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Teacher Perceptions of Integrating Technology Tools

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This is to certify that the doctoral study by

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2021

Abstract

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MS, Gannon University, 2004

BS, California University of Pennsylvania, 1998

Project Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Technology underutilization in educational settings is a problem that costs school districts time and money. This problem grounded the purpose of this study to explore teachers' perceptions of factors that influenced technology integration in a rural school district so that research-derived recommendations could be provided to improve future technology initiatives. The conceptual framework of this study was the unified theory of acceptance and use of technology. Four research questions guided the exploration of K–12 teachers' perceptions about technology utilization based on the framework's tenets of performance expectancy, effort expectancy, social influences, and facilitating conditions that influence teachers' technology utilization. The purposeful sample comprised 12 participants who were teachers employed by a single school district during a failed technology initiative. Following a basic qualitative descriptive design, an open-ended interview protocol was employed to collect data for subsequent thematic analysis that was organized by each of the 4 research questions. The findings revealed 4 corresponding themes that influenced teacher decisions to utilize technology: (a) improving professional performance through technology use, (b) pedagogical gains are worth the effort, (c) the importance of technology mentors and coaches, and (d) technology coaching and administrative support for technology integration. The COVID-19 pandemic influenced the decision to create a new professional development program rather than a policy statement to proactively assist technology integration based on these research findings. Combining the unprecedented need to deliver education remotely with the uncertainty of reconvening face-to-face classes due to the pandemic, positive social change will result from more teachers integrating technology with fidelity.

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Dedication

"Rejoice always, pray without ceasing, give thanks in all circumstances; for this is the will of God in Christ Jesus for you" (I Thessalonians 5:16-18). This work is dedicated to the people in my life who recognize that, even when things don't go the way they planned or hoped, life is worth celebrating. I am grateful that God strategically placed all of these people in my life. To the people I celebrate life with each day, thank you. Jolene, thank you for all your love and support. You can now call it "the dining room" again. With God, all things are possible.

Acknowledgments

Thank you to my Heavenly Father who provided the will and the way to make this possible. Thank you, Lord, for always going above and beyond my expectations to meet our every need. To God be the glory, great things He has done . . . and continues to do.

I would like to thank Dr. Richard Hammett for sharing his expertise, knowledge, experience, and talent with me throughout this journey. Dr. Hammett, I am grateful for your wisdom and guidance that navigated me through the arduous venture. You always took the time to explain how and why, while providing the encouragement I needed to get through each step and procedure. Thank you for your patience and giving your time and talents to help me any and every time I needed guidance.

Thank you, Dr. Kelly Hall and Dr. Floralba Arbelo Marrero, for the time you dedicate to lifelong learners. Thank you for investing your time and effort in the doctoral candidates that you guide and direct. Your guidance has been greatly appreciated!

I would like to thank my wife, five children, and parents for their love and support. This journey felt like we were traveling on windy roads full of bumps, potholes, road construction, and several “Caution,” “Road Closed,” and “Stop” signs abruptly placed randomly along the route. You never complained “How much longer” or “Are we there yet?” You buckled up and came along for the ride. Thank you to my family for reminding me about the light at the end of the tunnel. The view from the top of this rocky mountain destination looks refreshing.

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Section 1: The Problem

In this section, I identify the local problem in the Vestigo Area School District (VASD), a pseudonym. A description of the local setting is included with the description of the local problem as are the problem in education beyond the VASD setting and the gap in educational practice. A rationale for the study ends with the purpose of the study. A complete list of terms and their definitions is included as well as an explanation of the significance of the study. I also provide the research questions in this section, followed by a review of literature in which I explain the conceptual framework and discuss literature related to technology integration in public schools. A summary concludes Section 1.

The Local Problem

Despite significant investments by the school district, technology has historically been underutilized in the VASD. The advancement of educational technology challenges educators to remain current if technology is to be leveraged for teaching and learning (Davis, 1989; De Bruyckere, Kirschner, & Hulshof, 2016). Most school-aged students today have never lived without the Internet, iPads, cell phones, or Google, and those students expect technology to be as ubiquitous in their classrooms as it is in their homes (Mitchell, Wohleb, & Skinner, 2016). The existence and use of technology in the classroom may even play a role in students' levels of engagement throughout the schooling process (Mitchell et al., 2016). To successfully integrate technology initiatives in education, researchers have emphasized the need for adequate teacher training in this area (De Bruyckere et al., 2016; Vannatta & Fordham, 2004; Willis & Cifuentes, 2005).

If the problem remains unaddressed, the VASD may continue to purchase expensive technology that is underutilized by teachers.

The VASD is situated in a rural and suburban, socio-economically deprived county in the northeastern United States of America. According to its website, the VASD employs 200 teachers to educate 2,500 K–12 students. Grade levels are grouped within four buildings in the VASD: prekindergarten through second grade, third through fifth grade, sixth through eighth grade, and ninth through 12th grade. A curriculum team consisting of district administrators and selected teachers determines how technology tools will be integrated into the classroom, and principals monitor and manage the usage of technology tools within their building. According to the VASD technology director, they are responsible for purchasing, installing, and maintaining technology tools. BlackBoard (BB) is a web-based learning management system (LMS). An LMS allows educators to efficiently disseminate and effectively manage diverse curricula while engaging with students in an online forum (Varnell, 2016). BB can be customized to meet the needs of K–12 grade educators and learners (Bunte, 2017). Academic features of the BB LMS include progress monitoring, document and video sharing, school-wide or class-specific notifications, gradebooks, course calendar, assignment due date messaging, and user profiles (Bunte, 2017; Kraky, 2012). According to Masino (2015), BB technology supports efficient and effective teaching and learning strategies when actively utilized by teachers. The VASD was a licensed user of BB from 2008–2012, and during the same period, the VASD had a BB user agreement.

Challenges related to integrating technologies like BB are not unique to the VASD. In a study of the College of Technology at Purdue University, Little-Wiles and Naimi (2011) reported faculty were not utilizing the full capabilities of BB as an LMS. In addition, only 30% of the full-time faculty used specified, but not all, features of BB daily (Little-Wiles & Naimi, 2011). Faculty expressed the need for training and reported that BB was "tedious and time consuming" for them to learn how to use (Little-Wiles & Naimi, 2011, p. 10). Interestingly, per the VASD technology director, only 10% of the VASD faculty used BB in their classes. According to Teo and Zhou (2017), "when teachers do not use technology in the way it was designed to function, they do not exploit the capabilities of the technology in question to serve their professional purposes" (p. 514). Likewise, as evidenced by the 98% of VASD teachers who did not use utilize features of BB technology, they did not capitalize on the full potential of the technology tool.

In 2008, the VASD purchased a subscription to Blendedschools.net, an online program that offered BB, video conferencing network, and efficient online management of individualized teacher-designed course curriculum. At that time, *cyber schooling*, an online alternative to public school, was not an option and Blendedschools.net was the first organization to offer online curriculum for Grades K–12. The VASD technology director reported that the initial user agreement fee for BB through Blendedschools.net was $19,500. According to the VASD's technology director, the BB subscription increased in cost to $35,000 the second year, and $42,500 the third and fourth years. The

price increase changed from individual student account fees to block fees based on number of students (i.e., 0–500 student accounts, 501–1,000 student accounts, etc). Blendedschools.net provided online tutorials on BB for teachers; however, the district spent money investing in technology that teachers did not use. Without addressing this problem, there is a possibility of future technology purchases that go underutilized by teachers.

Rationale

Understanding how and why technology can be beneficial in the classroom influences a teacher's decision for technology integration (Mouakket & Bettayeb, 2015). Explaining how teachers would benefit from technology integration should be included in technology trainings (Mouakket & Bettayeb, 2015). In 2008, the VASD had a full-time technology integrator who was responsible for conducting technology trainings, professional development sessions, and one-on-one sessions per teacher request but that was the only training provided by the vendor.

According to the VASD technology director, 20–25 out of 200 teachers were utilizing BB in 2008–2009. By the 2011–2012 school year, only six teachers were using BB in their curriculum. At the July 2012 Vestigo School Board meeting, an executive decision was made to cancel the Blendedschools.net subscription. Blackboard.com was investigated by the technology director for a BB classroom-only option. The BB-only option would require the purchase of hardware to host the program in addition to the software, and district administrators did not find this option cost-effective. The lack of

VASD teachers who implemented BB technology into curriculum led to an administrative decision not to renew the BB licensing agreement, resulting in the removal of this pedagogical resource.

