

Technology Integration Support Levels for In-Service Teachers

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Abstract

In-service teachers across the globe are expected to integrate technology in their respective instructional content area. The purpose of this qualitative study was to explore the perceptions of in-service teachers concerning building-level support for technology integration. Participants in the study were asked to participate in semi-structured interviews to discuss how they were taught to use, transfer and integrate technology into instructional content areas for digital learners of the 21st Century. The findings of the study revealed that in-service teachers have had varying experiences in building-level support for technology integration. In-service teachers cited concerns with the building-support levels in terms of seamless technology integration in the classrooms that related to adequate web-based interconnectivity to make use of available educator tools for their discipline, proper acclimation of equipment tools adopted by the school district, and lack of computer resources to implement seamless technological innovations in the classrooms. Cooperative building-level technology driven provisions require a leader who actively supports the plight of the teachers.

Keywords: building-level support, in-service teachers, qualitative study, technology integration

1. Introduction

Millions have been spent on supporting infrastructure, hardware, and software in school districts across the nation to make technology accessible (Stobaugh & Tassell, 2010). The initial funding was provided through President Clinton's Technology Literacy Challenge Fund initiative in 1996 in support of making "all children technology literate to prepare them for the Information Age" (McLeod & Richardson, 2013; Riley, Kunin, Smith, & Roberts, 1999; White House, 1996, para. 1). The Technology Literacy Challenge Fund initiative is significant historically because President Clinton challenged the nation and all of the stakeholders that share in educational decisions for America's children to target specific goals in support the following initiatives:

1. Provide all teachers the training and support they need to help students learn through computers and the information superhighway;
2. Develop effective and engaging software and on-line learning resources as an integral part of the school curriculum;
3. Provide access to modern computers for all teachers and students;
4. Connect every school and classroom in America to the information superhighway (White House, para. 2)

Educational leaders and stakeholders had to develop plans of implementation to support infrastructure, pedagogy, and curriculum for technology integration in the schools (Graesser, 2013). Davies (2011) defined technology integration "as the effective implementation of educational technology to accomplish intended learning outcome" (p. 6), and the term educational technology as "any tool, piece of equipment, or device—electronic or mechanical—that can be used to support instructional technologies for teachers and learning technologies for students to accomplish specified learning goals" (p. 31).

By the beginning of the 21st Century, when over half of the schools were connected to the Internet, school leaders still were faced with a major dilemma of how to effectively integrate technology into student learning experiences (Graesser, 2013). To show how committed the U.S. Department of Education was about enforcing technology integration in American schools, an important piece of legislation, the Elementary and Secondary Education Act of 2001, was passed mandating that all core instructional content areas support technology integration by using educational technologies in instruction (Davies & West, 2013). The mandate was driven by the belief that technology would result in reciprocity in teaching and learning leading to positive outcomes for students to transfer technological skills in a knowledge-based economy (Davies, 2011; Davies & West, 2013; Spazak, 2013). According to Franklin and Bolick (2007), the technology infused in teaching and learning in the classroom supports individualized learning goals for students at the same time closing the gap on inequality of resources based on socioeconomic conditions in the school environment.

After several years of mandating technology integration in teaching and learning and equipping schools with technology infrastructure, numerous researchers along with school administrators believe that minimum effort by teachers to integrate technology have taken place in the classrooms (Davies 2011; Moeller & Reitzes, 2011). As a reinforcement of the mandate, the OET (2010) followed up with a National Education Technology Plan to assist state departments of education with forward-thinking plans to effectively use

technologies in the classroom (Davies & West, 2013).

According to Stobaugh and Tassell (2010), the application of digital technologies is no longer considered optional skills in the workforce. We live in a time where technology is constantly changing, thus, requiring continuous adaptation to new tools. Considering that technology integrated with learning is perceived to be difficult, research indicates that specific uses of technology support the improvement of student outcomes (Moeller & Reitzes, 2011). Barr and Sykora (2015) recently stated that, "Education has not fully leveraged these innovations to advance technology-powered pedagogy, and yet, educators in every country are being called upon to prepare students for a world where they can adapt, contribute and thrive" (p. 4). Some researchers attribute the deficiency of effective technology integration transfer in student learning to teachers simply not integrating technology into content areas, while other researchers believe that teachers struggle with using proficiency with technology (Davies & West, 2013; McLeod & Richardson, 2013; Ramasubbu, 2015). More recent criticisms from a NMC Horizon Report: 2014 Highlight Education Edition stems around the slow and exasperating process for educational vendors to get relevant technology introduced and approved by all of the educational stakeholders 1) State Legislatures 2) Academic Advisors 3) School Board 4) Curriculum Specialists 5) Special Education 6) IT 7) Principals (Ramasubbu, 2015).

