Technology Professional Development Phenomena in Today’s Schools

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Ryan McGee

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Abstract

This Interpretive Phenomenological case study explores the Technology Director’s understanding of technology professional development phenomena in today’s public K-12 schools. This research was conducted to provide a greater understanding of technology needs in school systems in southeastern Massachusetts and Rhode Island. Through interviews with current technology directors, significant themes emerged from current practices. These themes were The Call to Educational Technology, The Role of a Technology Director, Technology Proficiency, and Professional Development. These themes were further analyzed resulting in significant findings.

The significant findings that emerged as a result of this case study were categorized into three main categories which were Pedagogical Beliefs of Technology Directors, Technology Proficiency and Technology Director’s Understandings of Professional Development. This research can help school districts gain a better understanding of the role of the educational technology leader. This research documents current technology professional development findings in southeastern Massachusetts and Rhode Island. The information in this research gives stakeholders a better understanding of technology professional development and how a TPACK theoretical framework and Adult Learning Theory can generate important technology conversation. These finding can provide a means to share current practices and focus on future implementation of technology professional development.
Keywords: Technology Professional Development, Technology Directors, technological-pedagogical-content knowledge (TPACK), technology education, professional development.
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Chapter 1: Statement of the Problem:

The Topic:

The demand for technology professional development continues to increase as technology integration assistance is needed with the advancement of educational initiatives. Research suggests that as the modern classroom evolves with greater requirements for technology integration into the curriculum, teachers are then faced with the need for complex professional development (Avalos, 2011). In response to higher accountability for educational outcomes, federal, state, and local educational stakeholders continue to invest large amounts of resources into the professional development of teachers (Gaytan, 2010). Many districts in the states of Massachusetts and Rhode Island have a technology education leader referred to as a Technology Director. The specificities of a Technology Director’s work varies between districts depending on many different factors such as initial technology skills instruction needing to be provided by someone who is proficient in the use of that technology tool (MA DESE, 2008).

Technology Directors have many job functions to maintain levels of technology integration across multiple schools. One of the most important aspects of the Technology Director / Coordinator role relates to the professional development of teachers and the coordination of the school’s technology program (O’Donnell, 2002). In this research, Technology Directors have been interviewed to determine what their understanding is of technology professional development phenomena in today’s schools.

Technology Directors’ understanding of technology professional development phenomena in today’s schools is important and the research provides a unique perspective as information was analyzed through the Technological Pedagogical Content Knowledge (TPACK) theoretical frameworks and the Adult Learning Theory. The theoretical frameworks gave the
researcher the ability to apply the theory in the research to current practices in order to offer a compilation of experiences that Technology Directors can share to help maximize professional development offerings.

The Technological Pedagogical Content Knowledge (TPACK) framework (Koehler, Mishra, 2009) demonstrates how a heightened level of Technological Pedagogical Content Knowledge proficiency is essential to foster the increased integration of technology tools into today’s schools.

The Adult Learning Theory based on Knowles’ work is a set of core adult learning principles that apply to all adult learning situations (Knowles, Holton, Swanson, 2011). These principles outline the need for professional development and technology to help create a fostering learning environment. Without a willingness to rethink the shape of schooling best practices, we will attempt to push uphill even as our feet keep slipping beneath us (Hess, 2010). It is important to provide the opportunity for educators to receive technology professional development in order to reach a heightened level of Technological Pedagogical Content Knowledge. This can foster a better understanding of the TPACK framework and the Adult Learning Theory, which can help Technology Directors share their understanding of technology professional development in today’s schools.

There is a plethora of quality technology tools available, but an overarching problem remains that Technology Director’s understanding of technology professional development in today’s schools needs to be understood and communicated with others. The interpretative phenomenological analysis focus provides different perspectives and increased communication of current practices in technology professional development which has been shared throughout
this research. These current practices might be able to help neighboring schools. The research was able further to define the role of the Technology Directors’ current practices and allow the TPACK framework as a tool to help reach a better understanding of technology professional development proficiency. The Technology Directors who were interviewed as part of this study have many years of combined experience dealing with the integration of technology in professional development thus have offered different current practices and trends to help overcome overarching problems for neighboring districts. The Technology Directors were able to share underlying pedagogical beliefs, experiences, and elements in technology education professional development that they believe teaches an environment of technology proficiency. This research helps school districts determine a baseline of current trends and practices that can help promote the ease of use of technology in professional development through the experiences.

**Research Problem:**

What is the Technology Directors’ understanding of technology professional development phenomena in today’s schools?

**Justification for the Research Problem:**

The demand for technology professional development in school districts continues to increase as higher level skills are needed to improve the integration of technology into the curriculum with the adoption of more rigorous state and national standards. Adult and continuing education leaders have the opportunity to share experiences and guide the evolution as teachers and policymakers are scrambling to evolve to meet the needs of 21st century learners at all levels of higher education, professional development, and K-12 education (Hoskins, B. (2011).
The collaborative use of highly motivational tools such as a computer provides us with a means to facilitate growth in learning (Harrison, 1998). Technology Directors have many combined years of experience in the integration of technology into the school districts and classrooms that have been explored through this research. The research explored what the Technology Directors’ understanding of technology professional development phenomena are in today’s schools.

The research has provided an opportunity to understand what the Technology Directors have done in their past to create a baseline of current practices which can improve technology professional development practices in education. The expected areas of interest to stakeholders in the public K-12 school districts in this proposed research are as follows:

The role of the Technology Director has been outlined to provide readers with background information on the position and how school districts use this position to help increase the integration of technology and professional development. There has been additional information in the research regarding the ways by which Technology Directors’ understanding of technology professional development phenomena is explored in today’s schools. The Technology Directors use pedagogical beliefs and a relationship between technology and learning (Gupta, Ndahi, 2002, Saljo, 2010) which assists in the integration of technology into the curriculum.

The final component of the research was the exploration of the importance of professional development (Gaytan, McEwen, 2010), elements of professional development, methods of technology professional development and factors affecting the delivery of technology professional development along with state and national standards outlining technology
expectations. The topics focused on technology professional development through the lens of the Technology Director of the public K-12 school district will be referenced to the TPACK theoretical framework. The TPACK framework shows how Technological, Pedagogical, Content, Knowledge helps outline current practices and improve learning. In addition, the Adult Learning model was utilized.

**Deficiencies in the Evidence:**

Research in the area of technology professional development was missing the perspective of the Technology Director in school districts in general but even more specifically in Southeastern Massachusetts and Rhode Island school districts. The Technology Director’s work provides additional information to research by sharing current district practices with stakeholders, as well as perspectives viewed through the theoretical lens of the TPACK framework and Adult Learning theory. The research provides a platform for additional future research in the area of technology professional development.

**Audiences:**

The research on exploring the Technology Directors’ understanding of technology professional development phenomena in today’s school makes a positive contribution to the educational technology field. Currently minimal research exists from the perspective of Technology Directors that focuses on how technology professional development is provided and how it can help in schools with an increased understanding of the (TPACK) Technology Content Pedagogical Knowledge frameworks and the Adult Learning Theory.

The primary focus of this research was to gain an understanding of current practices of professional development in technology through the view of Technology Directors’
understanding of technology and to share with stakeholders how the TPACK framework and Adult Learning theory help improve technology professional development. The sharing of this research may benefit stakeholders, teachers, principals, central office staff, superintendents, and technology directors as the research shares current practices in greater detail.

The community and students are a separate group who can indirectly benefit from the Technology Directors’ understandings of professional development that teachers receive and how tax dollars are being utilized in their local school districts.

The school districts are obligated to offer professional development, and the cost is substantial which results in a need for current practices to be outlined in order to determine how school districts are utilizing time and funds. This research helps to share a baseline of current practices among districts in Southeastern Massachusetts and Rhode Island providing an opportunity to reflect on the professional development of technology. The research leads districts to findings that can help determine which professional development might appear to be most cost effective. The research allows school districts to compare Technology Directors’ understandings in order to help maximize professional development thus getting the most for each professional development dollar spent. The research suggests resources which can be best utilized to reduce waste on programs that do not lead to an effective implementation.

The research outlines current trends in professional development for technology through the understandings of the Technology Directors. We can gain an understanding of how a heightened level of professional development with the TPACK framework can help support the teachers in their classrooms as well as create a baseline of current practices for districts to utilize. Principals
and other administrators will have an advantage after reading this research. The understanding of
the research helps teachers realize the need for technology professional development.

The research provides a greater understanding for central office staff, assistant
superintendents, and superintendents to help with a baseline of professional development
recommendations in technology to help support teaching staff that is currently being utilized in
other school districts. The Technology Directors have the greatest benefit from this research. The
current trends around Southeastern Massachusetts and Rhode Island will provide Technology
Directors with the current practices of their peers. Collaboration is many times fostered through
grants or occasional presentations, but the research provides information specifically on
professional development in today’s schools. The latest trends were covered as the phenomenon
was shared through experiences of the Technology Directors in this research.

Stakeholders will benefit from the research as the new demands of the online formative
assessment such as the Partnership for Assessment of Readiness for College and Careers
(PARCC) testing will require heightened technology skills which will have to initially be taught
through professional development. The online PARCC assessments will be a gateway for
students to take the standardized assessment online. The skills to take the online assessment will
be required as a skill set by the Massachusetts Department of Education. The teachers,
administrators, and district staff need to have an awareness of these technology tools to ensure
students can take a standardized online assessment as a high school graduation requirement. This
is an example of how the research will reach students, teachers and district staff. The K-12 public
schools will benefit from the information in this study. When researchers include comments
about the importance of the study for audiences, they also remind themselves of the need to
report useful results (Creswell, J. 2012, P.70).
Significance of Research Problem:

It is essential to improving technology proficiency in order to become familiarized with the latest tools of the trade that have an impact as an educator. Technology continues to evolve rapidly as the needs of school districts must be maintained to ensure professional development meets the needs of new technology requirements and educational advancements. We must continue to learn new techniques that keep us current with the latest advancement, as technologies do not merely support learning; they transform how we learn and how we come to interpret learning (Saljo, R., 2010). The track for college and career readiness is an important topic in school districts as educators continue to struggle creating paths for students in order for them to be able to find their personal talents as they proceed in their educational track. The focus is on building skills for students, so they can get a job once they graduate. The research assists school districts in gaining an understanding through a baseline of data from Technology Directors understandings about technology professional development. The baseline data helps guide districts to professional development practices which teachers share with students. The research outlines the current practices of the Technology Directors and their understanding of technology professional development around school districts. This information can be utilized to help build the scaffolding needed for students to get the skills required to be successful in college and career readiness. Once school districts have a better understanding of professional development in technology, then students will need to be taught skills that will enable them to be lifelong learners and problem solvers in the area of technology.
The availability of technology in the K-12 classroom is a challenge. School districts will need to continue to make available computers resources in the classrooms along with quality professional development. Ongoing professional development is imperative to ensure tools and knowledge are available for success in the classroom. Teachers must be given the opportunity to learn new technology as it evolves in order to maximize student learning as teachers cannot be expected to execute new instructional methods, technologies, and evaluation tools without proper training (Benton, 2008). Technology Directors need to help school districts in creating a professional development plan with performance-based goals to standards as well as specific training, technology teachers and postsecondary faculty will go a long way toward ensuring that their students are taught which will help increase technological literacy (Loveland, T. 2012).

The educational impact of utilizing different technologic teaching strategies has been proven over many years that local, state and global exchanges of learning can elevate student learning in the classroom. Teachers must experience a level of comfort with technology in order to maximized learning. The TPACK framework can potentially be achieved through quality professional development allowing teachers to be comfortable with technology. This TPACK framework helps create a greater understanding of teaching pedagogy.

**Positionality Statement:**

As a Technology Director in a public K-12 suburban school system in Massachusetts, it has come to my attention that multiple influencing factors block the integration of technology into the curriculum. Educators in Southeastern Massachusetts and Rhode Island are forced to adopt many new Department of Education initiatives such as online assessments, district-determined measures, data collection, and educator evaluation systems with little exposure to professional development. The professional development provided by a school district gives
teachers the ability to use new forms of technology in the classroom. The essential state-mandated initiatives require educators to follow a specific curriculum standards. Due to increasing rigor in education from the Common Core Curriculum it is essential to offer technology professional development to support these initiatives. Professional development can be improved by embracing the integration of technology along with an additional focus in technology professional development. Although state-mandated initiatives are important, the amount of resources required to comply, impacts the available resources for learning new technology concepts resulting in teachers not having the tools needed to enhance technology integration. Currently many schools provide professional development offerings and continue to encourage Technology Directors to learn new techniques but the delivery of professional development might not be optimal and the district might not have a clearly defined outline of what elements make high-quality professional development.

An important concern is teachers having enough time to take professional development sessions and the quality of the professional development that is offered. The level of technology professional development delivered and the understanding by the teachers of the material that was taught is a concern. It is difficult to conceptualize a technology professional development offering without a model such as the TPACK framework to measure the teacher’s understanding of the professional development opportunity. A few question come to mind such as: Does the educator have knowledge in using the technology? Does the educator have content knowledge? Can the educator combine the use of technology with content knowledge and the pedagogy to create an environment conducive to learning? It is the belief of the researcher that public K-12 schools do not provide teachers with sufficient time to conduct professional development opportunities in technology. It is my belief that due to contractual obligations on time, quality
presentations from industry experts and additional practice support time for teachers is not available when they return to their classroom. A baseline of current trends expressed by the Technology Directors’ understandings of their environment can potentially utilize a TPACK framework to help determine if a true understanding exists from the technology professional development. A Technology Director’s understanding of their role and experiences create higher levels of technology education pedagogical understanding which can raise the level of education technology integration in the classrooms.

An essential component of professional development in technology is to provide follow up support and reflection on the TPACK process. Many different types of professional development are taught with little to follow no up on the subject resulting in experiences that are not optimal. If there was a check for understanding, then a follow-up educators might feel more supported, and technology integration might be utilized more frequently. In addition to educators feeling more supported this could be a great opportunity for follow-up training and help if that particular educator were in need of a refresher. A Technology Integration Specialist for the district or a technology coach could be a strategic position to offer additional support using a coaching model or to check in with the educator as a follow up to the elements of high quality professional development. The Technology Integration Specialist would work with the Technology Director to share a mutual understanding of technology integration in the curriculum with staff members.

Further, educators might enjoy learning from a high-quality professional development training which helps increase the Technological Pedagogical Content Knowledge to transform classrooms into 21st century learning environments. The understanding of TPACK frameworks creates a stronger understanding of the needs for quality professional development and provide
Technology Directors with the tools to help support teachers with professional development that is rich in content, purposeful and relevant to their work in the classroom.

It is my belief that Technology Directors have many combined years of experience dealing with professional development in technology and could share their knowledge and understanding of technology needs which can potentially help other districts witness current practices in technology professional development. The research created emerging thematic categories and a baseline of data findings to share current technology professional development practices with other neighboring school districts.

**Theoretical Framework:**

The Adult Learning Theory framework is based on research conducted in the 1970’s by Knowles, most recently updated in 2011. Knowles’ work continues to offer strengths of the Adult Learning Model, which is the core of adult learning principles that apply to all adult learning situations (Knowles, Holton, Swanson, 2011).

The Content Pedagogical Knowledge (CPK) Framework is based on research conducted by Lee Shulman, which was selected for inclusion in this research to provide us with a perspective on Content Pedagogical Knowledge which helped outline an understanding of technology professional development. Shulman’s work on CPK has evolved through research into the current TPACK framework. The TPACK framework utilizes a philosophy based on Knowles’ work with the addition of a clearly articulated technology component. The TPACK framework continues to draw upon researchers’ work as evident through an online meta-analysis. Koehler & Mishra in 2009 created an outline of the TPACK framework which has been extensively utilized as a resource for this research. The TPACK framework in this research has
been used as a lens to view modern technologic needs associated with the Technology Directors’ understanding of technology professional development phenomena in today’s schools.

**Technological Pedagogical Content Knowledge (TPACK) Framework:**

In educational institutions, teachers are expected to be lifelong learners in constant need of reviewing new curriculum such as the Common Core State Standards as well as new initiatives by the State and Federal Departments of Education. Teachers must adapt to new requirements that are at times challenging due to the rapid pace technologic developments. A challenging piece of technology can easily become overwhelming for teachers that integrate technology into their classroom. Many teachers have earned degrees when educational technology was at a very different stage of development than it is today (Koehler, Mishra, 2009). A technologic device can change instantly with the download of a required update, potentially in the middle of a lesson. The teacher immediately needs to be able to problem solve to move forward in the lesson. The research has outlined the role of a Technology Director and how an understanding of new technology helps adapt to new technologic advances to support teachers’ needs.

Professional development is challenging as teachers are asked to learn new skills necessary to make technology successful in the classroom and technologic devices continue to change. The professional development training teachers usually receive minimal. The offerings might not always be relevant to teachers’ needs to foster proper technology integration in the classroom. The TPACK framework offers an approach to thinking about technology integration into the curriculum. Teaching with technology is “a complex, ill-structured task, we propose that understanding approaches successful technology integration requires educators to develop new ways of comprehending and accommodating this complexity” (Koehler, Mishra, 2009).
Shulman’s work outlining Pedagogical Content Knowledge (PCK) describes how teachers’ understanding of PCK interacted to produce effective teaching methods. The work continues as Koehler and Mishra further develop the relationship between the TPACK components to identify knowledge teachers need to use technology to teach effectively.

**TPACK Components:**

At the heart of good teaching with technology are three core components: content, pedagogy, and technology, plus the relationships among and between them (Koehler, Mishra, 2009). The original CPK framework is further expanded through the Koehler and Mishra work to create the TPACK framework. The TPACK framework components are broken down into the following subcategories: Content Knowledge, Pedagogical Knowledge, Pedagogical Content Knowledge, Technology Knowledge, Technological Content Knowledge, Technological Pedagogical Knowledge, and Technology, Pedagogy, and Content Knowledge.

**Content Knowledge:**

The Content Knowledge component of the TPACK framework is the teacher’s overall knowledge about a particular subject. Content knowledge can be learned from a previous class or content specific information that has been read in prior years. Knowledge of content is essential for teachers as the nature of the inquiry differs greatly between fields, and teachers should understand the deeper knowledge fundamentals of the disciplines in which they teach (Shulman, 1986).

An example of art appreciation was shared in Shulman’s work that shows content knowledge which includes knowledge of art history, famous paintings, sculptures, artists and their historical contexts, as well as knowledge of aesthetic and psychological theories for
evaluating art (Koehler, Mishra, 2009). A higher level of content knowledge is important to ensure proper knowledge transfer is achieved by the learner.