The administrative decision to discontinue BB required teachers to identify alternative methods of lesson planning, curriculum development and delivery, and classroom management for the teachers and their students who benefitted from utilizing BB. Along with BB, other technology tools have not effectively been applied in classrooms. According to the technology director, in 2012 the VASD spent over $123,000 on the purchase of iPods and apps without an implementation plan. Perhaps a needs assessment would have provided vision for an implementation protocol. According to Maich, Rhijn, Woods, and Brochu (2017), needs assessments are beneficial to identifying the technology needs of teachers and implementing short-term and team-based technology training. A sole reliance on needs assessments and training, however, may not be adequate to resolve the problem faced in VASD.

Prior to the 2017–2018 school year, 44% of VASD middle school teachers responded to a nine-question online survey. The survey was used to determine teachers' ability levels using Office 365 features (i.e., Yammer, Class Notebook, Forms, and Teams). According to a VASD middle school assistant principal (AP), only five respondents felt confident enough to give an Office 365 presentation to their peers during an in-service. The teacher consensus, according to the AP, was that there was a need for additional technology training.

Teachers believe that underutilization of technology is a problem at the VASD as evidenced by the online survey conducted by the VASD AP. In one-on-one conversations, teachers expressed disappointment with previously purchased technology that went unused or irregulated. VASD administrators and the school board may find the problem of underutilization of technology worthy of studying in hopes of preventing future technology purchases that go underutilized. Finally, this study may be beneficial in hopes of planning future teacher technology professional development trainings and saving the school district money.

A more thorough understanding of VASD teachers' needs for the facilitation of technology utilization was needed. The purpose of this study, therefore, was to explore VASD K–12 teachers' perceptions of factors that influence technology integration through the lens of the unified theory of acceptance and technology use (see Venkatesh, 2000; Venkatesh, Morris, Davis, & Davis, 2003). The conceptual framework for the study is described thoroughly in the review of the literature, which appears later in this section.

Definition of Terms

The following terms were used in this research study:

Effort expectancy: Perceived level of ease when using technology (Sumak, Pusnik, Hericko, & Sorgo, 2017; Venkatesh et al., 2003).

Facilitating conditions: Teachers' confidence that technology support is available in their facility to enable their technology use (Tosuntas, Karadag, & Orhan, 2015).

Perceptions: The understanding of ideas formed about a concept or issue based on personal experience that "guides human behavior" (Alasela, Olufunmilola, Akindele, & Olabo, 2016, p.73).

Performance expectancy: The user's perceptions regarding the usefulness of a technology tool (Venkatesh, Thong, & Xu., 2016).

Social influence: Critical factors relevant to a teachers' decision to adopt or integrate technology into their curriculum (Mouakket & Bettayeb, 2015).

Technology: Any tool or device, manipulative or Web-based, or application that increases teacher and/or student productivity with the potential to enhance learning and increase efficiency in the planning, development, instruction, and delivery of learning objectives. Technology has the potential to improve learning outcomes when initiated and monitored in an educational setting (Mitchell et al., 2016; Wing Fat Lau & Hoi Kau Yuen, 2013).

Technology barriers: Factors that limit, challenge, or complicate the integration of technology into teachers' classrooms or curriculum (Jeong & Kim, 2017; Starks Ray, 2015).

Technology implementation: Active use of a technology tool or device in a manner that improves efficiency and effectiveness of curriculum delivery (Brabeck, Fisher, & Pitler, 2004).

Technology self-efficacy: An individual's confidence and belief that he or she can complete required technology-relevant tasks (Jeong & Kim, 2017).

Theme: Described “fundamental concepts” that may include multiple constructs but focus more globally on a shared idea (Ryan & Bernard, 2003, p. 87).

Significance of the Study

The purpose of this study was to explore K–12 teachers’ perceptions of factors that influence technology integration within the VASD. This study of technology underutilization among VASD teachers could be useful to VASD administrators, school board members, and teachers. The VASD administration could find this study useful because it helps identify specific needs for improvement and brings awareness to teachers’ feelings toward technology, which may impact their application of technology in their classrooms. Board members may find this study helpful for making financial plans and decisions in purchasing future technology tools and user agreements. Studying technology usage among VASD teachers was previously useful to teachers. Previous surveys completed by VASD teachers brought about awareness of other teachers’ feelings and attitudes toward technology use, which led to networking among teachers. Networking served as a basis to potentially develop future technology collaboration among grades and/or buildings.

Previous studies have indicated that technology implementation is facilitated when teachers have hands-on experiences (Meritt, Gibson, Christensen, & Knezek, 2013; Wing Fat Lau & Hoi Kau Yuen, 2013), continuing professional development (Cooper, 2014; Hu & Garimella, 2017; Thurlings & Den Brok, 2017; Wing Fat Lau & Hoi Kau

Yuen, 2013), and relevant technology training (Güven & Yilmaz, 2016; Hu & Garimella, 2017).

Through this study, I developed an increased understanding of how perceptions influence teachers' technology use and, in so doing, added to the collective awareness of themes that could lead to the successful implementation of major technology initiatives in the VASD. The results of this qualitative study will be made available to VASD administrators and principals to bring clarity to how teachers' perceptions influence technology usage and classroom integration. According to De Bruyckere et al. (2016), experiential learning resulted in increased technology usage among teachers and resulted in confidence in using a new tool (Darban & Polites, 2016). Possible positive social changes could occur when school funds utilized for education technology result in widespread acceptance and utilization by teachers and their students. The myriad undesirable education consequences related to the underutilization of technology tools among teachers that have been presented in this section will continue in the VASD if the problem goes unaddressed.

Research Questions

Technology has the capability to benefit learners and educators when properly implemented in the learning environment. The VASD K–12 teachers are not embracing the full potential of available technology tools. Historically, technology has been underutilized among VASD teachers. I designed the research questions that guided this study to explore and better understand teachers' perceptions of factors that influence

technology utilization through the lens of the unified theory of acceptance and use of technology (UTAUT; see Venkatesh et al., 2003). This study may bring awareness of the problem of technology underutilization among VASD teachers and may facilitate new collaborations between administrators and teachers for improved technology integration in the future.

RQ1: How do K–12 teachers perceive their levels of performance expectancy when integrating new technology in their lessons in the VASD?

RQ2: How do K–12 teachers perceive the level of effort required when integrating new technology in their lessons in the VASD?

RQ3: What social influences are perceived by K–12 teachers in the VASD when integrating new technology resources?

RQ4: What facilitating conditions are perceived by K–12 teachers in the VASD when integrating new technology resources?

Review of the Literature

While the preponderance of the literature review was focused on recent, peer-reviewed journals, I did not rule out the review of relevant dissertations and conference proceedings. I accessed the following databases through Walden University's and VASD's online libraries to search for current articles related to technology usage among teachers: EBSCOhost, Educational Resource Information Center, ProQuest, and Sage Publications. Search terms included: *teachers' perceptions of technology, teacher technology training, technology integration, learning management systems integration,*

and *teacher technology usage*. Technology integration efforts in K–12 settings have been previously studied in hopes of improving pedagogy and related student outcomes. Topics covered in this review of literature include the conceptual framework and how it informs to the study. Tenets of the conceptual framework served as a basis for themes of the literature review, focusing on challenges of technology integration in schools after recent studies about technology integration in schools were presented. Additionally, relevant public information related to the problem of technology integration in schools is presented.

Conceptual Framework

The UTAUT was developed by Venkatesh (Venkatesh et al., 2003) to identify behavioral factors that influence an individual's technology usage, including performance expectancy, effort expectancy, social influence, and facilitating conditions. These four tenets of UTAUT are further described in the following subsections. The UTAUT has been used in technology-related studies to help determine factors that influence educational technology integration. The UTAUT continues to aide researchers in identifying one or more of the key constructs that impact the decision to use or not use technology, which leads to programs and technology trainings for teachers (Ashari, Azmi, Yaacob, Alshurdin, & Low, 2018; Batane & Ngwako, 2017; Eutsler & Antonenko, 2018).

The tenets of the UTAUT. The conceptual framework of this study is based on the UTAUT (Venkatesh, 2000; Venkatesh et al., 2003). In the UTAUT, four tenets were

posited to influence the acceptance and use of technology, including (a) performance expectancy, (b) effort expectancy, (c) social influence, and (d) facilitating conditions (Venkatesh, Thong, & Xu, 2012). Performance expectancy is the user's perception of usefulness of the technology tool, and Venkatesh et al. (2012) found that this tenet was the most significant construct in the UTAUT. Effort expectancy is the perceived ease of using a technology tool (Venkatesh et al., 2012). The social influences construct includes organizational support of technology (Venkatesh et al., 2012). Finally, facilitating conditions are defined as "the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system" (Venkatesh et al., 2012, p. 453). I used the four tenets of UTAUT to formulate the four qualitative research questions for this study.