2. School Level Support for Technology Integration

According to Webb (2011), technology integration can be impacted by multiple levels of leadership within the school district to include (1) Superintendents (2) Campus Leaders/ Principals, and (3) Technology Leadership. Nonetheless, several researchers have indicated that the building-level principals serve as the leading catalysts to model 21st Century pedagogy for teachers to effectively prepare students to meet the demands of a high-technological global society (Fisher & Waller, 2013; Machado & Chung, 2015; Schwab, 2015; Webb, 2011). Many principals today, however, do not feel they have the proper credentials to serve as the technology integration expert across curricula (Machado & Chung, 2015; Starr, 2009). Previously, the technology integration knowledge level for some principals was limited to communicating competencies and standards to teachers that serve as a footprint for implementation and transfer of knowledge to the students. Principals today, however, are challenged with a host of other administrative roles and responsibilities to support technology integration for 21st Century learning, such as "cyber bullying, evaluating digital instructional materials, providing online courses, communicating via social media, hiring technology-proficient teachers, and providing high-quality technology-related professional development for existing staff" (Fisher & Waller, 2013, p. 11). Taking into account that principals are expected to be the lead facilitators of 21st Century learning and technology integration for teachers and students, research indicated that educational leadership programs and administrator preparation programs alike "do not require any technology leadership components for administrative credentials" (Fisher & Waller, 2013, p. 31). Various research conclusions found greater levels of technology integration achievement for schools that were led by principals who were trained to facilitate technology integration (Machado & Chung, 2015; Webb, 2011). Researchers further noted that the absence of administrator support to cultivate a shared vision of 21st Century skills knowledge-base and technology integration strategies can be the most crucial factor in deciding whether teachers make a commitment to integrating technology (Fisher & Waller, 2013; Kaplan & Steffens, 2010). A study by Kaplan and Steffens (2010) revealed that administrators reported a more optimistic view than teachers regarding the use of technology's impact on student learning. Starr (2009) stated that administrators must create consistent, supported training opportunities for teachers to enhance pedagogical instructional planning to create technology-rich, student-centered learning environments.

2.1 Purpose of the Study

The purpose of this study was to explore the perceptions of in-service teachers concerning building-level support for technology integration. Although there is a vast amount of literature that focuses on the presence and integration of technology in the classroom, there is a limited amount, if any, research that explores the perceptions of in-service teachers on the topic of the support levels that in-service teachers believe would benefit them in effectively interconnecting instructional content areas with technology integration in the classrooms. No longer can the bridge to connect technology and learning have justifications that yield less than positive outcomes for the students to apply technology tools to effectively engage in learning how to succeed in our global society contributing to solving world issues (OET, 2010). According to Mundy and Kupczynski (2013), "ultimately, the necessary educational cultural shift necessary to appropriately utilize technology in a meaningful manner begins with the teacher as a change agent" (p. 1).

3. Research Design and Methodology

To research the perceptions of in-service teachers concerning building-level support for technology integration, this study used a qualitative research design with a phenomenological approach. The researcher sought to define

a commonality of the experiences with the participants so that a central theme could be discovered. The philosophical aspect of a phenomenology study related to “the study of the lived experiences of persons, the view that these experiences are conscious ones, and the development of descriptions of the essences of these experiences, not explanations or analyses” (Creswell, 2007, p. 58). Specifically, this study took the transcendental phenomenology approach – where the description of the lived experiences was considered the phenomenon and how the recording of the lived experiences are transcribed to life (Creswell, 2013). Data were collected via a demographic survey and semi-structured interviews. The criterion for participation included: teachers who (1) were employed by the selected public school district during the 2015-2016 academic school year, (2) certified to teach K-12, (3) completed a traditional teacher education degree program at an accredited 4-year university/college and (4) completed the Digital Opportunity Trust [DOT] TeachUp! USA Program.

4. Summary of the Findings

Based on the in-service teachers building-level support experiences, the findings revealed perceived strengths, weaknesses, problems, and recommendations for technology integration.

4.1 Building-level support

The experiences of the participants when it comes to Building-level support are different. According to Jean, "The principal assigns Technology Mentors/teachers to help new and veteran teachers adapt to the technology resources utilized by our school. The Technology Mentors are selected based on their ability to effectively demonstrate technology integration into classroom learning." On the other hand, Julie, "The support levels for technology integration at our school consist of Teacher Technology Mentors and external IT Support. The Teacher Technology Mentors consists of volunteer classroom teachers in our building who are experienced in district technology resources and exhibit proficiency in fundamental computer knowledge." It was further mentioned by Margaret, "At our school, we have an IT technician that is full-time at our school. The technician will troubleshoot and demonstrate to the teachers how to resolve simple tasks that interrupt using technology for integration." Francis furthered, "The levels of technology support for our school include a technical support technician, the Principal, and the Superintendent of our school district." Phillis added, "Our school has a help desk technician in our building. We also have the support of our administration and Superintendent to provide education programs to all teachers to help students practice grade-level skills that align with state testing competencies."