**Pedagogical Knowledge:**

The pedagogical knowledge component of the TPACK framework is represented as a teacher’s depth of knowledge about the processes and practices or methods of teaching and learning (Koehler, Mishra, 2009). The understanding of pedagogical knowledge is important as the practice of teaching includes many different aspects of learning. The common pedagogical knowledge focuses on the educational process, methods of teaching and learning. The knowledge component covers an understanding of how students learn, classroom management skills, lessons, and student assessment. The combination of pedagogical knowledge reflects how teachers understand their students’ construct knowledge, acquire skills and how these habits of mind require an understanding of positive dispositions of learning (Koehler, Mishra, 2009). The pedagogical knowledge requires an understanding of how students can apply developmental theories in the classroom.

**Pedagogical Content Knowledge:**

The Pedagogical Content Knowledge component of the TPACK framework is similar to the PCK framework created by Shulman’s research of Knowledge of Pedagogy. The latest revisions of research outlines Pedagogical Content Knowledge as the core function of teaching, learning, curriculum, assessment and reporting which creates conditions that promote learning and has a correlation to curriculum, assessment and pedagogy (Koehler, Mishra, 2009). The Pedagogical Content Knowledge is an important component of the TPACK framework as it creates an awareness of the need to look at ideas and problems.
**Technology Knowledge:**

The Technology Knowledge component of the TPACK framework is difficult to address due to the constantly changing environment of technology. To define the term Technology Knowledge would be the ability to work with technology and the ability to apply the level of work ethic to all technology tools and resources (Koehler, Mishra, 2009). The TK component means having a true understanding of computer science and information technology as in our everyday lives. To have a true understanding, a person would be able to accomplish a given task, utilizing different technologic methods to come up with a solution to a particular problem.

**Technological Content Knowledge:**

The Technological Content Knowledge component of the TPACK framework is an understanding of the manner in which technology and content influences one another. The instructor will have an understanding of which technology is best suited for addressing a subject area, learning and how the content dictates or changes technology or vice versa (Koehler, Mishra, 2009).

**Technological Pedagogical Knowledge**

The Technological Pedagogical Knowledge component of the TPACK framework is an understanding of how teaching and learning can change when technologies are used in a particular way. The TPK framework includes knowledge of pedagogy of affordances and constraints of technology and the relationship between what is developmentally appropriate (Koehler, Mishra, 2009).

**Technology, Pedagogy, and Content Knowledge**

The Technology, Pedagogy and Content Knowledge component of the TPACK framework is an emergent form of the initial TCK framework that goes beyond the three core
components of Content, Pedagogy, and Technology. The TPACK framework is defined as meaningful and deeply skilled Teaching with Technology Knowledge. Teachers must develop fluency and cognitive flexibility in Technology, Pedagogy, and Content Knowledge but also the manner in which these domains and contextual parameters interrelate to construct effective solutions. The compilation of the TPACK Standards are a deep, flexible, pragmatic, and nuanced understanding of teaching with technology as a professional knowledge construct (Koehler, Mishra, 2009).

**Adult Learning Theory**

The Adult Learning Theory is based on the premise of the work conducted in the 1970s by Knowles that was referred to as Andragogy, or the idea that adults and children learn in different ways. Researchers for many years have debated the initial concept of Andragogy, which has lead to updates of Knowles’ work. The strength of the Adult Learning Model is a set of core adult learning principles that apply to all adult learning situations (Knowles, Holton, Swanson, 2011). Andragogy works best in practice when it is adapted to fit individual learner needs.

The learning principles as stated in Knowles’ research are: the learner’s need to know, self-concept of the learner, prior experience of the learner, readiness to learn, orientation to learning, and motivation to learn (Knowles, Holton, Swanson, 2011).

The learners need to know starts with the facilitator of learning which helps the adult learner recognize the “need to know” in a particular content area. The instructor attempts to create an understanding of the value of learning new information and develops an intellectual case with positive effects of learning concepts. Getting learners to buy into a topic appears to be
more important with learners that have less or no formal educational learning experience (Knowles, Holton, Swanson, 2011).

The Self-concept of the learner is when adults have a responsibility for their decisions that affect their lives. In the self-concept stage, the adult learners develop a deep psychological need to be seen by others and treated by others as capable of self-direction (Knowles, Holton, Swampson, 2011). The adult learner in the self-concept stage could resent situations they feel forced on them. Knowles continues into the self-concept stage by claiming that at young age children create an internal conflict of learner equals dependent which then outlines the psychological need to be self-directing. These learners have a natural response to flee from the situation probably accounting for high dropout rates. Adult educators take additional efforts to make the learning environment more comfortable and help make a transition from dependent to self-directed learning (Knowles, Holton, Swampson, 2011).

The Adult learners’ experience is more in-depth as they have lived longer, thus having greater experience. Adult learners have a wider range of differences in learning. Emphasis in adult education is on experimental techniques that tap into the experience of the learners such as group discussions, simulation exercise, problem solving activities, case methods, and laboratory methods instead of transmittal techniques as well as greater emphasis on peer helping activities. The learned experiences of an adult learner help make them who they are, and these learned lessons need to be acknowledged to help prevent the possibility of rejection. (Knowles, Holton, Swampson, 2011).

Readiness to learn will happen when adult learners learn what is needed to help address real life situations. Knowles discusses the importance of having a readiness to learn as a
developmental task to transition between learning stages. Orientation to Adult learning means motivation to learn will be to help them perform tasks or deal with problems that they confront in their life situations (Knowles, Holton, Swampson, 2011). The learning of new knowledge will be through experiences relevant to their situations.

Motivation to learn is the responsibility of the adult learner and many times is based on an external motivation such as a better job, promotions, higher salaries and the like (Knowles, Holton, Swampson, 2011). The Adult Learning Theory varies with instructor experience around the concept of best ways for adult learners to bring learning styles and life experiences into the classroom that may either be critical foundations for future success or deeply entrenched beliefs that hinder learning (Kenner, Weinerman, 2011).

Kenner and Weinerman (2011) have two main concepts that have made a contribution to the Adult Learning Theory. The first concept brings learning styles and life experiences into the classroom for adult learners. This research is similar to Knowles research which takes into account the learner’s need to know, self-concept of the learner, prior experience of the learner, readiness to learn, orientation to learning, and motivation to learn which helps determine success in the classroom.

The second concept of Kenner and Weinerman (2011) is based on the importance of life experiences being a critical foundation for future success or a hindrance which can be evaluated on an individual basis. Adult learners will need to have increased flexibility to create and evaluate methods that improve learning and increased opportunity to share the results of their improvement efforts with others (Wideman, 2011).
The Adult Learning Theory was made popular by Knowles’ work which created a baseline for researchers to continue the analysis outlining concerns of adult learners and instructors over the years. The value of the Adult Learning Theory is to have a conceptual framework which outlines the needs of adult learners as applied to the Technology Directors’ understanding of technology professional development phenomena in today’s schools.

The Adult Learning Theory lens provides us with an in-depth analysis of technology that is helpful and valuable to support adult learners while developing a better understanding of professional development. The benefits of the Adult Learning theory can be exponential.

**Theoretical Framework Conclusion:**

The research used the Adult Learning Theory and TPACK framework as theoretical lenses to outline the Technology Directors’ understandings of current trends of technology professional development phenomena in today’s schools.

The Adult Learning Theory offers a theoretical framework which strengthened the research with the added theoretical lens. The Adult Learning Theory helped outline the requirements of the adult learner and how technology plays a role in sharing knowledge with this type of learner. The Adult Learning Theory increased understanding of professional development in the area of technology integration.

The TPACK framework was useful in outlining professional development delivery in technology. The framework provided a basis to determine the skills a teacher or presenter possess in order to conduct training in technology professional development. In the research, the researcher was able to view modern needs of technology integration and explore the Technology Directors’ understanding of technology professional development phenomena in today’s schools.
CHAPTER 2: REVIEW OF THE LITERATURE

Introduction

Digital age skills are vital for preparing students to work, live, and contribute to the social and civic fabric of their communities (ISTE, 2012). The use of technology in the educational environment continues to increase as educators are looking for new ways to engage students. Dynamic and integrated use of digital tools extends the pedagogical role of the teacher beyond the traditional lecture and discussion format (Berry, Staub, 2011). Advancements in technology have created the need for school districts to have a Technology Director to help facilitate the integration of technology into the curriculum. A Technology Director performs several tasks within a school environment and plays multiple roles that influence teaching and learning each day (Sugar, Holloman, 2009). Professional development for staff is important as districts continue to roll out new technology into the schools.

The research is advantageous to readers as a look into the exploration of the Technology Directors’ understanding of technology professional development phenomena in today’s schools. The research provides additional valuable information to help technology professional development integration and to understand current practices which can be shared through collaboration with other neighboring school districts.

History of Technology Education

The history of technology education can play an important role in technological change, but it is important that technology teachers, teacher educators, curriculum developers and researchers can be provided with good analytical tools for this purpose (Hallström, Gyberg, 2011).
In the 20th century, scientific technology started being utilized in the classroom as military and industrial research, which started educational technology trends in schools. The evolution of educational programming has since borrowed wartime advances in instructional film, television and radio as part of technologic change in America (Saettler, 1968).

As the evolution of computer technology continues, schools adopt technologic innovations into the education environment. In broad terms, the two major functions of education was to transmit the culture, values and lessons of the past to the current generation; and to prepare our children for the world in which they will live (Molnar, 1997).

Teachers have access to shared computer laboratories or general resource areas such as a library or media center, which tend to be set up to accommodate many students (Becker, 2000). Computers in schools continue to evolve into the latest technologies available. The history of technology education shows us that changes in technology are inevitable. With the availability of Internet in schools, classrooms have greater access to information. Many teachers continue to work in situations where computer availability and lab access to the Internet are less than ideal (Linder, 2004).

To achieve better learning outcomes from investments in Information Technology (IT) within the educational environment, it is imperative for researchers to develop a more comprehensive understanding of the role of IT in the context of technology-mediated learning (Zeying, Yulin, Neufeld, 2007). The state and federal laws are now more often requiring schools to report on student populations and educational progress according to mandated deadlines. These deadlines are required even if the school district has suffered a disaster. The IT administrator needs to recover the data so he/she can file the necessary reports. Restricted by
tight budgets, many district IT directors have come up with imaginative workarounds that operate within the various mandates and limitations placed on K-12 information infrastructure (Ramaswami, 2008).

The modern classroom has evolved over the years to include different types of technology tools to help support learning with models such as 1-to-1 laptop initiatives, online courses, digital lessons, interactive tools, and smart assessments which have shown learning can take place anytime (Davis, 2011).

It is now common in today’s classroom to see an interactive whiteboard (IWB) connected to a computer, a teacher laptop with a document camera, student computers in the back of the classroom and a mobile tablet or laptop cart. These digital devices help improve access to information. Children's knowledge building is closely related to their active engagement in using IWB affordances and their productive dialog, essentially supported by the teacher's scaffolding strategies (Kershner, Mercer, Warwick, Staarman, 2010).

Students are motivated to use dynamic and engaging software to enhance the learning experience (Berry, Staub, 2011). The need for relevant professional development has never been as important as it is today because of the No Child Left Behind Act and state mandates that require teachers to be highly qualified as well as requiring an increase in student achievement (Benton, B, Benton, D. 2008).

When teachers are provided with technology professional development focusing primarily on technical skills, they may fall back on technology uses consistent with their existing instructional practices simply because they have not been provided with an alternative vision for the use of technology. (Matzen, Edmunds, 2007).
The role of a Technology Director in the public school environment is one of importance in order to provide vision along with the integration of technology into the curriculum. A Technology Director exhibits an assortment of activities in interactions with teachers including instruction, solving technical problems, providing access to technology resources, and collaborating with teachers to develop curricular materials for their classrooms (Sugar, Holloman, 2009). The history of the Technology Director began when technology needed to be integrated into the schools and changes were rapid. Districts demonstrate that it’s imperative to have a comprehensive plan that accounts for more than just the distribution of machines, but creates a technology-rich learning environment that is supported by ongoing professional development, technology coaches, high-quality curriculum, sufficient broadband access, and administrative leadership (Fox, 2009).

Understanding the needs of a school district are complex and to find best practices when incorporating technology with teaching pedagogy. The research explored Technology Directors’ understanding of technology professional development phenomena in today’s schools.

The school districts should use a well-designed needs assessment to inform important decisions about a range of technology program areas. Presently, there is a lack of valid and reliable instruments available and accessible to schools to effectively assess their educational needs to design better and evaluate their projects and initiatives (Corn, 2010). Even the most conservative administrators, when faced with the mounting problems see the increasing potential of technology to address problems, would admit that education is entering a period of relatively rapid change (Surry, Robinson, 2001).
**The Role of a Technology Director**

The Technology Directors are thought of as a somewhat disruptive force in the normal way of teaching in the school as they are change agents (Chamberlin, Scot, 2004). The Technology Directors’ role is constantly changing as new technologies become available and professional development is required. The role of a Technology Director has three major job responsibilities which are easily identifiable as instruction, technical, and analysis. Educating school personnel about effective technology integration strategies, providing technical support, planning a school’s technology infrastructure and assessing the effectiveness of technology within a school setting are all clearly attributed to a Technology Director (Sugar, Holloman, 2009).

As mentioned by Chamberlin and Scot, excellent people skills are needed as well as the ability to adapt to new devices in order to conduct professional development sessions and integrate technology into the curriculum. Understanding the global impact of this position should influence hiring decisions. The need for possessing excellent people skills, flexibility and a global perspective far outweighs the need for technology expertise (Chamberlin, Scot, 2004).

**Trends of the Technology Directors**

There are many trends in the educational technology industry as evident in a meta-analysis of the literature that Technology Directors are currently using and will potentially use to integrate technology into the curriculum and support professional development opportunities. The research explored the Technology Directors’ understanding of technology professional development phenomena in today’s schools.
The scope of technology in education is large which leads to an overabundance of current and future trends in public K-12 education. The trends of technology in education are uncertain as the availability of new devices continues to change making way for innovations to be created. The next 25 years will challenge our current organization of education around the individual child, the school and the discourses of the knowledge economy; and will require the development of new approaches to curriculum, cross-institutional relationships, workforce development and decision-making in education (Facer, Sandford, 2010).

A few years ago netbook laptops brought affordable computer technology into educational institutions. Shortly after the release of these smaller more portable netbook laptops, tablet computer technology was introduced into the world of education. The tablet computer technology immediately impacted the current netbook laptop trends.

Technology Directors access innovations and determine which type is best to be purchased for district use. Trends happen quickly as new technology comes to the market and support educational initiatives such as an example of the combination of science technology engineering and math (STEM). Initiatives such as STEM allow Technology Directors’ to work on including engineering in the curriculum resulting in the development of a fuller context as to how engineering can be included without eliminating the positive outcomes of contemporary technology education and the industrial arts of yesteryear from which it evolved (Pinelli, Haynie, 2010). The integration of technology media needs to engage narrative skills, editorial abilities and research capabilities with the process of student learning (Stephenson, 2002, P.214) which is a current trend in education.
The future trends of Technology Directors will be difficult to predict. The integration component of technology is a popular trend and can easily continue as teachers are in need of support for professional development in future trends. The understanding of Technology Directors role in education, as well as the role of the TPACK framework, can potentially provide insight into future trends. Education programs need to consider exposure to a range of technology integration, especially content-specific and the candidates’ development of TPACK, which supports future technology-related instructional decision-making (Hughes, 2013).

**Importance of Professional Development**

In the modern educational school environment, professional development is essential for teachers to learn new forms of technology advancement as a way of continuing to improve their practice after many years of being in the classroom. The increase in the number of states that include technology education in the state framework may indicate that, as a nation, we are placing increasing importance on technology education as part of the overall learning experience (Dugger, 2007).

Teachers are often blamed for failing to integrate technology into their teaching, giving such reasons as lack of time, training, equipment, and support. It has been suggested that other reasons exist such as teachers’ core values about teaching and learning (Hixon, Buckenmeyer, 2009). There are many barriers that have an effect on professional development in schools in regard to the integration of technology such as resources, knowledge, skills, attitudes, beliefs, and subject culture (Hew & Brush, 2007).

A primary reason for the lack of technology integration into the classroom is ineffectively developed professional development opportunities for teachers (Potter, Rockinson-Szapkiw,
Another reason for a lack of technology integration is not having the availability of hardware and not having the opportunity for professional development.

To enhance and sustain learning in technology there needs to be a focus on teacher knowledge of specific and detailed technological learning outcomes in conjunction with appropriate pedagogical approaches (Jones, Moreland, 2004). Professional development is important in education to provide teachers with an understanding of the TPACK framework to help maximize learning and build the learning outcomes with appropriate pedagogical approaches.

Teachers’ beliefs and attitudes about the relevance of technology to students’ learning were perceived as having the biggest impact on their success. Additionally, most teachers indicated that internal factors (e.g., passion for technology, having a problem-solving mentality) and support from others (administrators and personal learning networks) played key roles in shaping their practices (Ertmer, Ottenbreit-Leftwich, Sadik, E. Sendurur, P. Sendurur, 2012).

Professional development can address many concerns, but the current “one-size-fits-all” technology training, focusing primarily on first-order barriers, has proved to be inadequate in light of the developmental growth of teachers’ technology use. Successful technology integration calls for more personalized, professional development that focuses on teachers’ fundamental beliefs about teaching and learning (Hixon, Buckenmeyer, 2009).

**Professional Development Strategies and Methods**

No matter what educational method a teacher personally espouses, the fact remains, that the classrooms within which these students are educated will have an impact on the way they
embrace the challenges with which they are faced (Goble, 2013). Incorporating professional development into educational settings can be challenging which requires many different strategies and methods to be utilized in the proper delivery of professional development content to stakeholders. The research suggests that we should be utilizing the same technology tools for professional development that teachers can use in their classrooms (Ertmer, Ottenbreit-Leftwich, Sadik, E. Sendurur, P. Sendurur, 2012). It is the belief that Teachers which are a large educational subgroup noted that some of the strongest barriers preventing them from integrating technology were existing attitudes and beliefs toward technology, as well as their current levels of knowledge and skills (Ertmer, Ottenbreit-Leftwich, Sadik, E. Sendurur, P. Sendurur, 2012).