Recent research utilizing UTAUT. The UTAUT was used as the conceptual framework for the studies of Batane and Ngwako (2017) and Kabakci-Yurdakul, Usavas, and Becit-Isciturk (2014) that analyzed influential technology variables among preservice teachers. Infusion of technology into curricula was found to be limited to an educator's confidence, willingness, and ability to use technology tools (Kabakci-Yurdakul et al., 2014). Inadequate resources, lack of social influences (i.e., mentors; Evrim, 2016), lack of performance expectancy, and nonnecessity were reasons cited for technology underutilization among preservice teachers (Batane & Ngwako, 2017).

The UTAUT has been the framework for previous studies examining technology use among teachers. Maruping, Bala, Venkatesh, and Brown (2017) used the UTAUT as

the foundation for identifying and testing factors that contribute to behavioral expectations as predictors of technology use. The UTAUT was also the conceptual framework for studies examining self-efficacy among bloggers (Bumbuardner, Strong, Murphrey, & Dooley, 2014). Tosuntas et al. (2015) examined constructs of the UTAUT that influenced high school teachers' acceptance and use of interactive whiteboard. According to the UTAUT, technology is more likely to be used when people understand how the tool will be beneficial to the user (Batane & Ngwako, 2017).

How the framework informed the current study. Barriers exist that impede technology use among teachers in the VASD. The UTAUT framework provides four tenets that theoretically influence the acceptance and use of technology (Venkatesh, 2000; Venkatesh et al., 2003). I incorporated the four tenets of the UTAUT into the research questions for this study to explore teacher perceptions related to UTAUT acceptance and behavioral intentions, which, in turn, influence teacher use of technology (see Rucker & Frass, 2017).

Review of the Broader Problem

Introducing new technology for educational use comes with challenges. According to Maich et al. (2017), teachers who lack confidence are hesitant to use technology. Teachers become overwhelmed, anxious, and frustrated using technology, and past experiences influence a teacher's decision to integrate technology in their curriculum (Darban & Polites, 2016). A recurring theme in the literature is that technology training that is focused on helping teachers develop their technology skills,

regardless of past experiences, increases their acceptance and utilization of technology (Brown, Englehardt, & Mathers, 2016; Mouakket & Bettayeb, 2015; Sumak et al., 2017; Varnell, 2016). In addition, the corollary of ineffective technology integration is that educators have historically been expected to integrate new technology with little training (McKnight, O'Malley, Ruzic, Horsley, Graney, & Bassett., 2016; Riel, Lawless, & Brown, 2016). Aligned with the conceptual framework for this study, the topics covered in this subsection of the review include recent research that has addressed this problem, the facilitation of technology usage among teachers, effort expectancy of teachers when using technology, social influences of teachers' use of technology, and performance expectations of teachers when they use technology.

Recent studies addressing technology integration in education. The combination of traditional learning strategies with new technology devices have yielded improved learning achievement (Reigeluth. Beatty, & Myers, 2016). However, measuring the effectiveness of technology integration comes with challenges and criticism. Some researchers (i.e., Handal, Cavanagh, Wood, & Petocz, 2011; Huzzie-Brown, 2018) suggested technology integration should be measured by how willing teachers are to embrace technology in their classes. A multicase qualitative exploratory study conducted by Vu and Feinstein (2017) revealed that an implementation initiative led to dissatisfaction and middle school teachers abstaining from using technology tools. Failure to integrate the technology programs resulted in financial losses for the school district (Vu & Feinstein, 2017), a situation that has also occurred at VASD.

Ruggiero and Mong (2015) used a mixed methods approach to explore teachers' perceptions of usefulness of technology and teacher technology integration. Their study had 1,048 participants who were surveyed and 111 interviewees, all of whom were K–12 teachers. The findings recommended increasing professional development "aimed at technology integration" because "many teachers are still struggling to achieve meaningful technology integration within their classrooms" (Ruggiero & Mong, 2015, p. 175). Teachers were more likely to integrate technology when intentions and benefits were easily identified (Ruggiero & Mong, 2015).

Facilitating conditions of teachers' use of technology. Recent studies found that teachers lack technical support and training for technology tools (Hsu, 2016; Karsenti, 2016; Rucker & Frass, 2017). Teachers cited structural constraints as a barrier that impeded their technology integration (Buchanan, Sainter, & Saunders, 2013, p. 1). In one case, teachers engaged in a 100-hour professional development program designed to train teachers in technology integration of science, technology, engineering, and mathematics (Hu & Garimella, 2017). Upon completion of the professional development program, participants reported positive feedback, improved technology skills, higher motivation to learn new science, technology, engineering, and mathematics (STEM) activities, and becoming more confident psychologically (Hu & Garimella, 2017). The technology training program relieved fears through project-based learning activities.

Brown et al. (2016) examined teacher-in-training education programs and found that students often have more experience using instructional technologies, like iPads, and

preservice teachers should not be assumed to have prior experience using new technology. Like Hu and Garimella (2017), these researchers noted that teachers-in-training who completed technology courses had increased confidence and more positive attitudes toward using and implementing instructional technologies. Teacher self-efficacy toward technology utilization is important because as Alasela et al. (2016) reported, positive attitudes toward learning technology positively influenced learning outcomes.

Professional development offered teachers opportunities for teachers to experiment with technology tools (Güven & Yilmaz, 2016). Wing Fat Lau and Hoi Kau Yuen (2013) provided a description of effective professional development. According to the authors, the five essential components included a primary focus on examined topic, hands-on learning, coherence, length of program, and engaged participation. Güven and Yilmaz (2016) suggested a progression through five stages is needed to avoid a misapplication of technology among teachers. The progression included "familiarization, utilization, integration, reorientation and evolution" (p. 37). Regardless of the technology being offered, a needs assessment was recommended as beneficial to identify the needs of teachers and implement short-term and team-based technology training based on actual needs (Maich et al., 2017).

Effort expectancy of teachers using technology. Karsenti (2016) conducted a study of Interactive Whiteboard (IWB) use among Canadian teachers. The reasons teachers cited for their rare use of IWB included extensive effort and a necessary investment of their personal time required to learn how to use the new IWB technology.

Karsenti recommended in-service, hands-on trainings and teacher-group training before implementing IWB in the classroom. According to Burrell, Cavanagh, Young, & Carter (2015), a team-based approach to learning is "more than two people with different expertise working together to produce a collective outcome" (p. 754). Several researchers have emphasized the importance of team-based or group training in the professional development programs for technology integration (Hsu, 2016; Hu & Garimella, 2017; Thurlings & Den Brok, 2017).

Social influence of teachers using technology. Social influences affect technology usage among teachers. Rucker and Frass (2017) found that gender did not influence determining online learning technology tool usage in their study of BB Vista and Desire2Learn LMSs. Faculty members "indicated that the support and training level was low because the university did not provide multiple opportunities to attend training" (Rucker & Frass, 2017, p. 272) and recommended that offering multiple training times would be beneficial. Allen (2015) proposed in-service teacher trainings to "fill the training gap in 'top down' initiatives to introduce technology in schools" (p. 21). This finding compliments Hsu's (2016) report of obstacles that influenced teacher integration of technology, and especially the first two. Hsu's four obstacles to technology integration by teachers included (a) lack of training, (b) lack of time, (c) lack of technical support, and (d) lack of student skill. Providing bridges for overcoming the first two obstacles would help to mitigate the negative effects of the remaining two obstacles.

Mitchell et al. (2016) found that teachers with more experience (identified as number of years teaching) used technology less than teachers who have fewer years of experience. Students enrolled in high school expect teachers to use technology (Starks, 2015). As per their findings, the researchers recommended making more technology equipment available for teachers to use as well as increased funding to purchase and support training for technology. However, their findings showed that technology availability and accessibility were not indicators of teacher usage. Technology usage and effective technology integration should not be assumed to have equivalent meanings (Mitchell et al., 2016).

Performance expectations of teachers using technology. Teachers' effective and efficient use of technology integration resulted in reported positive learning outcomes (De Bruyckere et al., 2016). Implementation of technology was determined by teachers' willingness to initiate change in curriculum and their motivation to learn new skills (De Bruyckere et al., 2016). Teacher technology usage increases when teachers perceive technology as useful in their classroom (Hsu, 2016). According to Copper and Semich (2014), teachers perceived YouTube training videos as an effective technology tool that helped them generate higher-order thinking lessons for students, which strengthen problem-solving skills and promote critical and creative thinking.