4.2 Description

Leroy said that the support levels for technology integration at our school consist of a Computer Lab Technician that shares Internet research-based educational websites and tools, IT support technicians (not in-house), and Teacher Technology Mentors. Further, Caitlyn stated the following:

The Superintendent for our school district has been the leader for supporting technology integration at our school. One of the first things the Superintendent did upon coming to the School District was to require that all teachers use school email. The Superintendent expects all teachers to use technology to analyze assessments and use the district-adopted software to aid in improving student achievement.

Despite the differences in their opinion as to what Building-level support means, the statement by Zoe Grace summarized the general opinion of the participants, "The first point of contact for technology support in our school is the IT Technical Support technician, Mr. T. is stationed in our building. On the administrative level, the principal is the next level of support for technology integration."

4.3 Strengths.

The strengths of the Building-level support were also discussed by the participants. According to Caitlyn:

Our school definitely does not lack in the area of technology-supported programs or instructional delivery equipment that have been made available from the District. We have access to a SMART Board, Mimio Pad/Software, various education programs (Study Island, Accelerated Reading Program, Accelerated Math, and Compass Learning). It was mentioned by Caitlyn that "The Superintendent advocates that all teachers to use technology to analyze assessments and use the district adopted software to aid in improving student achievement." On the other hand, Julie said, "In most instances, the Teacher Technology Mentors are able to resolve a lot of our technology issues without placing tickets to the Help Desk." Margaret also felt that "The main advantage is having a technical support technician in our building who quickly responds to resolve equipment issues I may encounter in my classroom."

Zoe Grace added the following:

In our school, we have an advantage by having an in-house IT Technical Support technician that can quickly respond to any technical issues encountered during classroom instruction. Another advantage in our school is having a principal that explains and expects his teachers to use district-adopted software to

communicate student growth levels with different standards. The principal taught us how to use Renaissance Place to generate data reports to evaluate student growth and or deficiencies. Then, he seeks to provide strategies to assist you, the teacher, to aid in deficiencies of student learning. For example, he checks to see if you are using the data to develop lesson plans and differentiate instruction.

Francis' comments were as follows:

Our administration encourages and demonstrates teaching strategies for monitoring and improving student achievement using the district adopted educational software programs. Our building-level technical support technician is very helpful in solving technical problems with the computer equipment or Internet connection issues in my classroom. I can email the technician or send a student to get him.

Additionally, Phillis observed, "Our technician responds to computer equipment and Internet problems fast. As for the administration and Superintendent, both encourage teachers to use the state adopted education programs to provide an interactive technology platform for the students to practice skills."

4.4 Weaknesses.

There are also weaknesses attributed to the Building-level support. According to Leroy:

One of the main weaknesses would be that we only have a few IT technical support technicians that service several schools. Whenever, the technicians have to perform system updates, it takes them a while to service several schools which leaves individual classroom tickets in the pending service request queue.

This was likewise observed by Caitlyn who said in the interview:

Our building administrator does encourage teachers in the school to use the District adopted software, however; the administrator has difficulty understanding how to use the software effectively adopted by the school district to assist teachers who are either new to the district or veteran teachers. The new teachers and the veteran teachers do not know how to use the remediation tools. All teachers are not using projectors, the Mimio Pads that support the SMART Board, or Clicker technology. Each year the District provides technology resources to support instruction, but the tools are not being used by all teachers at our school. The main weakness is that our administrator does not know how to effectively use the technology resources provided by the district and the teachers are not fully trained to integrate the district tools to support student learning.

According to Julie, "One of the weaknesses concerning the support levels would be if a Teacher Technology Mentor was unable to resolve a technical issue, then a teacher would have to place a ticket with the Help Desk and the wait- time to resolve the issue could take a while." Margaret observed, "I need more training on how to use technology effectively in my classroom." Zoe Grace furthered, "Our classrooms could use updated computers and a set of iPads to support technology integration more effectively." According to Francis, "The weakness for administration would be not checking to see if teachers are having problems using the technologies in the classroom for learning. The technical support technician tries to respond to equipment issues promptly." It turned out that Phillis shared the same opinion when she uttered, "However, I am a hands-on learner and I need repetitive training to keep with technology. For example, I did not understand how to use the technology equipment such as the Mimio pad with the clicker technology."