**Mentoring**

A technology mentor is a role which applies to a formal advisory relationship with a practitioner. The practitioner is not necessarily a student but will usually be based in the early years of career (Robins, 2006). Mentors have many resources to draw on from experience and to continue with professional development, mentoring is highly significant within both training institutions and schools. The model can help both the mentor and mentee in learning new technologic materials.

**Peer coaching**

The model of peer coaching allows educators to have discussions and review teaching practices. These environments many times require trust and openness to share ideas amongst each other. Peer coaching provides an effective means of sharing feedback when paired with the faculty mentoring of students and the program success is dependent upon the establishment of
collegiality, teaching objectives/competencies, and critical evaluation of teaching methodology (Trautwein, Ammerman, 2010).

**Technology Tools In Professional Development**

A Google Scholar search for technology tools in professional development resulted in over 2,420,000 entries reflecting different types of technology tools available for utilization in professional development. In the public K-12 public school districts, many different types of technology integration tools are available. These tools many times are different between schools and grade levels. Technology tools are computers, interactive whiteboards, document cameras, data projectors, learner response clickers, laptops, desktops, and tablets, etc. The selection of devices many times can be overwhelming when selecting which tool can best support a lesson plan. The professional development offerings available online offer an assortment of topics as well and in the school districts different technology options might be available. The research explored the Technology Directors’ understanding of technology professional development phenomena in today’s schools which show Technology Directors needs in facilitating technology professional development. The understanding of hardware use as a technologic tool is also a component to consider along when reviewing the needs for technology professional development. The integration of the Common Core standard requires technology must be infused into the curriculum. Technology Directors might be the person needed to help school districts support technology integration and teach teachers how to use these devices to reflect 21st century learning techniques. The research has helped create a baseline of current technology integration practices that have outlined how technology is currently being used in other districts as well as the understanding a Technology Director has the value of a particular professional development offering.
Factors effecting delivery of professional development in technology

There are many different influencing factors that impact the delivery of technology professional development. These factors range from not having technology working properly in a professional development session all the way to not having a true understanding of pedagogy or how to operate software during a demonstration is given to a classroom of students. Teachers need both technical and pedagogical support to effectively integrate technology into their practice (Chamberlin, Scot, 2004). Many researchers have outlined different factors that have an effect on the delivery of professional development and integration of technology. The meta-analysis research conducted by Hew and Bush in 2007 creates a nice outline of six different barrier categories that address factors affecting the delivery of professional development.

Hew and Bush in 2007 created a detailed meta-analysis of barriers to the integration of technology in the literature over a ten year period from (1995-2006). Their research focused on creating a system of categorization of factors considered as barriers to technology professional development and the integration of technology.

Their work identified two main levels of barriers and six overall categories of barriers to technology integration based on 48 empirical studies. The first-order barriers were resources, institution, subject culture, and assessment. The second-order barriers impacting technology were teacher attitudes and beliefs; knowledge and skills. The three most frequently cited barriers are Hew and Brush delineated the three most frequently cited barriers impacting technology integration: 1) resources, 2) teachers’ knowledge and skills, and 3) teachers’ attitudes and beliefs, reported in 40%, 23%, and 13% of the studies, respectively (Hew, Brush, 2007).
Technology standards

The developments of state and national technology standards are important as we continue to increase the demand for technology integration into the curriculum and the need for technology professional development to help increase the use of these technologies. Particular advantages come along with online technologic learning of as affordances as information access, communications support, and the various forms of interactivity supported by web setting (Stephenson, 2002, P.109). The increase in the number of states that include technology education in the state framework may indicate that, as a nation, we are placing increasing importance on technology education as part of the overall learning experience (Dugger, 2007).

There has been a movement over the past several years with groups such as The International Society for Technology in Education (ISTE) which has been creating the NETS frameworks or ISTE Standards. The Association for the Advancement of Computing in Education has promoted these national standards efforts amongst technology educators to continue to improve the understanding and value of this work. Creating local and national standards in technology continues. The local chapters have been meeting as Massachusetts Computer Users Educators, and a more local branch of South Cape Cod Information Technology Team meets on a monthly basis to share and collaborate across school districts. The research explored what was the Technology Directors’ understanding of technology professional development phenomena in today’s schools which allows a comparison to be made between the research and the existing technology standards in use.

The federal government has played a large role in these movements with the support and development of the online assessments. The national, state and local organizations have taken
some of the online efforts of the federal government and utilized them as propulsion of current work. The state government continues to work on the alignment of these initiatives as well. The last set of standards created by the state of Massachusetts was April 2008. Many hardware and software vendors have been working to accommodate efforts in technology integration in school districts. The Technology Directors continue to build on experiences and understandings as they experiment with different delivery systems of information to help support the technology integration and initiatives.

**Massachusetts State Technology Standards**

In the state of Massachusetts the purpose of science and technology/engineering education in Massachusetts is to enable students to draw on skills and habits, as well as on their subject matter knowledge, in order to participate productively in the intellectual and civic life of American society and to provide the foundation for their further education in these areas if they seek it (MA DESE, 2006).

**National Technology Standards**

Several different organization exist that attempt to create national technology standards for educational use. The organization that is most frequently used is ISTE with their NETS frameworks and standards. The ISTE organization has broken down the standards for districts, teachers, and students. They are the most comprehensive standards currently available. The ISTE organization has educators from all across the United States and some international members.

**Definition of Terms in Research**

**Professional Development**
In the research professional development is a course offering or session where you can learn about a particular technology topic. The professional development discussed in the research covers the structure and composition of the environment in addition to the class structure. The term has many different names that are associated with a similar definition of bringing teachers and students together to learn about different means of communication.

**TPACK Framework**

In the research, the TPACK Framework outlined good technology teaching with three core components: content, pedagogy, and technology, plus the relationships among and between them (Koehler, Mishra, 2009). These are the TPACK Components which is the basis of the framework are broken down into the following subcategories Content Knowledge, Pedagogical Knowledge, Pedagogical Content Knowledge, Technology Knowledge, Technological Content Knowledge, Technological Pedagogical Knowledge, and Technology, Pedagogy, and Content Knowledge. Each category has a function and will help in the application to the study.

**Pedagogical Beliefs**

In the research pedagogical beliefs are the core beliefs of stakeholders about past, present, and future practices. The Technology Directors’ understanding of technology professional development phenomena in today’s schools is the main focus of the pedagogical beliefs. The research has created a baseline of current practices that will give the readers a greater understanding of what is currently happening in the area of technology in a public k – 12 school system.
Experiences

In the research experiences are the lived or witnessed participation in a particular event. The experiences of Technology Directors have helped in the interview process to obtain information on current trends and the understanding of the job role. This allows for a greater understanding of what is currently happening in the area of technology in a public K–12 school system.

Digital tools

In the research, a digital tool is a technologic device or software that allows collaboration and learning. Digital tools can range from a piece of hardware or software that improves engagement and provide a basis for increasing the ability to learn. The term digital tools can mean futuristic devices that will be used to advance learning.

Technology proficiency

In the research, the term of technology proficiency refers to a heightened level of understanding of technology. The concepts of technology knowledge, technology content knowledge, technology pedagogical knowledge and technology, pedagogical and content knowledge come together to create a TPACK framework which is where technology proficiency is expected at this heightened understanding of the framework. The term technology proficiency is frequently used in education as something to strive to achieve as an exemplar. To be technologically proficient is to have a true understanding of the TPACK framework and use technology at any time to improve a traditional lesson.

Technology Director
In the research, a Technology Director is an education leader in the area of technology that is in charge of running the technology operations in a public kindergarten to grade twelve (K-12) school district. The Technology Director has slightly different duties depending on what the Superintendent believes fits the district’s educational vision. Technology Directors many times have additional titles that are similar such as Technology Coordinator, Chief Information Officer, Instructional Technology Director and Technology Educational Leader.

**Interpretative Phenomenological Analysis**

In the research IPA is an approach to “qualitative, experiential and psychological research which has been informed by concepts and debates from three key areas of philosophy of knowledge: phenomenology, hermeneutics and videography” (Smith, Flowers, Larkin, 2013). Interpretative Phenomenological Analysis is a framework which has helped in this research explore what is the Technology Directors’ understanding of technology professional development phenomena in today’s schools.

**Technology Standards**

In the research, the standards are documents created to help outline different technology requirements in the curriculum in public k-12 school districts. The national ISTE- Nets frameworks have been discussed, Massachusetts Curriculum Frameworks for Technology, Science, and Engineering from 2006. The Massachusetts Technology benchmarks from 2008 have been referenced as well as providing additional reference materials and content relevance as needed.
Chapter 3: Qualitative

Research Questions:

The Interpretative Phenomenological Analysis (IPA) has studied the Technology Directors’ understanding of technology professional development phenomena in today’s schools. There are many public school districts facing challenges with the implementation of professional development and training in their curriculum due to rapidly changing technology rollouts which have been put into place to accommodate the increasing demands of technology integration. Many of these technology rollouts are done haphazardly and are not always well planned or in accordance with the Technology Director.

The IPA research has fostered a phenomenon determined as a result of the research interviews and analysis from the Technology Directors around Southeastern Massachusetts and Rhode Island. The research has helped outline current trends occurring in public education in technology professional development. The TPACK framework has formulated an additional understanding of current practices and allowed further suggestions and recommendations for stakeholders throughout this research.

Primary Research Question:

What is the Technology Directors’ understanding of technology professional development phenomena in today’s schools?
**Follow-Up Research Questions:**

The following questions will help expand upon answers received from the Technology Directors to help facilitate conversation that will provide additional information on experiences and understandings of a particular phenomenon that is currently happening in different school districts.

1.) What are the pedagogical beliefs of Technology Directors in today’s schools?

2.) What are the experiences and understandings of the Technology Directors in today’s schools which help create technology proficiency?

3.) What understandings do Technology Directors have about professional development phenomena and its role in technology integration?

**Methodology:**

The research used a qualitative research approach, Interpretative Phenomenological Analysis (IPA). The IPA methodology was used to explore and describe the beliefs and experiences of Technology Directors and their understanding of technology professional development phenomena in today’s schools.

**Research Design:**

The research method was conducted as an Interpretative Phenomenological Analysis study which focused on what is the Technology Directors’ understanding of technology professional development phenomena in today’s schools?
The qualitative method of research is an approach to inquiry that begins with assumptions, an interpretive theoretical lens, and study of a research problem exploring the meaning to a social or human problem (Creswell, 2011, P.65).

In qualitative inquiry, the researcher can collect data in a natural setting with sensitivity to the people under the study and analyze data to establish patterns or themes deductively. These patterns and themes from a homogeneous sampling of ISTE affiliated Technology Directors was valuable in sharing with readers of this research. The whole process of the qualitative research such as starting with a broad assumption, applying an interpretive theoretical lens, asking open-ended questions, gathering multiple forms of data to help answer the questions, coding information, and then creating the final narrative to compose a narrative story (Creswell, 2011).

**Research Tradition:**

The research study was conducted as an Interpretative Phenomenological Analysis which is an approach to “qualitative, experiential and psychological research which has been informed by concepts and debates from three key areas of philosophy of knowledge: phenomenology, hermeneutics and ideography” (Smith, Flowers, Larkin, 2013). Interpretative Phenomenological Analysis helped explore what is the Technology Directors’ understanding of technology professional development phenomena in today’s schools.

Utilizing a traditional component of phenomenology research along with a homogeneous sampling to interview Technology Directors proved valuable to document a baseline of current trends currently happening in public K-12 school districts with regards to technology professional development that accompanies the rollouts of these devices. The interview results were analyzed to reduce individual experiences with the phenomenon to a description of the
universal essence (Creswell, 2013, P.76). The qualitative researcher emphasized episodes of
nuance, the sequentiality of happenings in context, the wholeness of the individual (Stake,
P.XII). The conversation with Technology Directors generated valuable information that was
analyzed and helped provide an understanding of the job role and additional practices that can be
shared with this research with neighboring school districts.

The purpose of using a phenomenology component is to provide a deep understanding of
a phenomenon as experienced by several individuals. (Creswell, 2013, P.82). The expectation is
that educational technology leaders or Technology Directors will be able to share different types
of phenomenon leading to findings based on current practices or trends that we see in multiple
schools that will help inform districts of current trends being done in school districts around
southeastern Massachusetts and Rhode Island. The homogeneous sampling provided the
researcher with people who possess a similar trait or characteristic based on a membership in a
subgroup with defining characteristics (Creswell, 2012). The Technology Directors around
southeastern Massachusetts and Rhode Island are active members of an affiliated ISTE
organization such as MassCue in Massachusetts and RIDE in Rhode Island.

The use of a phenomenology component of IPA research was more focused on our
attempts to understand people’s relationship to the world and will focus on their attempts to
make meanings out of their activities and to the things happening to them” (Smith, Flowers,
Larkin, 2013, P.21). The IPA research component, phenomenology was integrated with a deeper
lens providing a rich source of ideas about how to examine and comprehend the lived experience
(Smith, Flowers, Larkin, 2013).
The next component to IPA research is Hermeneutics which is the theory of interpretation of philosophical underpinning for the interpretation of wide ranges of texts, such as historical documents and literary works (Smith, Flowers, Larkin, 2013). The focus was to uncover original intentions and the understanding of the Technology Directors’ role instead of a traditional analysis of the authors’ piece of literature. The interview data represents the story of the Technology Directors. The interview data contributed to the utilization of the IPA research method to further understand technology professional development phenomena in today’s schools.

The final component of the IPA research is the ideography which operated at two levels, commitment to the particular and commitment to the particular experiential phenomena. The commitment showed detail and a depth of analysis through a thorough understanding. The selection of the population allowed for specific systematic questions asked across different schools. The questions remained detailed to ensure the IPA research recommendation were followed, and an in-depth analysis was conducted. The commitment to the particular experiential phenomena worked on finding an understanding of an event, process or relationship (Smith, Flowers, Larkin, 2013). The expectation was an understanding as discussed through interviews with the Technology Directors in the selected school districts meeting the homogeneous selection criteria. The smaller sample size groups of Technology Directors created the perfect environment for the examination of the experienced phenomena.

The use of the Interpretative Phenomenological Analysis approach provided the proposed research with a greater focus on the Technology Directors’ experiences and greater understanding of particular phenomena that resulted from the interviews. The IPA analysis tells
us about a person’s involvement in and orientation towards the world and how they make sense of this (Smith, Flowers, Larkin, 2013) strengthening the research.

**Site and Participants:**

The Interpretative Phenomenological Analysis study utilized multiple sites of K-12 public school districts in Southeastern Massachusetts and Rhode Island as selected with the utilization of a homogeneous sampling to ensure the subgroup had defining characteristics of contributions to professional development. The research was classified as random purposeful with the addition of a homogeneous sampling which added credibility to the sample when the purposeful sample is too large (Creswell, 2013, P.158). The sample size of K-12 public school districts in Southeastern Massachusetts and Rhode Island might be too large requiring a sampling strategy such as random purposeful to help narrow selections along with the use of homogeneous sampling to assist in the selection of Technology Directors with an active ISTE affiliated membership. The additional sampling criteria helped increase the integrity and validity of the study eliminating participants that did not contribute to professional development.

The Technology Directors of public K-12 school districts that participated and that meet the selection criteria in this research were interviewed at a convenient location after the work day. It was beneficial to have confidential discussions at a neighboring coffee shop and where the participants felt comfortable and safe sharing information during the interview session. Initially, the researcher proposed a few alternative locations such as the public library, bookstore or a restaurant. The Technology Director’s office or a school location was not recommended for the research. The school districts were random purposefully selected for a mix of school populations and demographics located in Southeastern Massachusetts and Rhode Island as well as having the homogeneous sampling applied to help select a subgroup with defining
characteristics in professional development. It was valuable to get an assortment of Technology Directors that were varied in age, gender, background skills, duration in the Technology Director Role and with varied collegial degrees.

The Technology Directors sample size limit for the maximum participants was no more than ten participants and no fewer than three participants. Qualitative research is not only to study a few sites or individuals but also to collect extensive detail about each site or individual studies (Creswell, 2013, P.157).

The sample selection for the Interpretative Phenomenological Analysis study from the districts around southeastern Massachusetts and Rhode Island demonstrated a purposeful random sampling which provided a relevant basis for a baseline of research. Homogeneous sampling was additionally applied to ensure that participants in the research had an active ISTE affiliated membership which helped select a subgroup based on a common membership and shared defining characteristics around the influence of professional development. The Interpretative Phenomenological Analysis guidelines suggest between four and ten participants are selected (Smith, Flowers, Larkin, 2013). It is the researcher’s beliefs that the limitations of the sample size could have an effect on projecting this research across the states of Massachusetts and Rhode Island, however, the IPA method provides a greater depth of understanding compared to other traditional research methods. The sample size was within the anticipated range of IPA suggestions which allowed for accurate modeling. The researcher made an additional suggestion for future research which included representation of a greater number of Technology Directors to ensure greater diversity.
Recruitment and Access:

The recruitment process began once the appropriate approvals were obtained from the stakeholders at Northeastern University IRB. The recruitment process started with an email to Technology Directors who are located in Southeastern Massachusetts and Rhode Island. The researcher reached out to Technology Directors through professional affiliations, a list serve, and local Technology Director organizational chapters to email an initial request for participation outlining the basics of the research to generate interest.

When the researcher received an email expressing initial interest from a Technology Director, an in-person meeting was scheduled to discuss the objectives or the proposed research, answer, any questions and review the informed consent and the interviewee’s rights. Technology Director participants were assured confidentiality procedures were in place and that an environment was created where information was safe to be shared, and coding was used as an added level of protection in the research.

An incentive for participation in this study was the knowledge gained from the research. The research provided participants with a resource that addressed current trends in the public K-12 school districts in technology. As a Technology Director in the southeastern Massachusetts and Rhode Island region, I feel this research was beneficial. An additional incentive was to help as a member of the Regional Technology Director team. The TPACK framework provided increased awareness and understanding of the needs of quality professional development to which can help created a fostering learning environment.

There were a few ethical considerations that were taken into account as this research was conducted. The first ethical consideration was the researcher’s role as Technology Director of the
technology department in the Stoughton Public Schools. Equitable representation of all public K-12 school districts participating in this study was ensured.

The next ethical consideration was about the proper treatment of Technology Director participants in the study. The Technology Directors selected for this study met the selection criteria and participated in each section of the research. The use of pseudonyms protected the selected Technology Directors’ identities. This subgroup was not exploited for sharing information about public K-12 school districts.