Thurlings and Den Brok (2017) studied learning outcomes of peer teacher professional development in which teachers learn from one another through collaborative activities. They found that these peer-learning opportunities lead to professional growth

and collective development outcomes. The team-based approach curriculum design was beneficial to teachers in curriculum development and enabled the sharing of teachers' ideas to collectively build online lessons (Burrell et al., 2015). Recent studies examining teacher self-efficacy found that teachers are motivated to learn and retain new technology skills when they understand how the technology will be applicable to their students and beneficial to their classrooms (Hsu, 2016; Proctor & Marks, 2013; Roblin, Tondeur, Voogt, Bruggeman, Mathieu, & van Braak, 2018; Tondeur, Braak, Ertmer, & Ottenbreit, 2017; Wang & Wu, 2015). Learning how to use a new technology tool is more effective through experiential learning to better understand how technology will benefit the teacher (Britt, 2015).

Relevant public information related to the problem. The Every Student Succeeds Act (ESSA) of 2015 replaced the No Child Left Behind Act of 2002 (U.S. Department of Education, 2019). The ESSA aids in implementing successful strategies developed by school districts that best fit the needs of teachers and their students (U.S. Department of Education, 2019). Aligned with the ESSA, the National Education Technology Plan was released in January of 2017 through the U.S. Department of Education that recognizes the significant impact technology has on learning outcomes. The U.S. Department of Education requires teacher training programs to focus on technology integration to prepare future teachers to actively use technology that precipitates learning (Stokes-Beverly & Simoy, 2016). The National Education Technology Plan Update (U.S. Department of Education, 2017) stated that educational

stakeholders must collaborate with educators to improve technology implementation within our schools.

While policies have been written and legislation has been passed to mandate technology integration, as has been demonstrated through literature and locally, teachers are still reluctant to integrate technology that has the potential to positively influence their learning environment and student outcomes. The broader problem related to this study means that teachers are not utilizing technology that was purposely designed to facilitate development and delivery of curricula that offers student engagement and reinforces learning, while offering effective time-saving teaching practices.

Implications

Teacher perceptions are important to successful technology integration within a school. Teachers' perceptions of how and why technology is used influence their decisions on technology integration in their classroom (Mouakket & Bettayeb, 2015). According to Frost and Durrant (2013), effective training programs are developed with the teachers' thoughts, ideas, and opinions taken into consideration. Strategies for easing the technology integration process may be developed based on participants' responses related to their technology perceptions. Through the research questions, I gained an understanding of how teachers perceive the level of effort required to use technology, social influences that affect technology integration, their level of performance when integrating technology, and facilitating conditions that affect new technology integration.

Technology-related recommendations will be made to administration based on the findings of this study. Initial project genres considered appropriate for this study included professional development to facilitate teacher efficacy for using technology and a position paper to present, discuss, and offer suggestions to mitigate education barriers to technology integration within the VASD. As discussed in Section 3, my better understanding of the phenomenon that resulted through the data collection and analysis within the context of VASD, combined with a new apparent reality of remote working for teachers due to the Coronavirus pandemic resulted in the eventual project genre that was selected, a remotely facilitated 3-day professional development training to increase teacher efficacy for embedding technology in their instructional programs.

Summary

In the first part of Section 1, evidence of underutilization of technology was identified as a local problem within the VASD and mirrored as a wider education problem in the literature. The VASD was described as a socio-economically deprived school district in a rural northeastern state. The rationale section discussed existing evidence to demonstrate previous underutilization of technology tools within the VASD. Definitions of relevant terms were provided and operationalized for the study. The significance of the study was discussed and identified the purpose and potential benefits resulting from the study and project. Possible social changes included better integration of technology and more effective budgeting for technology resources and training at the local level. Finally, how the research questions were developed was explained in terms of

the need to explore teachers' perceptions to better understand factors of technology integration through the lens of the study's conceptual framework.

My review of literature began with details of data bases and search terms used in the literature review. The study's conceptual framework, the unified theory of technology acceptance and use, was presented. The theory's four tenets were presented, recent research that used the theory was presented, followed by an explanation of how the framework informed the study. In the literature review, I explored the broader problem in terms of factors from recent research that positively and negatively influence technology integration among teachers. Some of the factors included teachers' attitudes toward technology related to their willingness to learn and use new technology, time needed for learning technology sufficiently to integrate it into lessons, and teachers' perceived value of using technology. Research was also presented that identified barriers that impede technology use among teachers and a common theme was the need to implement beneficial training to develop technology skills to facilitate the acceptance of new technology. Finally, project implications were discussed based on what was learned through my research and development of Section 1, combined with possible findings that were predicted from my data analysis.

Key points from this section were that technology underutilization, while not an uncommon problem, can be overcome in schools with proper prior planning, training, and ongoing support for teachers to integrate and use technology. The remaining major components of the study include the research methodology (Section 2), an overview of

the project that was developed based on my findings (Section 3), and my reflections based on having completed the project study and research process (Section 4). The resulting project (Appendix) is a stand-alone professional development package for teachers in VASD that I created in response to my research findings.

Section 2: The Methodology

In this study, I employed a basic, qualitative, descriptive design to explore VASD K–12 teachers' perceptions of factors that influence technology integration through the lens of the UTAUT. The primary data collection strategy was open-ended interviews to generate rich, descriptive data from participants (see Creswell, 2015; Merriam, 2009; Merriam & Tisdell, 2016). This section contains an explanation of how and why the approach used was best suited for this study. I also discuss the participants for the study, the data collection and analysis plans, and data analysis results.

Qualitative Research Design and Approach

I used a basic, qualitative design to explore teachers' perceptions of factors that influence technology integration in K–12 education in the VASD. Qualitative studies are common in education (Merriam & Tisdell, 2016). In a basic qualitative study, "the overall purpose is to understand how people make sense of their lives and their experiences" (Merriam, 2009, p. 23), whereas quantitative research is "based on the belief that knowledge is preexisting, waiting to be discovered" (Merriam & Tisdell, 2016, p. 23). Furthermore, quantitative research relies on gathering numeric data that represent variables of interest and then subjecting those data to statistical analysis to discover significant relationships or differences (Creswell, 2015).

After examining different types of qualitative, quantitative, and mixed methods research designs, I concluded that the exploratory nature of this inquiry combined with potential access to participants and related data aligned best with the criteria and goals of

a basic, qualitative research design. In this study, I explored K–12 teachers' perceptions of factors that influence technology integration in the curriculum so that relevant themes emerged and then made recommendations for addressing the research problem based on the findings. The purposeful sampling and semistructured interviews of teachers from theVASD were used.

Participants

I invited a purposeful sample of Pennsylvania-certified teachers employed by the VASD during the failed BB initiative (2008–2011) to participate in this study. Purposeful sampling is most appropriate when the researcher's aim is to gain a better understanding of a specified group's perspective (Merriam & Tisdell, 2016). . The delimitation teachers who were employed during the BB initiative provided an opportunity for them to share their past and current technology integration experiences and perspectives of technology use at the VASD. Once I obtained a partnership agreement from partnering schools and approval from Walden University Institutional Review Board (IRB) to commence collecting data, I then sent an e-mail invitation with the consent form that explained the nature of the research with a solicitation for voluntarily participating in the study.

Only teachers who met the previously mentioned eligibility criteria received the initial e-mail from me. The first three teachers from each of the four VASD schools who agreed to participate in the study constituted the sample for the study. When fewer than three teachers per building responded, then I sent a second e-mail inviting teachers who had been employed for 5–10 years with the VASD. A final e-mail invitation was sent to

teachers who had been employed less than 5 years with the district until a minimum of 12 teachers volunteered to participate. Conducting 12 individual, face-to-face interviews with the participants using the open-ended questions presented in the interview plan allowed me to collect in-depth, rich data reflecting the teachers' perceptions of their experiences with technology utilization in the VASD (see Bogdan & Biklen, 2007).

Data Collection

According to Merriam and Tisdell (2016), interviewing is a systematic process that is essential when the researcher cannot observe feelings. In this study, I asked selected teachers to participate in semistructured interviews to explore their perceptions about factors that influenced their integration of technology. Interviews provided perspectives from various grade-level teachers within the VASD. Interviews were held at the convenience of the participant in their classrooms. Each interview was audio recorded, and the resulting recordings were stored in a secure location.