4.5 Problems.

There are various problems and issues encountered in trying to implement Building-level support.

According to Leroy:

In my classroom, I have five computers that service a classroom size of 20 students to rotate for small group work. If you have a class with more than 20 students, it makes it hard to rotate groups. The district does have enough licenses to service each child for each of the adopted education programs, but there are not enough computers for all students to have equal time with the learning technology.

In addition to the possibility of having limited resources, it is also likely that there would be problems due to geographical reasons.

According to Caitlyn:

The location of my classroom at the school is disconnected from the main school building. Fifth grade students are taught in portable buildings. A common issue that I experience is losing Internet connectivity. Our school does not have an in-house technology technician support who can address the outage quickly. In the meanwhile, a ticket is placed in the Help Desk queue and the ticket may not be addressed for several days. As a teacher who likes to incorporate technology tools into instruction time, this lapse of resolving the Internet connectivity issue is a problem for me and my students. Yes, I can come up with a Plan B, but I want Plan A. I am used to incorporating technology tools in instruction. The technology integration keeps my students engaged in the learning process.

Julie mentioned that:

The main problems that I have encountered with support-levels for effective technology integration would

be the wait –time for the Help Desk to address my technical issue and the restrictions that our IT Team places on teachers' Internet access. For example, there are certain sites, tools, or downloads that teachers are not able to download because the network prompts for a password that is not shared with teachers. The IT technician would have to respond to a teacher's network request by physically coming to the classroom to enter the password.

According to Zoe Grace:

This is not necessarily a problem with support; however, the District determines which educational programs with game integration our students will use for a calendar year. For example, one year the District used Education City and HeadSprout and the next year, one of the programs changed from Education City to Study Island. I had gotten used to using Education City to integrate technology in the classroom.

The view that there are problems that have to be solved is shared by Francis who said, "A hidden problem with administrative support is failure to notice that not all teachers are using the district supplied technology equipment and software to enhance student learning experiences." In addition, Phillis said, "I do not necessarily have problems that relate to support levels, but I would like more hands-on technology training."

4.6 Recommendations.

Just like in any other program or project, it is important to always focus on the recommendations so that the changes are focused on and not just the current issues being encountered. According to Caitlyn:

I would recommend new and veteran teachers should be provided with adequate training on how to use the district adopted learning/remediation programs to positively impact student learning. The norm should not be to just expect teachers to know how to use the programs because the programs are available to use. Instead, the administrator should schedule training and ask the teachers what type of assistance is needed to better integrate the tools into instruction.

Likewise, Julie mentioned, "I would recommend providing all teachers with the Network password so that we can accommodate students at a faster pace." It was furthered by Margaret, "I would recommend providing hand-on training sessions for teachers to effectively learn how to use technology to support student learning in the classroom." Meanwhile, Zoe Grace mentioned, "Multiple training opportunities need to occur for teachers to be effective with using technology equipment, applications, and or programs." The following statement was added by Francis:

I would like to receive professional development to learn new technology tools and teaching strategies for Art and Music. I believe that in order to make the best use of technology equipment and to be able to stay current with technology that is discipline specific requires repetitive instances of training for teachers. I am a hands-on learner and I need more practice to learn how to use technology tools. The Mimio pad in my classroom goes unused because I was only trained on the technology in one setting.

Phillis also stated, "I would recommend more training on using technology programs and equipment that is in the classroom." The recommendations suggested by the participants must be utilized in order to create a better Building-level support for the teachers.

5. Conclusion

The findings of the study revealed that in-service teachers have had varying experiences in building-level support for technology integration. In-service teachers cited concerns with the building-support levels in terms of seamless technology integration in the classrooms that related to adequate web-based interconnectivity to make use of available educator tools for their discipline, proper acclimation of equipment tools adopted by the school district, and lack of computer resources to implement seamless technological innovations in the classrooms. Research has shown that integration of technology does not happen over a short period of time. In-service teachers need to have the opportunity to model the technology, monitor student progress in behavior, motivation, and assessment which can take a number of years to see the technology effects on learning (Moeller & Reitzes, 2011). All in-service teachers, regardless of teaching discipline, should have a collaborative, systematic building-level support system to maintain the constant transfer of technology integration into student learning and application. Based on the results of this study, the following are the recommendations for future reference:

1. The perceptions of the students' technology integration experiences in the classroom may be taken into account for future research.
2. Future research may include an interstate study wherein the experiences and perceptions of building-level support for in-service teachers from one state are analyzed comparatively with the experiences of in-service teachers in another state.

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