The Internal Review Board (IRB) approval from Northeastern University was important. The researcher holds an administrative role as a Technology Director in a district and clearly outlined the study and expectations. The other participants held similar roles in their district. The research was focused on the Interpretative Phenomenological Analysis of Technology Directors’ understandings and was not input from teachers or students. This process did not directly have an impact on the participants’ districts. The researcher outlined and conversed with the Technology Directors and IRB members as stakeholders deem appropriate. All parties signed consent forms making them aware of their rights and their part in the research. Additional considerations of the IRB were upheld to ensure the accuracy of the research as well as adherence to local district policies.

**Data collection:**

The data was collected through scheduled interviews with Technology Directors who participated in the study. The study was focused on what is the Technology Directors’ understanding of technology professional development phenomena in today’s schools. The research question and scope of this research were not controversial, as a result; I did not
experience any difficulty recruiting participants for the study. Any questions were drafted prior to the interviews to ensure relevance and accuracy. The pre-determined questions were provided to the Technology Directors for review before the interviews were conducted. The interview questions that were asked of the district Technology Directors were available for review by the IRB board for Northeastern University School of Education. The analysis process was conducted at the conclusion of the data collection once approval was granted from the IRB board. Once the data was collected, it was securely backed up, and the coding process was used. The researcher used the open coding process with predetermined interview questions to help guide the conversation. It was the researchers expectation that phenomenon would emerge during the interviews. The phenomenon comes out naturally as the Technology Directors had many years of experience to contribute to the conversation. Specific categories for analysis and review were created after the interviews were conducted. The researcher had guiding questions for the interviews but was unaware of what phenomenon would come out of the in-depth conversations. The researcher probed for information based on what is the Technology Directors’ understanding of technology professional development phenomena in today’s schools which remained the focus of all correspondence with the participants in this study.

**Data storage:**

The data storage component of the research process provided added levels of security as the researcher had a background in information technology. The initial interviews with participants were recorded to a mp3 file coded initially with an alias to make sure names could not be connected with the audio files. The mp3 file on the researcher’s voice recorder was downloaded to his password protected computer. The translations from audio were recorded into dictation software; then a backup copy was created in text format. The files were then backed up
on the researcher’s computer and mirrored to an encrypted external backup hard drive on the
home network and deleted from the voice recorder. The researcher’s network backup solution
created an extremely small possibility of losing important interview data.

The in-field interviews with the Technology Directors recordings had additional backups
into a secure Google FTP share which provided access to the files at any time outside of the
home network for a disaster recovery contingency. With a dedicated Google account data
security was not an issue as additional considerations had been taken to ensure security of the
account. Pseudo names were used throughout the whole process as an added level of security to
protect the interviewees. The access to this data remained secure in the Google location
discussed. In order to verify the transcript accuracy, the recorded mp3 files were distributed
through a secure Google login on a FTP share site. Many users are currently utilizing software
named Google Drive. Technology Directors were given individual access to their mp3 file and
the printed text transcripts only they had access to. This method allowed the interviewees access
to both the mp3 audio file and the converted transcript. This process was secured with security
access which allowed the researcher and only that particular interviewee access to their files. The
original files on the recorder were erased after being posted to the secure Google FTP site, and
accuracy was confirmed. The original data was securely archived in accordance with the IRB
guidelines, and the mp3 file was destroyed on the recorder after the final process was completed.

**Data Analysis:**

The process appropriate for data analysis was IPA, which utilized the Moustakas method. In
addition to the Moustakas method, the simplified 1994 model of Stevick-Colaizzi-Keen was
utilized in this research. The combined methods were utilized in steps beginning with the
personal experiences of the phenomenon extracted from the interview data. The next step was creating a list of significant statements the researcher found through the interviews and from other data sources and coding methods. In the research the expectation was to get feedback from Technology Directors via the interview process. The researcher gave opportunity for additional comments to be made at the conclusion of each interview with Technology Directors for added phenomena. The research was focused on Technology Directors from Southeastern Massachusetts and Rhode Island. Additional steps were taken by the researcher to determine data significance and appropriate grouping of data for larger meaning units and themes. A cross reference referred to as “textural description” was created to categorize findings and analyze the data. The final step of data analysis was to follow up with the phenomena extrapolated from the process and describe in the narration summary which was inclusive of the data results in this research.

Moustakas is a psychologist who laid out steps to follow for data analysis which is appropriate for the IPA method selected for this research. The Stevick-Colaizzi-Keen method is shorter and more condensed which made it easier to follow with more simplistic and accurate language. Creswell mentioned an additional researcher named Riemann, who offered a structured analytical approach focused on medicine. This researcher has a similar structure as it analyzes the data for significant phrases, develops meaning, clusters them and presents an exhaustive description of the phenomenon. The above authors offered theoretic lenses for analyzing data which provided guidance together for a maximized data analysis of the research.

**Trustworthiness:**

The researcher took a several step procedure to maintain the integrity of the research. The proper approvals were requested from necessary stakeholders. The first step was to gain approval
from the Northeastern Internal Review Board. The next step was an introduction to the research conducted through an email sent out to all the Technology Directors in Southeastern Massachusetts and Rhode Island. Then followed up with a check with any Technology Directors who felt they need approval from the Superintendent or School Committee to participate in the research. The technology directors were met outside of school hours, and each of the participants did not feel the need to have additional approval. The pseudo names (pseudonyms) were used for coding to prevent any link to their school districts. The research focused on what is the Technology Directors’ understanding of technology professional development phenomena in today’s schools.

The sample of school districts was within Southeastern Massachusetts and Rhode Island. The interviews were done at random times that were most convenient to the Technology Directors that who were willing to participate in the proposed research. This allowed for an increase in trustworthiness and ease for the participant. The data sets were collected with respect and taken seriously to ensure the validity of the study remained intact. The next step was to communicate with the interested Technology Directors. After the Technology Director had committed to being part of the research study, then a mutually available time was scheduled to conduct the research. The researcher provided additional information to stakeholders for review. The research was used to analyze and complete the requirements of the study. Future research was proposed in this study which suggested the needs to continue to improve the field technology professional development from additional perspectives of Technology Directors.

The researcher selection of protocols used to eliminate any bias relating to the research. The researcher’s current position strengthened the research as the interviewees were understood through the lens of a Technology Director. An additional consideration was kept at the forefront
of the research to get a good sampling of diversity which allowed for better projections of baseline data used once the research was completed. As a member of the educational research community, I conducted a non-biased interview with non-judgmental outcomes. The information was factual from Technology Directors who were interviewed and provided information to be analyzed which helped create a baseline of data that school districts can use as research of current technology practices. It is the hope of the researcher that Technology Directors continue to benefit from this research and to share current practices and findings with others to help improve education in today’s schools.
Chapter 4: Research Findings

Introduction

The purpose of this study is to explore the Technology Director’s understanding of technology professional development phenomena in today’s schools. This chapter outlines the phenomenological findings from interviews that were conducted with four Technology Directors practicing in public K-12 schools in Southeastern Massachusetts and Rhode Island. The Technology Directors each had a professional membership to an International Society for Technology in Education (ISTE) affiliated organization.

Participants varied in district demographics, technology educational experience, and affiliated ISTE organizations. Table 4.1 provides an overview of the Technology Directors' current district information coded in pseudo names in order to protect the confidentiality of the participants.

<table>
<thead>
<tr>
<th>Name</th>
<th>District Demographics:</th>
<th>Years in Technology Education</th>
<th>ISTE Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>John</td>
<td>Rhode Island, Suburban, K-12 District Approximately 2700 Students, 5 Schools</td>
<td>2 Years</td>
<td>RIDE</td>
</tr>
<tr>
<td>Jen</td>
<td>Massachusetts, Suburban, K-12 District Approximately 3000 Students, 4 Schools</td>
<td>20 Years</td>
<td>MassCue</td>
</tr>
<tr>
<td>Mary</td>
<td>Massachusetts, Suburban, K-12 District Approximately 3600 Students, 7 Schools</td>
<td>34 Years</td>
<td>MassCue</td>
</tr>
<tr>
<td>Nancy</td>
<td>Massachusetts, Suburban, K-12 District Approximately 2500 Students, 5 Schools</td>
<td>20 Years</td>
<td>MassCue</td>
</tr>
</tbody>
</table>

The first part of the chapter is a summary of each of the Technology Directors’ stories. Each story is broken down into an overview of what brought the technology director into education, followed by their story and how the phenomenon was experienced. The second part of the chapter explores common major themes as well as sub-themes that have emerged from the
research. The interview data offers a list of experiences, phenomenon, best practices and other information that can be shared with districts in Southeastern Massachusetts and Rhode Island.

**Research Questions**

The following research questions guided this qualitative interpretive phenomenological analysis study:

- What is the Technology Directors’ understanding of technology professional development phenomena in today’s schools?

  **Sub-questions**
  - What are the pedagogical beliefs of Technology Directors in today’s schools?
  - What are the experiences and understandings of the Technology Directors in today’s schools which help create technology proficiency?
  - What understandings do Technology Directors have about professional development phenomena and its role in technology integration?

**Data Collection and Participant Information**

The participants were selected based on a homogeneous sampling. This was done in order to interview Technology Directors who could provide valuable insight of current trends happening in public K-12 school districts in regard to technology professional development. The interview results have been analyzed to document universal essence.

Data was collected and analyzed to determine significant categories of phenomena currently occurring in today’s public K-12 school districts. A total of four participants were interviewed as part of this study. Three of the interviews were conducted in a face-to-face meeting, and one was conducted in a private Google Hangout session recorded for an mp3 player. A Google Hangout is an online meeting place where you can exchange the face-to-face correspondence over the internet. Each of the technology directors was active participants in an ISTE affiliated organization. The importance of the ISTE affiliation was to help guide selections of technology directors that are more familiar with standards and have an understanding of
current curriculum frameworks and theories. Three of the technology directors are located in Massachusetts, and one technology director is located in a Rhode Island public K-12 school district. The selection of two states has provided a greater scope of perspective for the research. When the technology directors were interviewed, they were reassured that all information will be covered by a pseudo name for the individual and school district ensuring a level of anonymity.

**Technology Director 1: John**

John is an experienced industry technologist who entered into the area of education two years ago. The district in which John resides is a suburban Rhode Island location comprised of approximately 2700 students. John was part of Rhode Island Department of Education (RIDE) which is an ISTE affiliated organization in Rhode Island. He has helped facilitate many different initiatives that will be reviewed in greater detail as we explore the research.

John was asked to share reasons why he wanted to enter into the area of technology education. He then described several different reasons which attracted him to education. The first reason was the desire to share a decade of industry technology experience. John “wanted to get into education to see if he could help a local school district advance in technology, and also see how he could help bring them to the new century”. When John started his technology director position he realized that the district had “a lot of needs for technology, but, they needed somebody to guide them, so it was a good opportunity to help them go from an old model to a new model, and help them integrate technology into the curriculum”. He then shared different examples of items he had updated such as “a new e-mail system and rolling out a one-to-one program at the high school level”.
John shared “technology in education is a little bit hard because you have to go through a lot more. It’s full of processes that you don’t have to do in the normal industries. I think it’s a little bit harder to deploy some of the newer technology”.

John shared his understanding of the role of Technology Director who “is trying to help the superintendents and the curriculum folks, the directors try to help them with ideas”. The different technology recommendations “depend on the requirements that they ask of you and of the curriculum that you need to try basically to implement in the classroom settings.”

Technology Directors “need to provide recommendations for a natural solution and professional development for new technology to teachers, staff, and students”. The professional development can have an impact on a “lot of different places such as making it easier for the kids to learn about a new device, help develop and help the digital curriculum, make sure that it’s working with the devices that you’re handing out to kids”. The majority of “my duties are to make sure that we submit all the state reporting and federal reporting to the appropriate department of education, project management, and regulation compliance while enforcing due diligence”.

John stated that technology professional development is when “nontechnical people require a lot of training on new software packages or the new systems that we have, or the new hardware that we have, so they could have like a better sense of how to use the equipment or software”. The technology director must maintain a level of being a “technical expert in that area” to make sure you are prepared if anyone asks you content specific questions. There is a need for training utilizing the “train the trainer model” which provides “tech savvy folks” an opportunity to share with other teachers. John mentioned “me being a technical director, I might not be the best person to say what is best in the classroom.” John believes that “a lot of
technology directors don’t spend time in the classroom, so they don’t know how a teacher basically does their daily activities in the classroom or how they use the technology in the classroom, so we could train them on how to use the technology”.

John’s influence on technology professional development is to “recommend a lot of different technologies to the superintendent”. Due to the large amounts of teacher requested trainings needed in the district, John offered a few ideas such as “Google Docs and Spreadsheets in a smaller course format”. In electronic format district staff has access to “resources to be trained on”.

John believes that you must review “a lot of the different processes that are in place in an organization” and see how to help improve “processes which can become more efficient using technology”. You have to take a look and determine “ways which will make it easier for everybody to use the system, whether or not it’s through professional development and training”. An example John used was creating an assessment by hand on paper which can be more efficient through online electronic submission and grading using a technology such as Google Documents. This method allows online collaboration with an added component of grading which helps ensure “everybody answered all the questions”. John believes “a lot of trainings is needed” to create technology proficiency to make sure systems are “more efficient for any part of education”.

John shared current technology professional development practices in his school district by stating that “right now it’s not the best.” In the past a central professional development model was utilized which allowed district staff to “get together in one of the schools and have different professional development sessions on e-mail, MS Word, software packages and hardware training”. John believes that a central professional development model “was a good practice in
“the past” and “we need to get back to that model” as right now “there’s no actual set professional development model”. The current practice is “principals are in charge of their schools”. Teachers get minimal professional development selections, but they get to select which one they would like to attend on the first two days. According to John “there’s not a centralized professional development model in the district right now, but we’re trying to create one for the future”.

John believes that others perceive professional development in technology as a desire for more offerings in their schools. The Technology Department offered two classes on the Google Suite and Aspen X2 student information system in an attempt to get the most “bang for our buck in the sense that we want to get a lot of people trained at the same time”. It was hard “because either scheduling conflicts or limited funds, but there’s a need for professional development in technology”. We do often offer classes on a “voluntary basis and we’ll train them as long as there is a relevant use such as how you use the student information system, Google suites or other potential requests”. We try to “accommodate as much as possible with what we have”.

John then shared how technology professional development is currently integrated into the curriculum. The high school will be going forward with a one-to-one initiative which will utilize the Google Chrome books. At the completion of the school year, “training sessions for high school teachers will be on Chrome books, Google suite, Google Classroom in a one-to-one environment”.

Elementary and middle school levels will “receive similar training the following year as we utilize a phased-in approach” to implementation of district-wide one-to-one Chrome books. It is expected that the elementary schools will need additional student information systems training as the lower grades will utilize the software to enter grades as well as providing training to help
support parents. Professional development will be differentiated depending on “which grade level your work resides”.

John sees the role of technology director supporting professional development in the future as “an important role”. Technology Directors are going to have “to work with curriculum directors and superintendents to come up with a good professional development plan”. Teachers and staff must be well versed in technology “because if not, kids might suffer if teachers do not understand how to deliver the curriculum”.

**Technology Director 2: Jen**

Jen is an experienced educator, instructional technology teacher and technology coordinator who entered into the area of education twenty years ago. The district in which Jen resides is a suburban Massachusetts location comprised of approximately 3000 students. At the time of the interview, Jen was part of Mass Cue, which is an ISTE affiliated organization in Massachusetts. She has helped facilitate many different initiatives that will be reviewed in greater detail.

Jen shared why she wanted to enter into the area of technology education. Jen was an elementary classroom teacher who taught first and second grade, then became an integration technology specialist in an elementary school. Jen then taught Integrating Technology in the Classroom for undergraduate and graduate students who were looking to move into the field of teaching. She came to the high school level as a classroom teacher and moved into department chair role, technology coordinator.

Jen enjoyed watching technology in her teaching positions evolve over the years. Jen utilized technology in her classroom as a learning tool. Jen gravitated towards technology as she found that it helped to engage the students. Technology wasn’t hard for Jen as she had taken
some college classes in Computer Science “just because she was interested in it”. In addition, Jen believed that her experience “was something that can help more kids and teachers support the use of technology in the classroom which evolved into a coordinator position.” Jen feels that with her experience “in a supportive role, I feel like I’ve walked the walk, so I know what teachers are feeling like who are in the classroom trying to you know, leverage technology to help students engage them and to help with the learning. So I’ve been there. I think that also gives me some clout with them because they know that I’m not somebody who just is telling them what to do. I’ve done it”.

Jen believes the role of the technology director means a few different things. “I think it’s important to have a vision, to look at where we’re at in the society and to look at how we’re preparing these students to go out into the world.” As part of your vision, flexible is essential as technology is always changing. It is important to “help prepare students for whatever they’re doing in the future in technology”. “I also think team-building is huge as you are as good as the team you build.”

Jen believes the role of technology director is multifaceted as it is “so important because you have the tech support aspects, and you also have the integration aspect, and nobody can be an expert at everything”. As a technology director, you must “leave the ego at the door, and you have to be really learning as you go since things change so frequently”. You can’t always be an expert at everything related to technology. “If anybody’s trying to pretend that they can be, that’s not a good thing.”

Jen discussed support and integration which are both “supporting roles” she feels “a huge part of being a coordinator of technology”. The support role includes an additional component
which is “the ordering of equipment and everything else” needed to sustain the district’s technology needs, so you have to “wear a lot of different hats”.

Jen mentioned her pedagogical belief that “technology should be – first of all, be the teachers in the classroom, I think they are the experts. Good teaching is what’s important” and “technology should support good teaching”. A problem that exists is that many times we “get caught into using the technology because we feel like we’re supposed to” and “I feel like it’s important that the teachers are using the technology to enhance the learning environment and to engage students and not just to use the technology”. Jen mentioned that if technology is “going to make what they’re doing better, that’s when I think it should be used”.

Jen shared what technology professional development means to her. In our schools “professional development is really evolving”. An example is talking about an Ed. Camp model which “I really love the model”. The Ed. Camp model comes from the teachers at the session. The Ed. camp model is called an “unconference” because there are no scheduled presentations. “The participants show up that day and are asked to build a signup board. Then just break into sections. They’re asked to post anything that they want to learn about or that they learned about and wanted to share with others. It’s just a great giant share”. The participants will come in for example and share what they have learned about the idea. Jen used an example of the Google Console and was hoping to learn more and share what was learned. “I’m trying to get to be an expert but I don’t think anybody’s ever going to be an expert.”