In qualitative research, triangulation is the process of increasing the validity of findings by corroborating themes using multiple data sources (Creswell, 2015). According to Shenton (2004), triangulation can also be achieved through multiple accounts of similar perceptions or experiences. Accordingly, I achieved triangulation through interviewing multiple teachers who teach different grade levels and work in different buildings within the VASD (see Shenton, 2004). Educational research requires the researcher to work closely with the participants and attempt to understand the participants' experiences (see Lodico et al., 2010). While interviewing, I observed the

participant teachers' classrooms for artifacts related to the phenomenon under study (see Creswell, 2015): the integration of technology in education. When it was appropriate as led by teacher responses, I sought evidence for triangulation by asking teachers to share physical classroom artifacts they had access to. I also highlighted in my field notes any references to pertinent policy or procedure documentation that served as an artifact for the study.

Interview Protocol

I designed the interview questions included in the interview protocol to delve deeply into the phenomenon of teacher perceptions and experiences related to technology utilization to eventually respond to and answer the research questions posed in this study. The participants were asked each of these questions during the in-depth, one-on-one interviews. The sufficiency of the interview questions to answer the research questions was established by limiting the interview protocol to seeking perceptions and experiences related to the UTAUT tenets of self-efficacy, satisfaction with technology capability, social influences that affect their technology use, and barriers that impede technology use. The interviews were digitally audio recorded and later transcribed. I also utilized field notes to record major points of interest and help guide the interviews based on topics that emerged in the process (see Bogdan & Biklen, 2007).

Building Participant Rapport

To help establish the researcher-participant working relationship, I began each interview with a review of participants' rights, including the voluntary nature of their

involvement in the study and assurances of the anonymity of their responses and shared artifacts. I explained that all participants would be assigned a participant number that would be assigned a pseudonym to protect their identity. I went over my responsibilities as a researcher and offered the participants the opportunity to ask any questions of me prior to the commencement of the study. The interview commenced only after a comfortable, professional rapport had been established with the participant.

Role of the Researcher

I am a technology education teacher in the VASD middle school. I had no supervisory position or held any authority over the teachers who participated in this study. Participants had their rights explained to them and completed an informed consent to participate in the study. The anonymity of participants was maintained by assigning them pseudonyms during interviews that were used during data analysis and participant numbers that were used when reporting the data. I had completed National Institutes of Health online training for the protection of human participants in research prior to the completion of the research proposal.

Data Analysis

I began collecting data through interviews after I received IRB approval for the study (IRB Approval # 09-26-19-0305113). I introduced myself, explained the purpose of the study, and provided a copy of the superintendent's approval letter to each building principal prior to recruiting participants.

The data analysis process began with the data transcription and continued through member checking and thematic analysis (see Creswell, 2015; Lodico et al., 2010). Combined with my field notes, the transcription process was my first in-depth review of the participants' interview responses. To increase validity and reliability, I conducted member checking by asking participants to read the transcribed interviews and suggest any corrections that would better convey their perceptions (see Creswell, 2015; Lodico et al., 2010). All participants confirmed via e-mail that they reviewed and approved the transcribed interviews. I then re-read and listened to the recorded interviews to analyze the data. TEMI.com was used to transcribe the interviews. Themes were unpacked through this read, re-read analytic process (see Creswell, 2015; Lodico et al., 2010). Further analysis of the interviews occurred through the use of lean coding and in vivo coding of transcripts (see Creswell, 2015).

Lean coding is the process of grouping together participants' responses, words, and phrases into categories (see Lodico et al., 2010). In qualitative research using interviews, lean coding allows the researcher to combine various categories of codes into themes (Saldana, 2008). In vivo coding uses direct quotes in the form of recurrent words and phrases used by interviewees (Creswell, 2015). This method of coding preserves the participants' language and helps provide the emotional tone in the participants' responses (see Creswell, 2015). I sought direct quotes that exemplified categories to provide credibility and dependability to my in-depth analysis, as suggested by Creswell (2015).

To avoid bias, I maintained awareness of standard methods for conducting qualitative interviews, reminded participants of their consent rights upon initiating all meetings or communiques, and used member checking to validate the accuracy of the participants' responses. Main themes were analyzed, and repeating subthemes were evident (see Long, n.d.). Themes reflect the highest level of ideas that emerge from multiple-participant thematic analysis (Ryan & Bernard, 2003). When I ascertained that no new themes were unveiled from the data, analysis was concluded.

In qualitative research, discrepant cases present conflicting evidence from multiple participants (Merriam & Grenier, 2019). Any discrepant cases would have been identified and analyzed to build the trustworthiness of the research process. Participants' responses varied, but no discrepant (i.e., contradictory) cases were identified.

Recruitment

Upon receiving approval from the Walden University IRB, I sent an e-mail to teachers listed in the 2018–2019 VASD directory. The e-mail included an invitation to participate in a research study, a description of the purpose of the study, an explanation of the approval of a partnership agreement, an explanation of volunteer recruitment, and an attached informed consent form. Newly hired teachers for the 2019–2020 school year were not sent the e-mail. The building principals were copied on the e-mails but were not invited to participate. The first three teachers from each building (i.e., the prekindergarten through second grade building, the third through fifth grade building, the sixth through

eighth grade building, and the ninth through 12th grade building) to respond with their consent were recruited to participate.

Participants reviewed the informed consent and were given the opportunity to ask any questions before giving consent. Eleven of the 12 participants provided electronic signatures to the informed consent, and one participant signed a paper copy of the informed consent form; therefore, all participants acknowledged informed consent either by electronic or physical signature.

Interviews were scheduled at the convenience of the participant. I informed the teachers that the interviews would be held in each of their classrooms to make them comfortable (see McGrath, Palmgren, & Lilijedahl, 2018). Students were not present during interviews. Communication while scheduling and conducting the interview built a rapport between me and the participants. Rapport is crucial to build trust and understanding that the researcher values participants' thoughts and beliefs (Churches & Terry, 2007).

Participants were assigned a number to protect their identity. Prior to beginning interviews, I read the informed consent out loud. Participants acknowledged verbally that they understood that their participation was voluntary, they had the right to decline to answer questions and the right to no longer participate, and that the interview would be audio digitally recorded. Upon participants' acknowledgement that they understood their rights, had no further questions about their participation, and verbally confirmed that I reviewed the informed consent, I began the interviews.

Semistructured interviews are frequently used in educational research to gather rich, descriptive data (Creswell, 2015). Interviews were digitally recorded and stored in a secure location in the researcher's house. Walden University's IRB approved the use of TEMI.com to transcribe interviews. I selected TEMI.com due to its proficiency, cost-effectiveness, and stringent privacy statement.

I listened to the recorded interviews multiple times to help with my data analysis. First, I listened to the recorded interview while reading the transcribed interview to make any corrections to wording or spelling. I again listened to the recorded interviews while reading the revised transcript while jotting notes on possible themes. This process allowed me to listen to the interviews from a researcher's perspective, other than from an interviewer's perspective, helping to avoid bias. Reading and re-reading a transcribed interview gives credibility to the data and promotes authenticity of data (Sargeant, 2012).

Interviews

Interview transcriptions were e-mailed to individual participants. Member checking provides validation to ensure accuracy of the transcribed interview and increases reliability (Creswell, 2015). Participants were asked to review a copy of their verbatim transcribed interviews and asked to confirm the validity of their responses. All 12 participants participated in member checking and electronically confirmed the accuracy of the transcribed interview.

While reviewing coded interviews, themes emerged creating a need to clarify three participants' responses. I sent individual e-mails to the three participants to ask for

further explanation of technology experiences based on their interview responses. An additional theme emerged that required additional data from the VASD technology coordinator. An e-mail requesting information about monitoring available technology was sent to the VASD technology coordinator. The VASD technology coordinator's e-mail response was included as data for the study.

Data Analysis Results

This section includes the procedures taken for analyzing data. It explains how data were organized and the procedure for theme development. Themes are defined in this section to explain how I interpreted the meaning of each category and code. This section provides data analysis results of teachers' perceptions of technology related to performance expectancy, effort expectancy, social influences, and facilitating conditions that influence technology integration, in accordance with the study's conceptual framework and research questions.

Qualitative data were collected from 12 K-12 teachers' during one-on-one interviews. Recorded interviews were uploaded to my password-protected, personal computer. I listened to the interviews without the transcriptions, then again reading the transcribed interviews. Next, I read the transcribed interview, highlighting and underlining important words or phrases. Analysis of the interviews was completed through reading and re-reading transcribed interviews, and through lean coding. Recurring words were used to categorize teachers' responses into themes.

I organized the interview questions and responses, assigning categories to interview questions. Categories included usefulness, effort, social influences, tech support, facilitating conditions, needed past support, challenges, and influences to tech use. As I read transcribed interviews, I took notes on each category using color-coded ink for each participant. These notes were then categorized according to: prekindergarten through second grade, third through fifth grade, sixth through eighth grade, and ninth through 12th grade responses. This method of organization allowed me to look at all participants' responses to the same interview question and code their responses. Responses were coded and emerging themes reviewed multiple times. Categorizing responses according to interview question and again by participant's building helped ensure my data analysis.

Validity and Reliability

A qualitative study should be both valid and reliable (Creswell, 2009). Member checking strengthened reliability and enhanced the validity of data. Member checking allowed participants to review their transcribed interviews for accuracy. In vivo coding was used for reliability; using direct quotes from participants' responses ensured a nonbias approach to analysis of data. Themes were identified and presented in the following section.

Qualitative data were collected from 12 K-12 teachers' interviews. Analysis of the interviews were completed through reading and re-reading transcribed interviews, and lean coding. Recurring words were used to categorize teachers' responses into themes.

Defining themes provides data analysis of teachers' perceptions of technology utilization in terms of performance expectancy, effort expectancy, social influences, and facilitating conditions that influence technology integration. Each participant was assigned a number to ensure anonymity and organize data. Table 1 displays participant number, years of VASD teaching experience, and categorized grade level taught according to building. Average years taught in the ninth through 12th grade building was 17 years, sixth through eighth grade was 12 years, third through fifth grade was 11 years, and prekindergarten through second grade was 10 years.

Table *1*

Participants' Teaching Experience and Location

Participant	Range of years teaching	Building by grade
P1	10-19	9^{th}-12^{th}
P2	10-19	9^{th}-12^{th}
P3	20+	9^{th}-12^{th}
P4	0-9	6^{th}-8^{th}
P5	10-19	6^{th}-8^{th}
P6	10-19	6^{th}-8^{th}
P7	0-9	3^{rd}-5^{th}
P8	10-19	3^{rd}-5^{th}
P9	0-9	3^{rd}-5^{th}
P10	0-9	PreK-2^{nd}
P11	0-9	PreK-2^{nd}
P12	20+	PreK-2^{nd}

Defining Themes

The coding process began with highlighting words and phrases from participants' responses, listing recurring patterns, and identifying codes. Similarities in participants' interview responses were categorized and coded. After revisiting the data multiple times, I developed a better understanding of the codes that were then interpreted into themes. Defining themes minimizes the risk of potential assumptions to be made by myself and

the stakeholder when reporting the data (Ellicott, 2018). Defining themes allowed me to understand the relationship between the theme and the research questions. Themes were identified from each research question, and similar threads connected themes. The overarching themes and subthemes are explained and presented in the following thematic discussion.

Performance expectancy – RQ1. The performance expectancy construct derived from the first tenant of the UTAUT conceptual framework and was also reflected in the first research question that sought to unpack themes related to teachers' perceptions about their performance expectations when integrating new technology into their lessons. Teachers' perceptions of how useful a technology tool is or will be to their pedagogical performance influenced their decisions to use or learn how to integrate technology, and this was the first overarching theme found in my study. In addition, three subthemes emerged from coding participants' responses related to performance expectancy. These influencing performance expectancy subthemes included expectations for student engagement, occupational expectations, communication, and other beneficial outcomes.

***Expectations for student engagement*.** All 12 participants expressed perceptions that technology promotes student engagement. Student engagement refers to the level of interest as displayed through interaction, attentiveness, or degree of active involvement in classroom participation (Taylor & Parsons, 2011), and is a performance expectation for teachers. Teachers integrate technology tools with the expectation of increasing student engagement.

My observations; separate from my participant interviews, confirmed that SmartBoards were present in classrooms of all 12 participants. This technology was also referenced by participants during the interviews. SmartBoard is a technology tool that allows teachers to project lessons on an interactive white board. Teachers can create interactive lessons or use an existing lesson available for download from the free online SmartBoard Exchange, sharemylesson.com (Weingarten, 2020). SmartBoards increase student engagement by offering opportunities for students to participate in hands-on learning experiences. The research participants took ownership of the SmartBoards in their classroom, as evidenced by referencing to the technology tool as "my SmartBoard" and explained the integration of "their SmartBoard" in curriculum on a daily basis. P9 described students as "zoning out" during lessons without the SmartBoard; "Where on the SmartBoard, it's different. It's getting them up there and getting them to use it." There was an overwhelming consensus that using SmartBoard gives students a more interactive approach to learning.

All participants remarked that using technology in general increased student engagement. Using online software, websites, creating digit projects used as subject-specific assignments, and having access to iPods and laptops increased student engagement, reported sixth through eighth grade teachers. For P4, using the SmartBoard in class engages students and eliminates paper waste. An environmental eco-friendly benefit of using the Smart Board was cited by other participants, as well.

P6 reported the usefulness of technology in creating a classroom with less paper waste. P6 described one benefit to using technology in the classroom as, "Nice for me to not have all the paper copies. It keeps our room much neater, performing the tasks on the computers." Upon entering, P6's students see a Bell Ringer activity on the SmartBoard. The Bell Ringer is used as introductions to each class. While the teacher is taking attendance, a short assignment is for students to complete a warm-up activity or review of the previous day's lesson. The students use a laptop or sign into their online notebook to complete the Bell Ringer. The assignment is then directly uploaded for the teacher to review and used to gauge students' understanding of concepts that were covered in class. The use of online Bell Ringers streamlined the submission process and allowed the teacher to provide quick feedback, while eliminating excessive papers. Another third through fifth grade building participant agreed, stating it was "nice for me not have all the paper copies. It keeps our room much neater, performing the tasks on the computers."

P5 felt that giving students opportunities to use technology enhanced lessons, engaged students, and provided hands-on learning experiences that facilitates a fun learning environment. P12 stated, "Students love any time they can use technology, they just love it, they eat it up." Providing engaging educational activities, as described by P5, "That's part of my job."

***Occupational expectations*.** The educators who participated in this study conveyed feelings that technology use among teachers is expected, not just in the VASD, but in the profession. Occupational expectations refers to the presumptions associated

with teaching as a career; assumed teaching responsibilities. To maintain licensures and professional certifications, teachers are required to participate in continuing education through professional development trainings, earned college credits, and/or approved in-services. Teachers are expected to be lifelong learners, always building on previous experiences, to gain new knowledge and skill sets that can be carried out for their students' learning benefit. The VASD teachers who participated in this study perceived technology tools as necessary and essential to support curriculum and student achievement.

Teachers perceived technology as an expected component of pedagogy and learning. All 12 participants made statements that they felt expected or required to use technology daily in their classroom. P1 stated, "It's always been expected that it's part of what I'm going to do." According to P7, technology is, "expected to be used almost every day." Using technology was described by P8 as being "part of my job." P10 described technology as an everyday part of lesson planning and communication.

Technology was useful in the development of new curriculum that P8 was expected to develop and implement. Without any example or standards to follow, P8 spent many personal hours developing and then instructing VASD teacher how to use a new and ongoing technology software without being asked by administration if she would need training. P8 felt that building principals make assumptions about teachers' technology capabilities. The occupational expectation was perceived by P8 that building

principles assumed teachers would learn how to use and implement technology using their personal time.

Included within the theme of occupational expectations was the personal time teachers dedicate to researching, lesson planning for implementation, and successful integration of new technology tools. All participants expressed that technology integration is time-consuming. As P8 described the personal time invested to better understand how technology can be used and integrated, other research participants shared the same sentiments experienced through copious amounts of personal time invested in learning new technology tools. For P12, "there has not been an invitation to use technology", but an expectation to use technology. However time-consuming and difficult, as discussed in the next section, teachers acknowledged and even heralded the benefits of technology integration for themselves and their students.

Students expect teachers to use technology and stay up to date with technology trends. P1 perceived learning how to use and implement new technology as essential for teachers, just as teachers do with any new curriculum. Learning how to use a new technology device should not be optional because as P1 stated, "progression of change is happening and if I'm not keeping up with it, that's part of my own problem." Understanding the purpose of real-world technology application was the primary influence for P3's decision to implement and use technology in the classroom. As P3 stated, "Let's make sure that what they [students] have when they walk across that stage are skills that will actually be useful to them . . . so if it isn't a legitimate reason, I won't

implement it." P7 also cited real world application as influential when deciding whether or not to use technology.

***Communication*.** Another beneficial outcome to technology use was improved communication. Participants perceived that communication improves with technology usage. P2 justified that technology has been very useful, enabling better communication between teachers and parents. When P2 started using a new online gradebook technology it was exciting because it "would allow parents to have a more active role in their child's education" and parents would be able to "work as a partner" with the teacher while monitoring their child's classwork. Communication also improved among teachers.