The Ed. Camp model is “people who are walking the walk and talking the talk”. Everyone has the option to “share about what they’re doing”. Jen mentioned that the Ed camp model offers all kinds of different sessions “but it’s coming from the people who need to learn these things and are really interested in learning these things”.
Professional development is best when it is “coming from the teachers who are in the classrooms that are capable of supporting the people in the classrooms and being organic”. Jen compares this concept to “somebody in the administration hiring an outside contractor to come in that, maybe hasn’t been in the classroom for fifteen years but they’ve been on the professional development circuit”. Teachers many times feel “that this person is so out of touch - they haven’t been in a classroom and it’s changed so much. How did they know? I think teachers need to be the ones to identify what professional development may be needed.”

There are many tools that are helping with collaboration “We’ve been using Google Drive a lot in my district, and that’s why we’ve been working on that admin console”. “There’s the online – the access anytime, anywhere, all the tools that are there for people to share.” It is “being able to create a document, share it out to your students, share it out to your colleagues while being able to all be working in that document at the same time, it just really enhances collaboration”. With the technology available to schools, today collaboration is achieved. Tools such as a “hang out in Google and being able to collaborate is again so important”. It is important to “have people understand these tools and using these tools I think is really great for professional development”. Another important component to professional development is “having a team in place, other teachers who will come forward as no one person is the expert in everything”.

In technology education teachers, “so many times turn to people on my team for a topic that is something that’s their forte. So I’ll ask, can you come forward and share that?” The importance is that a ‘team is just huge when it comes to professional development”.

If you are “encouraging and empowering people by saying, hey, I was in your classroom the other day when I observed it was so awesome. Could you share it with others?” This creates
an environment that is “organic, it’s coming from someone who actually did it, and it’s empowering somebody to share who may be otherwise might not have”.

“Technology changes so quickly that again I think I tend to focus more back on skills, but what things are going to help students be successful in the future and create technology proficiency.” There is importance of the “standards of what things students should be becoming proficient in” followed by “having good file management is important, having good search strategies, being able to collaborate, being able to search and do an effective search is important. Those skills I think are you know, what’s going to get them success in the future”. Jen is not “so caught up on learning exactly how to use Microsoft PowerPoint”. She wants students to do a good presentation and doesn’t care what tool they use but wants them to understand “technology can be an aid to help build a presentation that they’re the creator of it, and they’re the ones who needs their point across to the audience”.

In the public school system which Jen works, they currently “want to expose the kids to as many different features that we can” and have been trying to “leverage the technology”. The school community and “stakeholders are constantly blasting out information to many of our followers which include our parent community, our student community”. Twitter is such an amazing tool that is one of many different online tools.

As a technology department “we had discussions about we all be using the same online platform? Won’t that be easier for the kids? But then it surely is easier for the kids but then again, that’s not the way the world works”. “We want to expose the kids to as many different features that we can” such as when the “teachers are using blogs, other teachers are actually writing code and posting website and the kids are being exposed to all these different platforms rather than just one online tool”. A specific example is one of the sports media history teachers
that “was Skyping with Steve Man and other like sports writers and you know, sports figures” to engage the students.

In my district “we call it pioneers and scouts. You get, you know, the ones who want to go out ahead and learn more, and it comes natural to them or they’re – they really want to do more with it. Then there’s the others who are kinda content with their app, and you know, those people aren’t really jumping at the technology”. Jen continues to share with others that “if you invest the initial time in learning this technology, it is time that you need to invest. It will pay off because it will save you time later on”.

Technology Director 3: Mary

Mary is an experienced educator currently in the role of Instructional Technology Director in charge of technology and library services. Mary taught computer science for fifteen years; this is her nineteenth year as a technology director, for a total of thirty-four years in education.

The district in which Mary resides is a suburban Massachusetts location comprised of approximately 3700 students. At the time of the interview, Mary held a leadership role in MassCue, which is an ISTE affiliated organization in Massachusetts. She has helped facilitate many different initiatives that will be reviewed in greater detail as her story unfolds.

Mary started out the interview by sharing her desire to enter into technology education. "Oh man, this is what I really, really like. I'm intrigued by it. I'm curious by it. I have an affinity for it. I mean everybody else in the department was struggling with it and it just kind of came easily. So I felt like it was a good fit for me”. Mary had taken some computer programming classes when she was first getting into education “because that was just really cool”. The programming classes “just fed my thirst, and then I ended up coming back into education”.
In some of the local monthly technology director meetings “we often talk about the people who sit in this job, they're either technical, they come from a technical or business background or they come from an educational background. I felt like I got both”. Mary discussed the importance of each of the components of being a technology director and “knowing enough to have a conversation or when they start talking I can ask questions so that technical piece, certainly is helpful”. Equally important is the “instructional side of it is huge because everything when it comes to technology, you want the teachers to integrate it. So you have to understand where they're coming from”. Mary believes as a technology director “you need to be the champion for technology. You have to advocate technology. You have to be the go-to person. Everybody is going to ask you for direction”. You always have to be “a big, big time sales person”. “When someone comes in your office you stop what you're doing and focus totally on them and, sometimes I actually go hide when I have to get work done.” Some of the duties that Mary has as a technology director are “meetings sometimes as a participant, sometimes as I'm preparing for them, reports, erate, managing budget, presenting budget, staff , and evaluation, you know, supervision, that's a huge duty”.

Mary is “drawn to technology because it's always changing” and we “always have to be learning” to stay up to date with current trends while staying up to date on technology professional development. “It's that lifelong learner thing, you know. So it sometimes it's overwhelming, I'll be honest”. Mary prefers a hands-on approach and believes that always trying to do something better or finding a more interesting way of doing it especially when it comes to technology with so many different avenues. There are so many different possibilities for professional development “it's just crazy”.

The first most important way Mary creates technology proficiency is to “model it”. Mary then continued to share an example of how she had a standing meeting with the superintendent every week and was talking about sharing a Google calendar with her secretary. Mary has been using this tool in the district for a couple of years and mentioned that it can be used with ease to reflect cancelations immediately. Mary walked the superintendent’s secretary through a test event to teach her how to use the tool. Mary promotes the use of “Google calendar to share and invite people to events. At any rate, so modeling is one thing”. Mary believes in providing an opportunity for staff to learn about technology. “I try to take, drag people to things as well.” “Tomorrow we have a whole day together and I have my agendas with professional development stuff that I think they should get.”

Mary shared her thoughts about current technology professional development practices as a technology director. “There aren’t a lot, I mean, there’s a lot on YouTube so I will tell you I do watch YouTube find out some things like, “How do you do this?”.

There is a “regional technology director meetings once a month” which is “valuable” to learn information. In the monthly meetings “learning from others is really, really helpful”. Mary shared when she first entered into the position of being a technology director and people thought “Mary was supposed to be fixing computers and her superintendent said that no, you need to be the instructional technology leader kind of person." This helped Mary reach out to the “other two or three schools that she knew had technology directors at that time and suggested that maybe we meet and we started meeting monthly”. That regional group continues to meet on a monthly basis providing an opportunity to share different technology skills, conversations and professional development strategies as Mary has just mentioned.
Mary then reviewed current technology professional development practices that she offers to her staff in her current school district. “We offered a couple of summer courses like a smart board, flip classroom, doing a chrome book initiative at grade six.” Mary finds herself doing “a lot of like one-on-one or small groups”. At the start of the year “during administrative work week, principals and assistant principals had a morning training, and I've done a lot of training with my technology department”.

Mary has recently acquired supervision of the library teachers in her department and some of the technology teachers which enabled her to work with them to “give them some, increase in their skill sets, to do better in that area”. Mary just started a new kind, of course, that’s “kind of crazy” which is called "Text parts." This provides an opportunity for “kids to become experts, not just in tearing computers apart, but also like picking up an app, an iPad app but really learning about it and put together some tutorial information”. Mary has been doing a lot of “working with kids, working with teachers, working with the administrators here and there one-on-one because really, real changes, you know are one-on-one”.

Mary shared an additional professional development model which she extended to teachers as a form of “internal grant”. The teachers were provided “laptops, projectors and document cameras” in return for nine hours of training over the first few months of school and teachers, in turn would be the spokesperson for technology in the buildings. Mary made it fun by offering snacks and offering different models such as “speed dating which was sitting in a circle and then I would like talk about what you did this last month, and then rotate around and they would talk to different people and get different ideas”. Mary mentioned that many people in her district perceive technology as “scary” and believe they will “break something even though they have been told over and over again, you're not going to break it. Don't worry about it”. Mary said
that teachers who do well accept the risk. It might not work, but they have much higher tolerance for it. Most teachers feel like they need to be the expert, and it's intimidating for them. “I feel like that's real, a real challenge for folks.”

Mary shared current technology integration into the curriculum with an example of Promethean board lessons which have additional interactive resources from a new math textbook vendor. At the kindergarten level, Mary shared the utilization of a youtube clip in the classroom to get kids moving around to help regain focus. In middle school, the examples of blogs were shared. The high school students are using bring your own device models. The high school students are using their cameras on their phone to take pictures in science class as part of their lab report.

Mary outlined her beliefs about professional development in regards to adult learning by sharing that adult learning is being respectful of the current level the learners are and how they learn. This includes differentiation to figure out if “they are afraid of the technology or are they a risk-taker?”. Mary mentioned the need to “handhold adult learners” through difficulty or give them opportunity to “let them go”. “I don't know if I would call it professional development, but I do email about some things that are kind of cool.” Mary will send items to a “couple of teachers that I know will run with it, or share a video depending on the level of skills and comfort”. Mary “helps them grow beyond, help them, or just give them some resources and let them go crazy”.

“The technology director's job is to make somehow professional development available to all staff. I mean all the new things that keep coming down”. “When it comes to technology, it's always changing and because it's proliferating and because it's, you know, the professional development is always going to be a part of that role.”
Technology Director 4: Nancy

Nancy is an instructional technologist who entered into the area of education around twenty years ago. The district in which Nancy resides is a suburban Massachusetts school which is comprised of approximately 2500 students. Nancy was part of Mass Cue and South Cape Instructional Technology Teachers (SCITT) which are each ISTE affiliated organizations in Massachusetts. She has helped facilitate many different initiatives that will be reviewed in greater detail as we explore the research.

Nancy has been in education for twenty years. She began her career as a middle school teacher then became an elementary teacher and instructional technology teacher. She now is a technology director. Nancy enjoyed working in education and decided to pursue a Masters Degree in Instructional Technology. She stated that she was thrilled “with the decision to go into technology because it’s always changing. Every day's a new day; that's what I love about it”. Nancy shared a story about what guided her into technology education. She mentioned a memorable conversation with a principal while teaching third grade about pursuing a master’s degree. Nancy stated “everybody was getting their Masters in reading or administration, and I thought how I still love teaching, but I wanted to do something that was more engaging for my students, so technology was the choice”. Nancy shared “my love with technology just kind of drew me to this position”.

Nancy mentioned that the role of a technology director is to be “the lead technology learner. My job is to model innovative and exciting ways to use technology, and I think this is where my background kind of helps”. Nancy advocates for best practices in the area of technology to ensure that “these are the things that should be happening in our classroom with
our students, and advocating for maybe equipment, tools, change in curriculum, and professional development for teachers”. Nancy believes that the same should apply to administrators as well. Nancy’s role as a technology director is to “get administration to be good role models in terms of technology use as well as their staff”.

Nancy’s interpretation of professional development or technology professional development looks different to everyone. An example was that Nancy likes to “learn something new every day, but I'm seeking it out”. Nancy shared that “whatever their role is in the district technology professional development can really improve something in their current practice”.

Nancy shared how she felt technology directors create technology proficiency. It starts with a lot of “hands-on experiences” and taking some “baby steps”. Her district has not spent much time on training staff, so they are now offering differentiated professional development for staff and administration. The sessions are currently “drop-in sessions”. Nancy is working to eliminate the perspective of “a one-size-fits-all professional development” so she has tried to make the sessions more relevant.

Nancy shared “when I look at technology competencies or technology proficiencies I think we have to meet people where they are. I've got people all over the spectrum. It's meeting those people and meeting their needs, and what they feel that they require”. Currently, Nancy is offering differentiated monthly sessions”.

Nancy mentioned several current technology practices that are happening in her district. The first model is “a solicitation of classroom teachers to provide professional development for other staff during a full day in-service”. There were many selections based on technology. The options were wide open, and staff could “pretty much do anything”. The conference model
allows staff to choose from five sessions. Nancy likes the “conference model for this district” and feels it will work great for the population. It was mentioned “we're limited to our resources, our technology resources, but our wireless infrastructure is great” possibly making way for teachers to “bring your device.” Nancy compared the conference model to a similar “Ed. Camp” model which “speaks to the fact that you trust teachers to be educators and professionals”. Nancy shared one additional current technology professional development offering which was based on Twitter. Nancy outlined building a professional learning network on Twitter which offers “a wide range of educators all over the world that range from preschool teachers to college professors, but they're all have some ties to education”. In the Twitter learning network staff members are encouraged to “share great stuff whether it be what they're doing in their classrooms or in their schools, or in their communities”. Twitter is a tool which “opens your mind, or should I say opens you up to a lot of different experiences because you're talking about people all over the world”.

Nancy mentioned that her staff perceived technology professional development as something that should not be “time wasted”. If staff feels that it is something that “is not going to be useful to them, or if they do not have the tools to be able to access something, or they don't see the relevance of their position they think it's a waste of time”. Nancy feels that another perspective which is the early adopters that “almost like your feed the rabbits per se, like your earlier adopter that can't get enough of anything and everything you want to share. But they're typically the more advanced learners”.

Nancy mentioned that a survey was administered to teachers, and it was clear that professional development should meet people at their level and “differentiation alleviates some of those issues”. Nancy then shared examples of curriculum that she has helped integrate into the
curriculum. In a kindergarten room, they were “looking at using the iPad as more of an all-inclusive device for a literacy center”. An example of a middle school technology was “how to use Google Classroom” then students were able to use the technology to conduct research which was “pretty awesome”. Nancy mentioned that she needed to meet with the middle school teacher before and after the successful implementation he was like an “advanced user”. Nancy classified the professional development session as a “just in time” session. A high school example was shared in the math classroom in regards to a smart board and TI calculators which was presented to a department meeting for professional development. With a “captive audience” that department had some great success with the additional support.

Nancy shared that in her district technology professional development for adult learners has “people all over the spectrum in the sense of their ability level”. Nancy warned about making assumptions “because you can't assume that if somebody is younger, if you've got a younger staff member, that they are more capable of technology because I actually find that is not true”. Nancy mentioned “I've got some more experienced staff members who are quite savvy.” Nancy believes adult learners “need to be met where they are developmentally just like kids” and “some are very apprehensive”. Nancy shared that the future of technology directors will be like a “lead technology learner, like the kind of trying to stay one step ahead of the rest of the staff. But I also think learning along, modeling good and appropriate professional development”.
**Themes**

The goal of this study was to explore the Technology Director’s understanding of technology professional development phenomena in today’s schools. The data that was collected from interviewing technology directors is intended to share pedagogical beliefs, understanding of the role, how to create technology proficiency and phenomena and its role in technology integration into the curriculum. Upon analysis of the technology directors’ responses the researcher has presented the findings the identification of four major themes 1) Call to Educational Technology; 2) Role of a Technology Director; 3) Technology Proficiency; 4)Professional Development as displayed in Table 4.2.

<table>
<thead>
<tr>
<th>Significant Emerging Themes</th>
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<tr>
<td>Call to Educational Technology</td>
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<td>Technology Proficiency</td>
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**Call to Educational Technology**

The Call to Educational Technology category captures the exploration of the phenomenon in educational experience, formal education background, previous experience, technology coming easy, and the Technology Director’s desire to improve technology in their school district.
The first technology director interviewed was John, who entered into the educational field two years ago. He has industry experience and would like to use his experience to help his school district move forward in technology. John said that he has “been in the technical and the technology industry for over ten years, and I wanted to get into education to see if I could help a local school district advance in technology”. He added “when I took over the position in my current district they had a lot of needs for technology, they needed somebody to guide them, so it was a good opportunity for me to help”. John mentioned “it’s a little bit harder to deploy some of the technology or newer technologies into the school system to make it better for students and teachers to basically have technology in their classroom.” He believes that “most of my other jobs, it was a similar environment to my district”. When John “came into education, it was a lot of the same things I had to do, basically standardize a lot of like different software or hardware or server and things of that nature, so it’s made it easier for me to copy basically and paste from my previous experience and just use the same methods that I had done in the past”.

Jen, Mary and Nancy each have over twenty years of teaching experience. Jen shared technology is “something I can help more kids and teachers and support them and use in the classroom which evolved into moving into you know, coordinated position.”

Educational experience became apparent as being significant as the technology directors were interviewed. A common theme amongst each of the participants was that having experience was helpful. Three of the technology directors were tenured educators while John had recently become involved in education.

The technology directors shared stories of their formal educational experiences and achievements. They each had taken technology classes to feed their desire for knowledge. John has a “Bachelor’s degree in Information Technology with a concentration in curriculum”. Mary
“took computer programming classes because I thought maybe I'd be a programmer, and that just was cool. So that just fed my thirst”. Jen has “taken classes in college Computer Science classes just because I was interested in it. So I had had some background”. Nancy shared “I have my Bachelor's in Elementary Education, minor in Psychology, Masters in Instructional Technology and I have 60 credits beyond my masters. Yeah, I take a lot of little classes here and there” (Nancy). Each of the technology directors has taken advanced educational computer science classes and earned degrees. Classes in computer science are important as technology is always changing. Technology directors realize the importance of continual learning and the need to stay current with technology trends.

The participants had a common theme of a shared goal of helping to improve technology education in the school districts. “I can help more kids and teachers supporting the use of technology in the classroom” (Jen).

The experiences of the Technology Directors had the common theme that technology is coming easily to them. “I’ve looked at different industries and was able to bring some of my prior experience in the current district and help” (John). Technology “was something that I gravitated towards, enjoyed and found that it helped to engage the students. It wasn’t hard for me to do” (Jen). "Oh man, this is what I, like. I'm intrigued by it. I'm curious by it. I have an affinity to it and it just kind of came easily” (Mary). “My love with technology just kind of drew me to this position” (Nancy).

After reviewing the responses to the Technology Directors, a common theme emerged that their previous experience “absolutely” helped in their current role (John, Jen, Mary, Nancy). The technology directors that have been teaching for twenty plus years believe they have “walked the walk” (Jen, Mary, Nancy) and the other technology director, John, felt that his
experience in industry was “the same methods that I had done in the past”. The background experiences of the technology directors helping in the current position was a common theme among each of the participants.