A new digital dashboard streamlined the communication between teachers and students. This enabled P6 to provide more meaningful and quick feedback on student assignments. The online curriculum was perceived by P6 as very beneficial, and increased communication between the teachers and students, "tenfold from what was regularly experienced in a classroom situation." Communicating between teachers through Microsoft Teams was beneficial. Related to Microsoft Teams, P10 stated, "I found it very useful." This same participant was mostly "self-taught" through experimenting with the Microsoft Teams program, and also attended a training program to expand his knowledge and skills.

Teachers' willingness to learn a new technology was perceived to be influenced by their past experiences. One participant, P3, expressed confidence in technology ability, described an advanced level of proficiency, and claimed confidence for learning

how to use new technology, as well as implement outdated technology. P3 had an extensive history of past experience using technology, professionally and personally. These past experiences seemed to increase the likelihood of teachers experimenting on their own with new technology. P3 summarized that technology was a useful part of everyday teaching, and "I can take any piece of technology and find a way to use it . . . I don't know that everybody has that ability" (P3). Overall, the teacher participants acknowledged the importance of technology and shared specific examples of how technology integration helped them achieve high standards of instructional performance.

Other beneficial outcomes. Teachers perceived technology as beneficial to themselves and their students. Other beneficial outcomes were positive educational consequences that were realized as a result of technology integration. Beneficial outcomes, identified by participants, included enhanced learning experiences, academic success, facilitated data collection, better time management, and less paper waste. The participants also acknowledged technology usage as an occupational expectation to improve their performance based on measurable student learning outcomes.

The teachers noted that technology tools in the VASD were used to collect data from students, a form of automated progress monitoring through embedded software programs. The digital scoring was praised for eliminating the need for educators to manually calculate and submit scores, collect and store raw data, or pull students for 1:1 progress monitoring. P4 perceived online technology tools as very useful in the classroom because it saved time and makes progress monitoring more efficient. The

occupation of teaching has evolved from students using textbooks, paper, and pencils into a technology-advanced learning environment where printed materials are becoming less widely used. One third through fifth grade building participant implied a high level of performance expectancy when they explained that technology does require a lot of time initially to learn how to use and set-up the tool for an individual's benefit, but those efforts save the valuable time in the long-run.

Participants perceived technology as useful and beneficial when student learning experiences were described as "fun" or "engaging" or in terms of increases in learning and retention. Teachers who recognized the beneficial outcomes of a technology tool were motivated to integrate the technology tool into their classroom. When a teacher recognizes the benefits to students and/or teachers, the technology is viewed as being useful; as evidenced when P12 described getting excited and motivated to learn how to use a new technology when beneficial outcomes are known.

One ninth through 12th grade building participant started using technology in college and continues to use it because it makes "instruction better." Improving instructional performance by a variety of measures were important considerations when weighing the decision to use technology. P1 claimed to use technology on a daily basis because of the value placed on online resources. P1 also employed different types of technology to make the educational experience better for the teacher and students. P1 compared technology to Vygotsky's concept of scaffolding (Fania & Ghaemib, 2011). Students learn new skills and build on previous tasks attained through using technology.

Primary skills are essential to master before working toward new skill levels, while technology allows teachers to guide students to achieve the next level skills.

Effort expectancy – RQ2. Effort expectancy was the second construct identified by the UTAUT framework. The second research question, therefore, sought to gain data for the exploration of VASD teacher perspectives about levels of effort required to integrate new technology in lessons. The overarching theme that emerged was that pedagogical gains are worth the effort required to learn and integrate technology. Four supporting subthemes included perceived technology benefits, worthwhile time investment, importance of self-confidence, and professional development.

Perceived technology benefits. This theme was related to advantages when implementing technology in classrooms. Teachers were motivated to learn and implement a technology tool when they perceived a benefit for their students. The perceived benefit provided motivation to invest the required time to learn the new technology integration. In short, technology tools were more likely to be integrated into lessons when teachers could reasonably expect the tool would benefit student learning outcomes. The benefits of using technology in the classroom was mentioned by participants from every building. P10 explained the level of student engagement that was evident in the classroom from technology integration. P10 stated, “As soon as you got them [students] on the computers, it’s completely something new to them, you could hear a pin drop. They were so into it.” The biggest influence in determining technology usage

for P10 was the belief that students who were introduced to technology early in their schooling would see long-term benefits throughout their academic careers.

Teachers place value on technology that was based on their perception of how the tool would benefit to their planning, time management, and student's learning experiences. P6 perceived the additional hours required to learn where and how to integrate technology as advantageous because it reduced the amount of time needed for grading and recording grades compared to a non-tech enhanced grading process. Initially, technology integration required more time and effort, but leads to increased productivity. As for SmartBoard integration, P9 stated that "it's a lot of effort, but there's a lot of benefits that go with it." P5 expressed that before using technology, there is a need to assess "whether the overall outcomes of the technology use would be beneficial for both the teacher and the students.

According to P8, integrating technology enhanced lessons; while P9 shared that classroom technology usage promoted student engagement. The benefits to student learning outcomes, student retention, and ability to maintain student's attentiveness was a recurring response from participants that influenced their choice on whether or not they were willing to try to use technology in the classrooms. P6 explained that accessibility to technology was important because "it just makes my life easier." The ability to track student progress using technology saved time.

Tests were developed and graded more efficiently when technology was used. Technology saved teachers' time compared to the outdated method of correcting

assignments and exams and recording grades. Technology tools, such as ExamView, abated the grading process. According to P12, the time required by teachers during the school day to complete routine pedagogical tasks (i.e. lesson planning, progress monitoring, grading, and evaluating) was mitigated with technology implementation. Technology usage saved time and led to more productivity with less effort (P4, P6, P7). Technology usage streamlined the progress monitoring and student data analysis processes in P6's classroom. Technology provides differentiated learning opportunities that are more readily individualized to meet the needs of the learner.

P5 cited availability of resources as the number one reason in determining technology usage. Having technology that is consistently available was crucial to technology integration. When referring to outdated laptops and iPads, P10 stated, "It's hard to integrate things when you don't have the resources." P10 shared a personal experience when a lesson was planned that required students to use laptops. When none of the laptops worked, an alternate lesson plan had to be implemented at the spur of the moment.

Worthwhile time investment. All participants expressed that learning how to use technology is excessively time consuming, but worth the time invested. Teachers use personal time to research new technology that would benefit their classroom and practiced ways to integrate technology. The extra time and effort invested to self-teach before implementing is crucial, because "A technology tool is worthless if not implemented correctly" (P3). As per P3, "If you don't know how to use [technology],

you can't implement it." According to P4, technology integration makes teaching responsibilities "easier in the long run" and the effort taken to initiate learning is a beneficial commitment. Initial investment in any extra time or effort is prudent for future use.

Often overlooked is the extra time and effort a teacher invests to locate digital resources and appraise the value of a tool's usefulness. Teachers not only have to learn how to use and implement a technology tool, but also determine if the tool is appropriate, adaptable, and fits the needs of the learners. P2 explained that another timely investment is in the area of mentoring other teachers in technology; not every technology learning curve is the same. Teaching other teachers about a new software available and then how to use it requires additional hours that exceed the daily required after-school professional development time.

Another example of a perceived difficult time requirement to integrate technology was mentioned by P12, referring to when teachers have to familiarize themselves with technology that was not invented or available for them to learn when they were taking college courses to prepare them to become teachers. Teacher training programs are developed to teach current technology integration; however, technology evolves quickly and as technology evolves, teachers are expected to adopt new technology tools.

P5 perceived technology integration similar to lesson planning and as part of teaching responsibilities. P1 shared the sentiment that technology was a pedagogical tool that has become part of our culture of learning. Locating, learning, and implementing

new technology resources was not viewed as extra work by P1, but something that is expected of teachers.

Teachers were amenable to the strenuous undertaking of technology implementation when they were aware of beneficial outcomes to themselves and/or their students. One participant from the prekindergarten through second grade building expressed willingness to spend many hours to learn how to use a new device and online tools in order for students to have a successful and fun learning experience. P11 stated, "I'll figure out how to do it." Without doubting the ability to self-learn, P6 expressed willingness to put in extra effort and time if they knew the technology integration will benefit student learning outcomes. This perception of understanding technology benefits that leads to increased willingness was shared by P7. Understanding the potential of a technology tool has to be helpful and influenced P7's decision to invest personal time to learn how to use and integrate the tool.

Importance of self-confidence. According to P11, past experiences were likely to determine how willing a teacher would be to try a new technology tool. When teachers experience difficulty, disappointment, and frustration trying to learn a new technology, a repeat technology integration attempt would be less likely to meet with success. Statements were made by prekindergarten through second grade participants that indicated feelings of frustration and doubt, such as, "This is going to be a lot to learn" and "I'm very overwhelmed . . . something new is hard." At the same time, participants generally expressed their realization that the benefits of using technology outweigh any

personal reservations to learning technology. One prekindergarten through second grade participant explained that the process in becoming proficient with using technology was challenging, but still recognized the benefits of technology implementation in the classroom.