In the Call to Educational Technology, there was noticeable growth of the themes across the participants. The technology directors had different perspectives based on past experience and current district practices. John had industry experience and a couple of years in education while Jen, Mary, and Nancy each had over twenty years of experience in education. The themes were outlined by John in a direct method as Jen, Mary and Nancy referred to their relation to the classroom. Both styles appear to be effective and cover similar topics.

There is great significance to the Call to Educational Technology theme as technology directors shared their educational experience, formal educational background, and previous experience that helped them in their role as a technology director. These skills are utilized to help others. The technology directors each shared how technology comes easy to them and how they have desired to help others with the implementation of technology in their public K-12 school district. The significance is represented though the need to have a technology director with experience to reflect on and to be able to help improve education.

The Role of a Technology Director

The role of a technology director shared understandings of the technology directors’ current roles held in their respective districts. The common themes of the technology directors’ role have been shared in this section. The common themes are being a visionary leader, providing differentiated support, past experience helping in the role and the need for professional development.
The first of the common themes technology directors had was to be a visionary leader for technology. Each of the technology directors shared what it meant to them to be a visionary leader. John shared the definition of being a technology director in his district as one that is “trying to help the superintendents and the curriculum folks, the directors to try to help them, uh, give them ideas or basically recommend different technologies”. Jen then shared that it is “important to have vision, um to you know, to look at where we’re at in the society and to look at how we’re preparing these students to go out into the world um and be able to uh you know, use technology to help them in whatever it is they do”. Mary shared her perspective of vision which was slightly different as she believed in building relationships and vision as “I'm a sales person, total sales person because they can see them coming, and you say, "Okay, whatever." I don't have to do that, you know. Well, you know, sometimes we mandate things. They have to do attendance online. They have to do the grades online, stuff like that. But they don't have to integrate it into their curriculum. Um, not, at least not from my point, you know. So I have to be a big, big time sales person” to share what she believes will move the district forward in technology. Nancy shared “my role is primarily to work with curriculum, teachers, and administrators to enhance current practice utilizing technology. It's trying to help develop a vision of where our schools and classrooms need to be to support the curriculum”.

The next common theme was categorized as a general support role to include technical support and purchasing hardware. “Give them ideas or basically recommend different technologies depending on the requirements”(John). “It’s my role but I do it by getting input from everyone so I make decisions on some purchasing”(Jen) to support the classroom best. Nancy shared “my job is to model innovative and exciting ways to use technology, and I think this is where my background kind of helps. Having been in a classroom, I know these are some
cool things that teachers can do with their students. But I think that it's also advocating best practice. These are the things that should be happening in our classroom with our students, and advocating for maybe equipment, the tools, the change in curriculum, professional development for teachers kind of all of those things”. Mary shared an interesting perspective about the role of technology directors being “I feel like this job, we often talk about the people who were, that sit in this job, they're either technical, they come from a technical or business background or they come from an educational background. I felt like I kind of got both. I know... I mean I'm not fit... Although I will tell you my first year as a tech director, I was fixing computers. And the first thing I said was you got to, you got to hire a technician because it was scary that I'm fixing computers”. Mary shared that recently “I haven't done, I mean, I haven't, I don't, I do that much at all. But I handle enough to have conversations, or when they start talking I can ask questions so that technical piece certainly is helpful”. The support role is significant as well as “the instructional side of it is huge because everything when it comes to technology, you want the teachers to integrate it. So you have to understand where they're coming from. You are going to have to have to walk that walk, and there's a lot of credibilities”. Mary can “talk about good instructional strategies and, you know, how technology can support that stuff”. The differentiated support between hardware repairs and instructional technology accompanies the following theme of past experiences helping guide the work of the technology directors in their current role.

The technology directors shared past experience and how it has helped in the role. As mentioned above the differentiated support is important to provide to staff members. John started how experience “I think it helped me in a sense like that I’ve looked at different industries and was able to bring some of my prior experience to the current district and basically help”. Jen believes her prior experience helps in the technology director role. “Absolutely. So right now,
I’m in a supportive role but I feel like I’ve walked the walk, so I know what teachers are feeling like who are in the classroom trying to you know, leverage technology to help students engage them and to help with the learning. So I’ve been there. I think that also gives me some club with them because they know that I’m not somebody who just is telling them what to do. I’ve actually done it”. Mary “absolutely because I mean I was a computer science teacher for 13 years. So, ah, but I was a teacher. So I feel like this job, we often talk about the people who were, that sit in this job, they're either technical, they come from a technical or business background or they come from an educational background. I felt like I kind of got both”. Nancy “I was a general classroom teacher, so that was fifth grade. I taught it all. 4th grade taught it all, second grade taught it all. Sixth grade I did ELA and Social Studies, and then I did ELA and science, and then I did middle school tech, so sixth, seventh, and eighth tech, and then elementary tech. I kind of has some credibility with the staff now though because I know what kids can do at the elementary level, middle school level. I know what they can do academically, and I know what they can do with tech”.

Mary and Nancy mentioned professional development as part of their current role. The others mentioned professional development later in the interviews but not as a primary role in their districts. The final common theme in the Role of a Technology Director section was based on technology directors’ pedagogical beliefs that the learning environment is enhanced with the use of modern technology (John, Jen, Mary, Nancy) which provides teachers tools to support the classroom.

In the role of a technology director, there was noticeable growth of the themes across the participants. The technology directors each had different perspectives on their job responsibilities. Each of the technology directors had in common a shared vision. The role of a
technology director is different in each district, but the common theme was that they must have vision to move the district forward in technology. Each of the districts had slightly different visions of technology. The development of vision continued to be refined through each of the interviews. The technology directors were able to outline the phenomenon in their own words. The themes of differentiated support showed differences in definitions as part of the role of a technology director. Professional development was mentioned in each of the interviews but showed minimal growth between districts. There was a desire to offer professional development for future growth was great in technology but not present in each of the districts in the role of technology directors primary responsibilities.

There is great significance to the role of a Technology Director theme as the technology directors shared the role of technology director being an essential job role in each of these districts. The vision is important to each of the technology directors as leaders in order to share the use of technology. The general differentiated support was evident in each interview and is significant as it takes a portion of the technology director role. The past experience was significant as the technology directors that their past experience helped them in their current role. The professional development aspect is significant to each of the technology directors, but it is not a primary role. There is an expectation that future professional development needs will continue to increase and time spent in this area will need to increase as different technologies continue to be released into education.

**Technology Proficiency**

The technology proficiency section captures the technology directors’ understanding and experiences of how they create technology proficiency in the school districts. The common
theme between each of the technology directors is creating a fostering environment built on respect to support learning.

John shared how you could take a look at different processes in use to find a way that will help improve the district. Jen shared that teachers in the classroom are the experts. Jen was the only technology director to share an example of students creating technology proficiency which referenced how “we plan to look at the ST standards of what they – you know, what things students should be becoming proficient in. But things are so – changing so quickly that again I think I tend to focus more back on skills, but what things are going to help students be successful in the future”. Jen was confident in her educational experience and stated that “those skills I think are you know, what’s going to get them success in the future.” The focus of creating technology proficiency amongst the students was not focused on a particular tool but “I want them to understand that you know, the technology can be an aid to help them but the presentation is that they’re the creator of it, and they’re the ones who needs their point across to the audience” (Jen).

Mary talked about creating technology proficiency by “Modeling it”. Mary shared how “you have to model it. So I try as best as I can to model it and then to kind of share that with people”. When someone comes in your office, you have to stop what you’re doing and give them your full attention. Mary shared an example about Google Calendar and how she created technology proficiency by modeling the use. “Why don’t you just share that, you know, create the event and share it with me, and then I can add it to my calendar. If you cancel it, I'll know, right? Or if I cancel it, you'll know I'm not coming. And she, she didn’t understand that she could just share an event with me. She thought when I said share calendar; she had to share everything on the calendar. I said, ”No, no, just this one event, this recurring event. You could share that one
event." So I walk her through it. And we’re talking, we've been using Google Calendar for years now” (Mary). Then Mary shared how she recently had an increased role in staff evaluation with the English department “so I'm taking the MassCUE. Um, I'm dragging them to other things, like tomorrow we have a whole day together and I have my agendas all, like, professional development stuff that I, I think that they should get” which helps create technology proficiency through modeling.

Nancy focused on the need to have everyone learn at their appropriate level to help create technology proficiency when “I look at technology competencies or technology proficiencies I think we have to meet people where they are” (Nancy). The staff needs “A lot of hands on experiences I think. We're kind of taking baby steps. My district did not spend a lot of time training it's staff, so we're offering almost like differentiated professional development for our staff and administrators” (Nancy). Then Nancy shared how “this is only my third month on the job, so it's ... we're just starting it. It's almost like drop-in sessions, like offering beginner, advanced, intermediate sessions in specific buildings for teachers or administrators because we don't discriminate. Anybody can show up” (Nancy). There was an example shared by Nancy, which was similar to the example shared above based on using Google. “. I've got people using let's say Google, for example, Google Docs using Google Drive, and people who don't even know how to log in. Then, I've got people who are doing professional development on Google Classroom, and how they're using it with their students, so we're kind of all over the spectrum. It's meeting those people and meeting their needs, and what they feel that they require” (Nancy). These examples each contribute to a common finding of creating a fostering environment of respect directed towards staff and meeting learners where they are which was said to be important in creating technology proficiency amongst technology directors.
**Professional Development**

The professional development section started with the technology directors describing technology professional development in different ways. The term of technology professional development was based on several factors. The first factor was that technology directors needed to be lifelong learners as technology professional development “is really evolving” (Jen). The next factor was that teachers should be the ones to select the professional development that is most relevant to their classroom. “I could just tell them this is the technology, and this is how you use it but when you get into the classroom it could be completely different” (John). Using the Ed. Camp model the “professional development is coming from the teachers, coming from the people who are in the classrooms that are capable of supporting the people in the classrooms and being organic” Jen believes is a great model. Jen continued to mention that many professional trainers have been out of teaching for a while thus many teachers believe that the “person is so out of touch”. Mary shared an example of working with computer teachers and being “involved in the technology is, is just self-motivating and you have to figure it out a lesson I wanted to do and I could not figure it out” but reached out to her team for help in selecting the best models. YouTube was the chosen technology for the example Mary had given with the computer teachers. Nancy shared her beliefs that “staff might feel like professional development is something done to them. But I feel as though it's building upon any knowledge that they have to improve their practice. Whatever their role is in the district, whether it be an administrator or a classroom teacher, or a custodian for that matter” (Nancy).

The perception of professional development varies with each of the technology director’s descriptions. A common theme emerged that no staff member likes to waste time in professional development. Another common theme emerged that there are different style learners. The
learners were broken into two groups. The first group was those who were ambitious to learn about technology and the second group was folks who were a little more reluctant to learn. In Jen’s district, they refer to these two groups as “Pioneers and Scouts”. The first group is those who want to “go out ahead and learn more, and it comes natural to them or they’re – they really wanna do more with it. Then there’s the others who are kinda content with their app, and you know, those people aren’t really jumping at the technology” (Jen). The technology directors believe in differentiating for the learners and that in the end professional development can be rewarding.

The current professional development practices have been collated into table 4.3. The following information is from technology directors on current professional development practices in each of their districts. The current district practices were highlighted as they apply to multiple districts.

<table>
<thead>
<tr>
<th>District Practices:</th>
<th>Technology Directors:</th>
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<tbody>
<tr>
<td>-District professional development is limited to the first couple of days at the start of the year.</td>
<td>John, Jen, Mary, Nancy</td>
</tr>
<tr>
<td>-Principals currently offer building based technology professional development.</td>
<td>John, Nancy</td>
</tr>
<tr>
<td>-We use Google Hangouts, Google Drive, Google Docs, Spreadsheets, Classroom.</td>
<td>John, Jen, Mary, Nancy</td>
</tr>
<tr>
<td>-Leverage technology through Twitter, web pages, blogs.</td>
<td>Jen, Mary, Nancy</td>
</tr>
<tr>
<td>-Ed camp model - “unconference”.</td>
<td>Jen, Mary, Nancy</td>
</tr>
<tr>
<td>-Team in place to support technology professional development and learning.</td>
<td>John, Jen, Mary, Nancy</td>
</tr>
<tr>
<td>-Encouraging and empowering.</td>
<td>John, Jen, Mary, Nancy</td>
</tr>
<tr>
<td>-Staff can take advantage of personal, professional development days to attend conferences, training, etc.</td>
<td>John, Jen, Mary, Nancy</td>
</tr>
<tr>
<td>-Training on 1:1 Chrome Books, iPads, Tablets, BYOD, Etc.</td>
<td>John, Jen, Mary, Nancy</td>
</tr>
<tr>
<td>-Differentiated Learning.</td>
<td>John, Jen, Mary, Nancy</td>
</tr>
<tr>
<td>-Adaptation to current technology trends.</td>
<td>John, Jen, Mary, Nancy</td>
</tr>
<tr>
<td>-Standardization of software for ease of training / support.</td>
<td>John</td>
</tr>
<tr>
<td>-Electronic Content Management System.</td>
<td>John, Jen, Mary, Nancy</td>
</tr>
<tr>
<td>-Sharing information through email.</td>
<td>John, Jen, Mary, Nancy</td>
</tr>
<tr>
<td>-Grants to support Initiatives.</td>
<td>Mary</td>
</tr>
</tbody>
</table>
The table 4.3 listed a collation of current initiatives and professional development practices that were mentioned by the technology directors currently in use. They have shared reasons why these practices are currently being used. The first example which has been referenced the most is the use of Google Hangouts, Google Drive, Google Docs, Spreadsheets, Classroom. Each of the Technology Directors referred to utilizing these tools to help increase collaboration between district staff, teachers, and students. Google suite was offered in John’s district as “two classes that we offer, the tech department at the beginning of the year to have centralized classes to go basically over those things that they’re having trouble with or issues with, so understanding the Google suite better”. Jen shared in her district that they use “Skype is another one where we’re really starting to get into Skype and this kind of Google Hangout that we’re doing” (Jen). Then Jen shared an example how one of her teachers is using Google hangout to bring the authors of literature to the students through this technology. “Famous people respond and they’re able to you know, interview these people to find out what – how those people are leveraging social media in their jobs. So it’s really kind of cool” (Jen).

The next most talked about professional development practice was the Ed-camp model. The technology directors shared how this model brings educators together to learn. There is a huge gathering, and the educator participants offer what they feel like learning about. It gets posted on a board in a central location and then everyone chooses one of the informal sessions to attend. Anyone with experience is asked to share and collaborate in one of the sessions along with others. “I've been to probably five or six different Ed. Camps in which participants decide what they want to share. And you basically if you want to share something you write it on a note, a sticky note or whatever, and you put it up on the schedule, and just get together with a group of people and have conversations. It's more I think professional learning is the way that I can best
described an Ed.Camp (Nancy). “So it's just awesome because I think it's more empowering because you feel as though as an educator you know what best fits you professionally, and what your needs are at that time, at that moment in time I guess” (Nancy).

Technology director beliefs about their work and pedagogies are important as they believe in helping local school systems create and follow the vision to integrate technology. John shared how he believed in education and “wanted to get into education to see if I could help a local school district advance in technology”. John stated as part of his pedagogical practices that “I think the technology director can have impact on a lot of different places. It could be just from the business organization, or the business sides of education, although it’s through the classroom and the kids learning and making it easier for the kids to learn with a new tech – with a new device” (John).

Jen shared “I really believe that uh you know, technology should be first of all, the teachers in the classroom, I think they are the experts. Good teaching is what’s important. The technology supports good teaching. A lot of times, we get caught in just using the technology, but we have it maybe or because we feel like we’re supposed to” (Jen). Mary mentioned “as a technology I definitely think it's a balance. But we're in education, so, you know, maybe it's more the instructional side, maybe it's more to 60%, you know, of what I need to focus on. But, you know, you tend to get sucked into all the other stuff, the things, the stuff and so, it probably takes up more than 40% of my time, you know just kind of dealing with buying things” (Mary). Nancy shared how she believed that schools need to continue to update policy to accommodate current technological trends. “Well, I think it should be seamless. Today our kids and me, I can only speak for myself ... I constantly have a device one me, multiple devices on me using them, and I
wish that schools mirrored that because kids are on devices constantly outside of schools, so I think the anytime-anywhere learning is almost a necessity” (Nancy).

The technology directors shared that in professional development in adult learning the most important focus is based on being “respectful of where they are and how they learn” (Mary) and to meet the adult learner at their ability level. “We've got people all over the spectrum in the sense of their ability level. Not their age because you can't assume that if somebody is younger, if you've got a younger staff member, that they are more capable of technology because I actually find that is not true” (Nancy).

The future role of technology directors is believed to be evolving as technology is currently changing. Nancy mentioned “there is always something new out there, and we need to be open to sharing that with others.” John mentioned the “importance” of this role in the future and the necessity to work with others. Jen wants to make sure that as a technology leader professional development is not done to the people but is a “Wow! That’s more meaningful”. Mary shared that professional development is currently a huge part of her job and wants to make sure that we engage others and get “buy in” to offer the correct professional development to propel learning. All of the technology directors believe that staying one step ahead will continue to be important as they support, model the use of technology and provide recommendations for technology integration into professional development and the curriculum for many years to come.
Inconsistencies

The technology directors were consistent in many of their interviews as was stated above in each story as well as in the analysis. There were a few overall inconsistencies that were noticed in the research. These inconsistencies have been broken down into three main categories: 1.) Current district definition of the technology director role; 2.) Years worked in education and prior technology experience; 3.) Experience in delivering technology professional development to stakeholders.

The technology directors outlined their roles in the school districts where they are currently employed. John’s district was focused on building infrastructure to accommodate the increased needs of technology. There was talk about the need for additional professional development from a central model that will help increase the skills across the district. Jen had focused more on the integration of technology into the curriculum in her district and currently does a lot of work to teachers on utilizing technology in their classrooms. Mary shared that her team maintains and repairs hardware while she works with staff to integrate technology into the
curriculum. Nancy is new to her district and mentioned that she has a team that takes care of the network and repairs, and she can focus on supporting the teachers with new skills. All of the technology directors believe in supporting teacher needs, but their role in their current districts require different levels of integration. This is divided between hardware needs and working with teachers in assisting them with different types of training and professional development. John believes there is not only a need for training and professional development but also a need to maintain the hardware infrastructure. He plans to incorporate more training through working with the central office team and the superintendent.

The technology directors had varied amounts of time working with technology and working in education as teachers. They also varied in the amount of time spent working as a technology director. John has many years of technology industry experience and two years in an educational environment. Jen and Nancy both have twenty years as educators. Jen has been a technology coordinator for several years, and Nancy is just starting this year. Mary has thirty plus years as an educator and a technology director combined. All technology directors have taken formal course work in technology. John and Mary both have industry experience and have spent the most time in the industry.

The technology directors each had different experiences in delivering technology professional development to stakeholders. John shared his desire to offer more training to the staff members in his district but needed help from the central office to make the centralized model happen. Jen currently offers many different ways to share integration of technology through current types of social media and in-person trainings. Mary believes that professional development is part of her role as a technology director. Both Mary and Jen have hosted an Ed. Camp model in their districts, while Nancy was attempting to use the Ed. Camp model this year
for her staff and will eventually host an event. John was not aware of the Ed. Camp model in his Rhode Island district. All of the technology directors have offered an assortment of trainings to district staff. Those who have worked in schools for many years shared an understanding of classroom teachers’ needs and work with teachers on a daily basis for professional development. John would like to have the opportunity to be able to offer more trainings, but his current role does not allow him time to provide the trainings he would like to offer to staff.

The role of the technology director is different depending on the districts’ definition as well as the technology director’s skills. The inconsistencies were based on the different requirements outlined in each of the technology director roles in their current school districts.

**Summary**

The purpose of this study was to explore the Technology Director’s understanding of technology professional development phenomena in today’s schools. The research sub-questions focused on the pedagogical beliefs, experiences and understandings of technology directors which help create proficiency and the technology professional development phenomena in today’s schools.

The findings outlined many current practices and beliefs of technology directors that are currently happening in today’s schools. These areas of focus were generated as a collated list of main themes that have emerged from the interviews with the technology directors. They are as follows:

- District PD is limited to the first couple of days at the start of the year.
- Principals currently offer building based technology professional development
- We use Google Hangouts, Google Drive, Google Docs, Spreadsheets, Classroom
- Leverage technology through Twitter, web pages, blogs
- Ed camp model - “un-conference.”
- Team in place to support technology professional development and learning.
- Encouraging and empowering
- Staff can take advantage of personal, professional development days to attend conferences, training, etc.
- Training on 1:1 Chrome Books, iPads, Tablets, BYOD, Etc.
- Differentiated Learning
- Adaptation to current technology trends
- Electronic Content Management System
- Sharing information through email

The list of collated findings of current technology practices will be helpful to share with other school districts in the local area as well as nationally as an overview of what is occurring in today’s schools. The technology directors explained their perception of the common themes. It appears that in each of the district’s technology directors are charged with different job responsibilities. The technology directors were candid in sharing information and believe the importance of the role of assisting in professional development and improving education. It was evident in each of the districts that professional development of technology and the support of technology in the districts were important. There was a slight variance in the levels of involvement for each of the technology directors, but each believed in helping others become more proficient in the use of technology. The findings outlined current trends happening in today’s schools that help support technology.
Chapter 5: Discussion of Findings and Implications for Practice

Introduction

This study was focused on exploring “What is the Technology Directors’ understanding of technology professional development phenomena in today’s schools?”. The research was conducted with technology directors that currently work in public K-12 schools located in Massachusetts and Rhode Island. The goal of the research was to get an understanding of different experiences to share with other districts of current happenings in the area of technology professional development through the perspective of the district's technology leaders. The role of a technology director was important to review the results of the description have an impact on the expectation of offering professional development to the staff members of the district. The research question has allowed conversations between the technology directors that help explore the research questions in greater detail. The stories that have been shared will provide districts with some current practices and additional information that can be valuable as professional development plans are devised.

The following chapter discusses in detail this studies contribution to research, additional findings, theoretical frameworks, reference to literature, implications for practice, limitations, future research and a conclusion of the study.

Contributions to Research

This study explored the role of a technology director along with current professional development practices of public K-12 school districts located in Massachusetts and Rhode Island. The results of the study have generated a list of current district practices in the area of technology and technology professional development findings. The literature review injects a philosophic look at these practices and helps create a better understanding of what technologic
practices are currently happening in today’s schools through the lens of a public K-12 Technology Director. The contribution to research is through an investigation with technology directors on how school districts are currently handling professional development in technology. The contributions will be able to be shared amongst other districts in the state and across the nation while helping to create a baseline of current practices. The findings that have emerged are a powerful tool which can assist technology director pedagogical practices and help improve technology integration.

**Research Question**

The following research questions guided this qualitative interpretive phenomenological analysis study:

What is the Technology Directors’ understanding of technology professional development phenomena in today’s schools?

**Sub-questions**

- What are the pedagogical beliefs of Technology Directors in today’s schools?
- What are the experiences and understandings of the Technology Directors in today’s schools which help create technology proficiency?
- What understandings do Technology Directors have about professional development phenomena and its role in technology integration?
Pedagogical beliefs of Technology Directors

Five important findings emerged from the examination of the interview data based on the pedagogical beliefs of Technology Directors.

1.) Technology directors have a desire to work with technology and continue to be a lifelong learner as technology constantly changes.

2.) Technology Director believes in assisting students, teachers, staff, administration and stakeholders to be successful in the use of technology.

3.) Technology Directors backgrounds and experiences help them with their daily job as a technology director.

4.) Technology Director Roles are different according to the vision of the district.

5.) Professional development for technology director is limited and more professional development needs to be offered to district staff.

Theoretical framework. The findings are relevant to the different components of the TPACK framework. The Adult Learning Theory framework also applies to the findings listed in the Pedagogical Beliefs of Technology Directors section of the research.

The TPACK framework focuses shows that at the heart of good teaching with technology are three core components: content, pedagogy, and technology, plus the relationships among and between them (Koehler, Mishra, 2009). The first two findings show that technology directors believe in learning about the latest technology advances to fulfill a personal desire and to help build on pedagogical content knowledge to be able to support the needs of stakeholders in their district. The relationship between the three core components of TPACK is evident as learning about technology happens, sharing the understanding of content through their pedagogy to provide assistance to stakeholders around the district.
The third finding shows us that technology directors use their backgrounds and experiences to help with the daily job responsibilities. The complete TPACK framework is defined as meaningful and deeply skilled Teaching with Technology Knowledge. Teachers must develop fluency and cognitive flexibility in Technology, Pedagogy, and Content Knowledge but also the manner in which these domains and contextual parameters interrelate to construct effective solutions (Koehler, Mishra, 2009). Technology Directors use these skills to help others improve their individual TPACK understandings on a daily basis. The backgrounds of technology directors allows for “the instructional side of it is huge because everything when it comes to technology, you want the teachers to integrate it. So you have to understand where they're coming from. You’re going to have to have to walk that walk. And there's a lot of credibilities, you know, when you say, "Hey, I taught for 15 years," you know, I get it. I mean, education is clearly changed in the 15 years. But, but I understand, you know. I could talk about good instructional strategies and, you know, how technology can support that stuff” (Mary).

The fourth finding was based on Technology Director Roles being different according to the vision of the district. The TPACK framework has evolved from CPK to the current version of TPACK. The framework models the need for change and difference of perspectives as the technology director roles evolve from district to district.

The final finding in was based on the limit of professional development for technology directors. In addition, there was extremely limited technology professional development being offered to school district staff. The technology directors believe that it will be essential as technology continues to evolve, and TPACK needs to be maintained as additional learning must happen to stay current with technologic advances.
The Adult learning theory shows us that the learning principles as stated in Knowles’ research are: the learner’s need to know, self-concept of the learner, prior experience of the learner, readiness to learn, orientation to learning, and motivation to learn (Knowles, Holton, Swanson, 2011) are evident in technology directors pedagogy. The technology directors through these findings have continued to outline the needs of meeting the adult learners with respect, differentiated learning at their level, and conversations that reflect prior experience of the technology director and the learners to develop a plan to help support the district stakeholders.

The findings show us that the pedagogical beliefs of the technology directors are that of a supporting role for district stakeholders that continues to change with technology and provides professional development and assistance as needed.

**Literature.** The findings are consistent with different pieces of literature. The study was interesting as there was not a large body of research that was focused on public K-12 school districts in the area of southeastern Massachusetts and Rhode Island. The research has modeled the literature in many ways with a consistent message that technology directors have many different job functions with their daily responsibilities. The technology directors must continue to learn different technologies to support the school district. The literature references how a Technology Director performs several tasks within a school environment and plays multiple roles that influence teaching and learning each day (Sugar, Holloman, 2009). The pedagogical belief of technology directors, evident in the findings was the belief in assisting students, teachers, staff, administration and stakeholders as a support role. The literature shows that many teachers continue to work in situations where computer availability and lab access to the Internet are less than ideal (Linder, 2004). Technology Directors strive to address and improve technology availability as the literature outlined as a need. The technology directors
shared how the job role has multiple parts detailed by the district's vision always in the research conducted showing that a focus is on supporting teaching and learning with increased technology integration.

**Implications for Practice.** The pedagogical beliefs of technology directors is a very complex concept as each of the districts has slightly different visions of the role of a technology director. The pedagogical beliefs are important to practice as current practices are powerful to share with other school districts. The research has helped outline common practices of technology directors. The five findings each have implications for practice. The technology directors desire to be a lifelong learner allows for other stakeholders to benefit in their district from new knowledge on latest technology trends. The in-depth knowledge allows for technology directors to assist students, teachers, staff, administration and other stakeholders. The background experiences of technology directors are important to share with superintendents, and central office hiring teams a common list of skills that technology directors currently have in southeastern Massachusetts and Rhode Island.

The technology director’s role according to the vision of a district is helpful as different districts have technology directors do different job functions. The current roles as outlined in this research can help share what technology directors are doing as current pedagogical practice. The final finding of the pedagogical section discussed the importance of professional development for technology directors. The findings show the value of making sure that technology directors have professional development and have an opportunity to reach a heightened level of the TPACK frameworks to help them remain supportive to district staff.
Implications for future research. Technology directors have shown the desire to remain current in technology trends to make sure they can support their school district's technology needs. The literature was limited in the specific geographical location of southeastern Massachusetts and Rhode Island. It would be the recommendation of the researcher to focus on the current pedagogical practices of technology directors and apply the research to all public K-12 school districts across the United States. The focused pedagogical practices of technology directors would potentially show a greater understanding of current trends around the country. The researcher would recommend conducting the research as a quantitative study with would yield large amounts of data and the potential for tracking trends around the country. In addition, another potential future study would be to examine what tech directors can accomplish in terms of professional development offerings if they have the financial and symbolic support of their bosses.

Technology Proficiency

Three important findings emerged from the examination of the interview data in relation to technology proficiency.

1.) Technology Directors believe they must foster a safe learning environment and model technology proficient behavior.

2.) Technology Directors believe that sharing experiences are how you create technology proficiency.

3.) The role of a technology director is one of support to make sure that all stakeholders are provided with the tools needed to be successful.

Theoretical framework. The findings in the Technology Proficiency section are relevant to the different components of the TPACK theoretical frameworks and the Adult learning
frameworks. The TPACK theoretical frameworks are the compilation of the TPACK Standards are a deep, flexible, pragmatic, and nuanced understanding of teaching with technology as a professional knowledge construct (Koehler, Mishra, 2009).

The first finding, *Technology Directors believe they must foster a safe learning environment and model technology proficient behavior* directly correlates with the TPACK frameworks as the official TPACK framework is defined as meaningful and deeply skilled Teaching with Technology Knowledge. The technology directors each shared examples of how they model technology proficiency as an educational technology leader. The TPACK framework outlines the different levels of teacher technology knowledge which is part of the process of achieving technology proficiency.

The second finding *technology directors believe that sharing experiences are how you create technology proficiency.* *The sharing of experiences is talked about through each component of the TPACK frameworks.* *The goal of the TPACK framework is that teachers must develop fluency and cognitive flexibility in Technology, Pedagogy, and Content Knowledge but also the manner in which these domains and contextual parameters interrelate to construct effective solutions.* The compilation of the TPACK Standards are a deep, flexible, pragmatic, and nuanced understanding of teaching with technology as a professional knowledge construct (Koehler, Mishra, 2009). The technology directors believe that sharing experiences are essential to help teacher increase technology understanding. The research shows that the technology directors are using technologic devices to help get to a heightened level such as TPACK outlines for us in theoretical frameworks.
The third finding of the role of a technology director is one of support to make sure that all stakeholders are provided with the tools needed to be successful. The TPACK framework offers an approach to thinking about technology integration into the curriculum.

The important finding with the Adult Learning Theory in Technology Proficiency was that adult learners needed to be supported in a safe learning environment. The Adult Learning Theory tells us that we must respect the adult learner by meeting them where they are academically, create a safe learning environment and use the learned experiences of an adult learner help make them who they are and these learned lessons need to be acknowledged to help prevent the possibility of rejection. (Knowles, Holton, Swampson, 2011). The third finding of the role of a technology director is one of support as well as offering new technologies to stakeholders that are not always perceived as current practice. Many of these technologies are revolutionary and require Technology Directors to sell these technologies to the stakeholders. Mary shared with us that the role of a technology director was a sales person. These technologies are considered disruptive to the existing educational environment. The term disruptive being has been used to describe new trends, as well as innovation in education.

**Literature.** The findings in the Technology Proficiency section are similar to the different pieces of literature that define key leadership roles in school districts. The literature goes in depth on the exploration of the role of a Technology Director and how it’s perceived. The existing body of literature was not able to focus on the specific public K-12 school districts in Southeastern Massachusetts and Rhode Island. The literature outlined the role of a Technology Director as having three major job responsibilities which are easily identifiable as instruction, technical, and analysis. Educating school personnel about effective technology integration strategies, providing technical support, planning a school’s technology infrastructure and
assessing the effectiveness of technology within a school setting are all clearly attributed to a Technology Director (Sugar, Holloman, 2009). The research articulated that two major categories exist which were instructional and technical. The third category of analysis was outlined by Sugar, Holloman 2009 with no mention of the technology director interviews.

**Implications for Practice.** The three findings of this section help outline what technology proficiency means to public K-12 school district technology directors. The value of these findings will help other local school districts through the sharing of current practices in creating technology proficiency.

The first finding was based on Technology Directors believe they must foster a safe learning environment and model technology proficient behavior. The value of knowing this information can help other technology directors and central office staff by making sure that a safe learning environment exists for learning and to define further what their district believes the technology director’s role looks like through their local vision. The second finding that the technology directors believe that sharing experiences are how you create technology proficiency shows how a support role should work. The technology directors want to model appropriate behavior and share with others. Districts can use this information in many different ways such as creating technology mentors, co-teaching or many other options such as shared planning time which includes the technology director to help different departments around the district review what technology proficiency means. The third finding was focused on the role of a technology director which is one of support to make sure that all stakeholders are provided with the tools needed to be successful. The technology directors want to help and support according to the study data. In addition to the support role outlining this information can help district stakeholders know that technology directors can be additional support in their daily endeavors.
The value of this research provides districts with additional information based on current practices that can be applied to the public K-12 school district in southeastern Massachusetts and Rhode Island. The research can share the current practices of the technology directors as well as be a tool to inform others of what this job role does on a daily basis and how it can help in their daily practices.

**Implications for future research.** The concept of technology proficiency can be useful to many public K-12 school districts that believe in technology and its use in the educational environment. This study has findings which outline current practices from technology directors who can help share what technology proficiency means to school districts. The implications for future research are great as there is a solid base of what technology proficiency is currently in place in southeastern Massachusetts and Rhode Island in the eyes of technology directors. The future research can expand the scope of districts around the country and possibly the world. It would have the benefit to any school district that believes in the use of technology. The goal is to create technology proficiency is based on a concept of higher levels of understanding in technology as mentioned in this study and the TPACK frameworks outlines. The researcher would recommend finding a way to measure technology proficiency and share the findings on large scales as many districts could potentially benefit from that information.

**Technology Directors’ Understanding about Professional Development**

Six important findings emerged from the examination of the interview data in relation to Technology Directors’ understandings about professional development.

1.) Technology Directors need to provide training to educators according to skill level, meeting people where they are in the learning process. 2.) New professional development
model called Ed camps has been gaining momentum as a current professional development model.

3.) Technology directors feel professional development is important, but not all technology directors interviewed believe it’s a primary role of being a technology director.

4.) Many different technologies are currently being used in the school districts making it difficult to provide appropriate professional development which is not a time waster and is teacher driven.

5.) Educators must be provided professional development to make them successful that is efficient and appropriate to their current skill levels.

6.) Technology professional development is constantly evolving with the different types of technology and technology directors must make professional development recommendations.

**Theoretical framework.** The findings in the Technology Directors Understanding about Professional Development section are relevant to the different components of the TPACK theoretical frameworks and the Adult learning frameworks. The frameworks have allowed the researcher to gain perspective on how the research can continue to help improve technology professional development in public K-12 schools by offering differentiated professional development to stakeholders while reviewing current practices. These current practices of technology professional development can be shared out with other neighboring school districts to provide additional information and idea sharing.

The first finding, Technology Directors need to provide training to educators according to skill level, meeting people where they are in the learning process directly aligns with the need for
the TPACK frameworks to create a full understanding of technology pedagogy. The second finding of a newer professional development model called Ed camps has been gaining momentum as a current professional development model which aligns with the first finding and the TPACK frameworks constantly looking for was to meet the TPACK standards which are a deep, flexible, pragmatic, and nuanced understanding of teaching with technology as a professional knowledge construct (Koehler, Mishra, 2009).

The third finding that Technology directors feel professional development is important but not all technology directors interviews believe it’s a primary role of being a technology director is significant to the theoretical frameworks because each of the frameworks have outlined the importance of continued adult learning. The TPACK frameworks are focused on achieving a level of technology proficiency while the Adult Learning Theory needs to meet adult learners where they are and utilize lessons learned. If the technology directors do not have oversight or assistance in developing professional development, then these theoretical frames might not be reviewed in the planning processes. The importance of sharing the theory of current practices is important for the work of technology directors.

The next finding shows how there are many different technologies currently being used in the school districts making it difficult to provide appropriate professional development which is not a time waster and is teacher driven. The TPACK Framework shows us the importance of acquiring a complete understanding of technology to help create proficiency as the technology directors have outlined in their interviews throughout the research. The educators or educational leaders must be provided professional development to make them successful that is efficient and appropriate to their current skill levels as outlined in the TPACK Frameworks. “The instructor will have an understanding of which technology is best suited for addressing a subject area,
learning and how the content dictates or changes technology or vice versa (Koehler, Mishra, 2009).” The final finding reiterates that technology professional development is constantly evolving with the different types of technology and technology directors must make professional development recommendations. “The TPK framework includes knowledge of pedagogy of affordances and constraints of technology and the relationship between what is developmentally appropriate (Koehler, Mishra, 2009).” The technology directors have shared current examples of professional development practices and continue to emphasize the importance of this process as well as sharing how important technology development will continue to be in the future.

**Literature.** The findings in the Technology Directors Understanding of Professional Development section are similar to the different pieces of literature. The literature goes in depth on the exploration of the role of a Technology Director and how it’s perceived. The existing body of literature was not able to focus on the specific public K-12 school districts in Southeastern Massachusetts and Rhode Island.

**Implications for Practice.** The topic of professional development is important in school districts today to accommodate the state initiatives as well as the need to continue to improve education in school districts. Professional Development is essential along with the specific needs of stakeholders. The research has provided findings of professional development from the perspective of the technology directors in public K-12 school districts in southeastern Massachusetts and Rhode Island. The technology directors provided many different offerings of current professional development along with different perspectives on the value of these models. The implications for practice on technology professional development are significant, and the data shows the importance of including all stakeholders.
The first finding outlined how technology directors need to provide training to educators at their current skill level. This can provide perspectives and help generate awareness of different skill levels before offering technology professional development to staff. The second finding was based on a new concept of an Ed. Camp model which can be utilized in many different ways for educators to experience professional development. This finding is a current trend and can provide districts with a great tool to utilize for professional development. The third finding was based on technology director roles and the mix of duties related to professional development. The technology directors are a resource and can potentially provide additional support to districts. The fourth finding is based on providing appropriate professional development at the correct skill level. The significance of this finding is that in order to value professional development in technology the staff feels that it must be well fitted to their needs and get increased buy-in from teachers.

The fifth finding is based on making educators feel that professional development is successful and that it is at their current level. The significance in practice is that teachers and other district staff need to be provided with appropriate technology professional development to achieve the TPACK frameworks. The final finding of professional development is that technology professional development is constantly evolving with the different types of technology and technology directors must make professional development recommendations which accommodate the needs of all stakeholders. The technology directors as part of their role need to make suggestions on professional development needs around the school district. The recommendations are important as the technology director’s role suggested that they are the technology leaders in the district and need to help get the teachers the appropriate professional
development that is desired. These professional development initiatives must reach all stakeholders and at the appropriate level needed for success.

**Implications for future research.** The topic of technology professional development is important to technology directors. The findings showed that not all technology directors had a direct influence on what professional development was offered in their district, but the all believed in the value of offering professional development. The implications for future research are great as this study has shown the need for technology professional development and current offerings. The researcher would recommend for future research the exploration of public K-12 school district’s technology director involvement in the professional development offerings and to see if there is a correlation with the attainment of TPACK.

**Research Significance**

**Significance for Technology Directors.** The primary focus of the research was research is to gain an understanding of current practices of professional development in technology through the view of Technology Directors’ understanding of technology and to share with stakeholders how the TPACK framework and Adult Learning theory can help improve technology professional development. The sharing of this proposed research will benefit stakeholders such as teachers, principals, central office staff, superintendents, and technology directors as the research continues to share current practices in greater detail.

**Significance for Principals.** The research has provided an in-depth analysis of information from public K-12 technology directors based on current practices. Many of these current practices can be used at the school level to review current practices, as well as practices
Currently in use at neighboring school districts. Principles can utilize this information to guide current practices.

**Central Office Staff & Superintendents.** The central office staff members and the superintendents of the district can use this research to help in the planning of professional development activities around the district. The findings from this study have information based on current technology directors practices in public K-12 school districts around southeastern Massachusetts and Rhode Island.

**Teachers.** The teachers in the district can benefit from the information in this study to get a perspective from technology directors and the level of support currently offered in neighboring public K-12 school districts. The role of a technology director varies in each district but the information shared was consistent in many ways throughout each of the interviewees in this study. The findings can provide a great conversation starter for teachers to explore technologic ideas further with their district technology director.

**Community / Taxpayers.** The community and taxpayers can indirectly benefit from the Technology Directors’ understandings of professional development. Teachers and district staff receive different professional development offering, and the use of tax dollars pay for these opportunities for staff. Community and taxpayers might be interested in exploring the role of technology directors in their town and see how tax dollars are being utilized in their local school districts.

**Limitations.**

The researcher has noticed two valuable limitations while conducting the research. The first limitation noticed by the researcher was based on the sample size of districts that have participated and diversity of candidates. The Interpretive Phenomenological Analysis suggested
that four participants are within reason. The researcher believes that it was helpful to gain an in-depth analysis of the phenomena of four experienced technology directors. The phenomena was captured in this Interpretive Phenomenological Analysis research study which complies with the suggested number of participants, however, the number participants is small in comparison to the overall number of school districts in southeastern Massachusetts and Rhode Island.

The second limitation was based on diversity of the candidates. It was limited to three female and one male technology director. In a larger sample size, the candidates would have had greater diversity both socio-economic, gender, ethnicity and district composition.

**Future Research**

In today's educational environment the demand for technology professional development in school districts continues to increase as higher level skills are needed to improve the integration of technology into the curriculum with the adoption of more rigorous state and national standards. The technology directors that have participated in this study shared current practices in their districts and their understanding of the role. After conducting this research and reviewing the literature two questions have been outlined below for future recommendations for research.

- How will technology professional development evolve in the future with new forms of social media, pd models, and ever changing technology?
- Can districts create a sustainable professional development model which accommodates limited time and funds?

The technology directors each discussed the importance of professional development but expressed many concerns about the cost, time allocations, relevance, responsibility and the needs
of districts. With greater outreach and potential future research answers to the questions will be able to continue to help all school districts.

**Conclusion**

**Researcher’s Reflection.** Throughout this research journey, I have gained considerable knowledge in regards to technology director roles, current practices in public K-12 schools, and thoughts about professional development. I now have a greater understanding of the importance of the TPACK frameworks and the Adult Learning Theory along with concrete examples that are currently deployed in today’s schools. The research process has allowed me as a researcher to grow with the understanding of incorporating theory into real world practice.

In technology, we are constantly faced with an industry that is in a constant state of change which has been outlined by the technology directors that were interviewed in this research. Change was brought up multiple times as a challenge to school districts. The incorporation of theoretical frameworks into a changing education technology environment will continue to be challenging for technology directors, however, the benefits of applying a heightened level of technology achievement through the TPACK frameworks can have many positive implications.

As a researcher and technology director, I found the findings to be engaging. The three main categories of Pedagogical Beliefs of Technology Directors, Technology Proficiency and Technology Directors Understandings of Professional Development have provided findings which will be interesting to share with other neighboring school districts through this documented research. The three categories that have emerged from this research have come up in monthly meets with many current practicing technology directors as areas of interest.
**New Discoveries.** There were a few new discoveries that were found through the research that are current practices that emerged while interviewing the technology directors and synthesizing the data in this study. The focus of technology professional development was dependent on the district's understanding of the role of the technology director. The vision of the technology director role had an impact on the work that the technology director was able to focus on in their school district. There were new discoveries that the technology directors shared through different methods of professional development. The first discovery focus was based on a new model called Ed. Camp which is currently trending in Massachusetts. The researcher found it interesting that John, in the Rhode Island school district, was unaware of this practice of the Ed. Camp model. The technology directors in Massachusetts believed that this was a disruptive and revolutionary way to offer professional development to educators.

The next discovery was present in all of the technology director interviews which focused on using the Google Suite. These tools have been around for awhile. However, there are new releases of the Google technology that have exploded into the school districts in southeastern Massachusetts and Rhode Island. The examples that were shared were based on Google Classroom, Hangouts, Drive and collaboration through these technologies. The technology directors each shared examples of new innovative ways they are currently using Google in classrooms.

**Positionality.** The researcher was able to focus on technology professional development in public k-12 school systems which awarded an opportunity to become a scholar-practitioner. The researcher is currently employed as an Administrator of Educational Technology in a district located in Southeastern Massachusetts. The research helped gain greater understandings of how a theoretical framework applies to research as well as provided opportunity to share with
neighboring school districts through practice. The researcher shared the TPACK framework as a best practice to other Technology Directors around the state to advocate the power of theoretically grounded research. As a scholar-practitioner, it is the researcher’s belief that theoretically grounded perspectives of technology professional development can provide our public schools systems with appropriate professional development to be disruptive in technologic advancement. The researcher plays a role of advocacy for the value of technology professional development, the importance of the role of a Technology Director, and the shared findings from this research. The researcher continues to be a scholar-practitioner and this research process has improved his practice.

**Final Thoughts.** At the conclusion of this research study focused on the exploration of Technology Directors’ understanding of technology professional development phenomena in today’s schools the research has been able to make contributions in the sharing of current technology practices in southeastern Massachusetts and Rhode Island. This study has been guided by the Interpretative Phenomenological Analysis, which allows exploring, describing, interpreting and situating the means by which participants make sense of their experiences (Smith, Flowers, Larkin, 2013). The findings reflect current practices of school districts which can be utilized as the information for discussion amongst stakeholders in neighboring school districts. The findings have provided additional information in the area of technology directors’ job roles which help districts get a better understanding of current practices. The findings help technology directors, central office staff, teachers and other stakeholders better understand technology professional development. This would help Assistant Superintendents, and Superintendents, who are concerned about technology professional development, as well as their one on one initiatives, will fail if the group does not act as a team and accept disruptive change.
This research was focused on public K-12 school districts in southeastern Massachusetts and Rhode Island. The researcher recommends for future research increasing the sample size of school districts. In addition, the researcher recommends narrowing the sample size to only technology directors who have an influence on professional development. If this study were increased in scale and focused on technology professional development, the findings would be a significant contribution to technology professional development in public K-12 schools nationwide.

Technology directors who participated in this study believed in job satisfaction, helping all stakeholders with technology. The technology directors felt that more technology professional development would be helpful. Each technology director strongly believed that future staff members will need more professional development offerings. In order to achieve a heightened TPACK Framework understanding staff will need to be provided with more technology professional development. The increase of technology professional development will provide staff with the ability to learn from the technology directors and support technology integration across school districts.
References:


Berry, James; Staub, Nancy


doi:10.1111/j.1365-2729.2009.00337.x


Teacher professional development in *Teaching and Teacher Education* over ten years

Beatrice Avalos Publication: Teaching and Teacher Education

Publisher: Elsevier Date: January 2011 Copyright © 2011, Elsevier


Wideman, R. (2011). Empowering Teachers and Schools to Play Their Key Role in Improving Education. A Keynote Address Delivered at the North Eastern Ontario Education Network 2011 Research Carousel: Evidence in the Classroom--Affecting Student


2007, Hew and Brush, the integration barriers

APPENDIX A

INFORMED CONSENT DOCUMENT

Northeastern University
Human Subject Research Protection

900 Renaissance Park
Northeastern University
Boston, MA 02115-9300
Tel: 617.373.5700, Fax 617.373.4595

Informed Consent Document

Northeastern University, College of Professional Studies in Education

Name of Investigators:

Principal Investigator's name: Dr. Karen Reiss Medwed

Student Researcher's name: Ryan McGee

Title of Project: What is the Technology Directors' Understanding of Technology Professional Development Phenomena in Today's Schools?

Informed Consent to Participate in a Research Study:
We are inviting you to take part in a research study. This form will tell you about the study, but the researcher will explain the research at our first meeting. You may ask this person any questions that you have. When you are ready to make a decision, you may tell the researcher if you want to participate or not. You do not have to participate if you do not want to. If you decide to participate, the researcher will ask you to sign this statement and will give you a copy to keep.

Why am I being asked to take part in this research study?
The researcher has asked you to participate in the study because you are a Technology Director in a public school district located in Southeastern Massachusetts or Rhode Island. The researcher will be exploring Technology Directors' practices and understanding of technology professional development phenomena in today's schools.

Why is this research study being done?
The purpose of this research is to gain an understanding of Technology Directors' role in technology professional development. The research study will be able to provide current practices used around Southeastern Massachusetts and Rhode Island in the areas of technology professional development.

What will I be asked to do?
If you decide to take part in this study, we will ask you to have one brief initial phone conversation to review the scope of the research and answer any questions. It is anticipated that the initial phone conversation will be brief at about fifteen minutes.

At the time of commitment to participate in the study the researcher will provide you with the interview questions and a copy of the Informed Consent Form that we will discuss at the next meeting. The Informed Consent Form will need to be signed before we conduct our interview at the in person meeting. The in person meeting will be about one hour long. This meeting will be where we conduct the interview. It will be important to record the conversation for the researcher.
to be able to take the conversation and convert it to text through a transcription process. The transcripts will use coding to make sure the information remains confidential. Once the researcher converts the transcripts then the interviewee will be asked to verify the information is correct and reflects your thoughts properly.

The two meetings mentioned above complete the requirements of the study. Once the researcher completes the research he will provide you with a copy to read. It is the hopes of the researcher that sharing the ‘Technology Directors’ understanding of technology professional development phenomena in today’s schools can potentially have great benefits for anyone in the job role to see current trends.

Where will the study take place and how much of my time will it take?

There will be a time requirement of one fifteen minute phone conversation to discuss the scope of the research and to answer any questions. The second time requirement will be an hour long session to sign the research consent form and conduct the in person interview.

Will there be any risk or discomfort to me?
The researcher does not anticipate any reasonable foreseeable risks, harms, discomforts or inconvenience that the participant may experience. The researcher will maintain professionalism during the research and address any concerns.

Will I benefit by being in this research?
There will be no direct benefit to you for taking part in the study, however, the information learned from this study may help in sharing research with stakeholders such as teachers, principals, central office staff, superintendents, and technology directors as the research continues to share current practices in greater detail.

Who will see the information about me?
Your identity as a participant in this study will not be known to anyone other than the researcher. The information received from the interview will be converted by the researcher into a text document then verified with you for accuracy. There will be coded alias names used to protect information that is shared in the research. Once the information is verified in the text documents the researcher will delete the original audio files. The text data will be maintained on the researchers password protected computer and a backup copy of the data will be stored in a secure FTP site in the cloud. The alias will be used on all text documents for an added level of security and confidentiality. The only limit of confidentiality would be in a rare instance, authorized people may request to see research information about you and other people in this study. This is done only to be sure that the research is done properly. We would only permit people who are authorized by Northeastern University Institutional Review Board.

What will happen if I suffer any harm from this research?
No special arrangements will be made for compensation or for payment for treatment solely...
because of my participation in this research.

Can I stop my participation in this study?
Your participation in this research is completely voluntary. You do not have to participate if you do not want to and you can refuse to answer any question. Even if you begin the study, you may quit at any time.

Who can I contact if I have questions or problems?
Ryan McGee (508)364-9857 (mcgee.r@husky.neu.edu), the person mainly responsible for the research.
You can also contact Dr. Karen Reiss Medwed, the Principal Investigator (k.reissmedwed@neu.edu).

Who can I contact about my rights as a participant?
If you have any questions about your rights in this research, you may contact Nan C. Regina, Director, Human Subject Research Protection, 960 Renaissance Park, Northeastern University, Boston, MA 02115. Tel: 617.373.4588, Email: n.regina@neu.edu. You may call anonymously if you wish.

Will I be paid for my participation?
Participants will not be compensated for participating in this research.

Will it cost me anything to participate?
Participants are not expected to incur any expenses.

__________________________________________  ____________
Signature of person agreeing to take part             Date

_____________________________________________________
Printed name of person above

_____________________________________________________
Signature of person who explained the study to the participant above and obtained consent

_____________________________________________________
Printed name of person above

Approved

Nursing 11-12-13
Valid 11-12-13
Through 11-30-15

16 Northeastern University - Human Subject Research Protection
Rev. 9/3/2013
APPENDIX B

LETTER OF INITIAL INTEREST

Dear Technology Directors,

I am a student researcher currently working on a thesis project for my Educational Doctorates Degree in Curriculum Leadership at Northeastern University. I have an interest in the work of Technology Directors as related to professional development in technology in today's schools. The information learned from this study may help in sharing research with stakeholders such as teachers, principals, central office staff, superintendents, and technology directors. The research will focus on sharing current technology professional development trends with neighboring school districts.

Would you be willing to be interviewed, at a time and place convenient to you as part of my research? The time requirement is one in person meeting for 15 minutes to review my research. The second time requirement is an in person interview which should take no longer than one hour.

The title of my thesis is What is the Technology Directors’ Understanding of Technology Professional Development Phenomena in Today's Schools.

I am currently a Technology Director in Massachusetts. I hope to explore our work as a Technology Director, which can foster technology integration in school districts. The research will be able to share current trends, which can help increase the understanding of technology professional development.

I sincerely hope that you will be able to help me with my research. Your participation in the research is entirely voluntary and at your discretion. If you have any questions concerning the nature of the research or if you are unclear about your involvement in the research please contact email me at mcgee.r@husky.neu.edu.

Thank you for taking the time to consider my request and I look forward to your reply.

Sincerely,
Ryan McGee
APPENDIX C

LETTER OF RECRUITEMENT

April 1, 2014

Dear Technology Directors,

I am a student researcher currently working on a thesis project for my Educational Doctorates Degree in Curriculum Leadership at Northeastern University. I have an interest in the work of Technology Directors as related to professional development in technology in today’s schools. The information learned from this study may help in sharing research with stakeholders such as teachers, principals, central office staff, superintendents, and technology directors. The research will focus on sharing current technology professional development trends with neighboring school districts.

Would you be willing to be interviewed, at a time and place convenient to you as part of my research? The time requirement is one in person meeting for 15 minutes to review my research. The second time requirement is an in person interview which should take no longer than one hour.

The title of my thesis is What is the Technology Directors’ Understanding of Technology Professional Development Phenomena in Today’s Schools.

I am currently a Technology Director in Massachusetts. I hope to explore our work as a Technology Director, which can foster technology integration in school districts. The research will be able to share current trends, which can help increase the understanding of technology professional development.

I sincerely hope that you will be able to help me with my research. Your participation in the research is entirely voluntary and at your discretion. If you have any questions concerning the nature of the research or if you are unclear about your involvement in the research please contact email me at mcgee.r@husky.neu.edu.

Thank you for taking the time to consider my request and I look forward to your reply.

Sincerely,
Ryan McGee