P8 did not hesitate to respond when asked about the level of effort required when integrating new technology in lessons. P8's rushed response included feelings of frustration after spending "hours and hours trying to figure out what was necessary . . . given no training . . . and was just expected to figure it out." P9 summed up their experience as being "not comfortable at all with technology." This participant described them self as having no previous background experience and expressed learning new technology methods required "lots of extra effort." According to P7, past technology educational experiences with hands-on technology bolstered confidence. The VASD previously purchased technology tools, software licensing agreements, and online resources without scheduling PDs or in-service trainings with the expectation that teachers would initiate self-directed learning of the new technology tool.

P3 perceived an individual's confidence in their ability to learn and use technology as an important influencer in determining technology usage. Self-confidence, self-efficacy, and self-motivation were noted strengths that lead to a teacher's ability to mentor. Self-efficacy is a person's confidence to successfully achieve a task or skill (Levine & Ornstein, 2006). While mentoring and coaching emerged as a theme associated with UTAUT's social influence tenet, eight participants described technology

mentor roles they willingly fulfilled (i.e. assisted coworkers finding or using technology, ability and willingness to learn new technology without training) separate from describing themselves as "mentors." Having a technology mentor was only useful if the mentee is going to apply new skills. An educator can learn a new technology, but as P12 stated, applying a new technology "depends on level of comfort." Practical hands-on PDs offer new technology learning opportunities that teachers could then apply in their classrooms. P4 recognized and pointed out the role of professional development in providing increased frequency and more meaningful exposures to new technology tools.

Professional development. Professional development and in-service training that provided hands-on technology experiences to learn or practice with new technology were greatly appreciated by teachers but there were complaints about the need for more frequent scheduling of the training. P10 perceived new technology integration as requiring "lots of extra time and effort initially" but learning how to effectively and efficiently use GradeBook "saved time in the long run." P10 also expressed that the time and effort invested in initial implementation was worthwhile. Technology implementation required extra effort, hands-on experience, and trouble shooting.

Teachers must be proactive and motivated to learn new technology. Participants voiced understanding that extra effort and time was required to integrate technology. Much of professional development time was spent on planning and preparing lessons, and teachers were expected to integrate technology into those lessons. P11 summed up any introduction to new technology integration as overwhelming initially, takes

significant initial effort to teach yourself, and it "takes a lot of time, but I've seen the benefits of using something new every day." A few participants perceived the level of effort required to learn new technology integration as frustrating and overwhelming; while most participants expressed satisfaction in knowing their efforts in learning new technology and ways to implement it were beneficial to their instructional methods and student learning outcomes.

Mandatory in-service training days were scheduled annually for VASD teachers. These in-service days fulfilled annual training requirements for certified teachers, but may have sometimes failed to meet their needs for technology training. One of the trainings included a scheduled Microsoft trainer who provided Microsoft Teams training to VASD employees that offered Microsoft e-mail tools and features instruction. The first time P10 learned about Microsoft Teams was during the training day offered during VASD in-service day. P10 described a personal experience, "After learning about it a little I decided it was something I wanted to try out. So, I started experimenting in my own time to figure out the best way to use it in my own class" (P10). When the Microsoft trainer conducted the in-service training, P8 was asked to help lead a beginner-level Microsoft e-mail training for teachers. However, due to a scheduling conflict, P8 was not able to attend the advanced-level training to improve or learn new skills. Beginner-level Microsoft e-mail training was scheduled simultaneously with the Microsoft trainer-led training.

According to P4, there was a good push and support when a new technology initiative was presented at an in-service; however, there was no follow-up to ask if and how teachers were using it 6 weeks later. P8 explained that teachers were presented with newly purchased technology without providing training or insight how to use the new tool. Regarding technology implementation, P11 felt like it is expected. According to P11, teachers were expected to "figure it out on their own" and found ways to integrate the technology in their classroom.

Another opportunity to learn how other teachers use technology was through attending state conferences (P5). The VASD afforded P5 the opportunity to attend an annual conference specific to her curriculum where new technology tools were introduced, explained, and offered hands-on opportunities to practice. The National Math and Science Initiative summer workshop had a positive social influence on P9's classroom technology use. Summer workshops provided teachers ample time to learn through hands-on technology experiences without performing expected teaching obligations required during the school year.

The participants perceived that teachers were expected by their administrators to be career-long learners. The state of Pennsylvania Department of Education (PDE) mandated that all public-school teachers successfully achieved a Pennsylvania Teaching Certification through completion of an accredited teaching certification program and required passing the Praxis exam score (PDE: Become an Educator, 2020). A prerequisite technology course was required to earn a Bachelor of Science in Education; however, the

participants in this study had variations of the course that served that prerequisite. At the time of the interview, one participant was actively pursuing a master's degree in technology; while other participants had been more than 20 years since their last "Computers for Teachers" college coursework. College students were required to complete the mandated technology for teachers training course, but that course content becomes outdated in a matter of years. College education major students were given instructors, instructional time, lessons to complete, and opportunities for hands-on learning that yielded understanding of the course content. However, due to the unabating technology advances, the required teacher technology course quickly becomes outdated. One participant was enrolled in a master's degree program at the time of the interview and perceived the technology course instructor as a valuable resource, viewing the technology instructor as a mentor.

Social influences – RQ3. The third construct expressed as a principle of UTAUT represented social factors that influence technology integration, and this tenet of the theory was reflected in RQ3. Social influences are critical factors that impact teachers' decisions to integrate technology into their classrooms. The third research question, therefore, sought to explore VASD teacher perceptions about social influencers related to integrating new technology resources in classrooms. All 12 research participants were asked to identify and explain social influences that related to their technology usage. The overarching theme unpacked from the interviews for RQ3 was technology mentors and coaches. Two subthemes related to social influences included age of teachers and

collaborative purchasing decisions. The most dominant and recurring theme from all participant's responses was the use of mentors and coaches.

Technology mentors and coaches. A *mentor teacher* provides guidance through relaying personal experiences, hands-on practices, and sharing practical knowledge to benefit a less experienced or novice teacher (Daloz, 2013). Teachers seek guidance from colleagues, mentoring each other to gain necessary skills to integrate new technology. All 12 participants perceived mentorship as an important factor that influenced technology usage and integration.

An interview question for RQ3 asked participants to share an example of any interpersonal relationships that have influenced their use of technology in their teaching. A technology mentor or mentee context was used as an example of an interpersonal relationship that influenced technology use. Given the definition of a mentor, the 12 VASD teachers who participated in this study shared their perceptions based on their teacher-mentor experiences. Table 2 provides the teacher-mentor role experiences described by each participant. One participant (P4) indicated the need for a mentor relationship for technology. Seven participants perceived themselves as mentors. Four out of 12 participants stated that they had a mentor and was a mentor.

Table 2

Teacher-Mentor Roles

Participant	Role	Building by Grade
P1	Is a mentor	9th-12th
P2	Is a mentor	9th-12th
P3	Is a mentor	9th-12th
P4	Needs a mentor	6th-8th
P5	Is a mentor	6th-8th
P6	Had a mentor/ is a mentor	6th-8th
P7	Is a mentor	3rd-5th
P8	Is a mentor	3rd-5th
P9	Had a mentor/ is a mentor	3rd-5th
P10	Had a mentor/ is a mentor	PreK-2nd
P11	Is a mentor	PreK-2nd
P12	Had a mentor/ is a mentor	PreK-2nd

Same-grade teachers were grouped into teams at the prekindergarten through second grade building. These grade-level groups offered technology mentoring to each

other. Teachers supported each other, and P12 relied on a partner teacher for technology support. P11 was a technology coach in another district before getting hired at the VASD and used that previous experience in the role P11 played on the leadership committee. The leadership committee in the prekindergarten through second grade building was a group of teachers who shared ideas regarding all aspects of curriculum development, student behaviors, promoting inter-disciplinary team building, and technology integration. P9 stated that other teachers in the third through fifth grade building were always willing to mentor. Regardless of the role as mentor or mentee, teachers provided technology support to each other.

When the VASD had a full-time technology coach available to educate teachers on technology, this position was the "biggest social influence on integrating technology" for P8. P8 found the technology coach to be useful and helpful, and described technology integration as frustrating when given a new technology tool to integrate having "nobody that would show us how to do it."

Colleagues as teacher mentors were noted to be the primary social influence for technology integration among research participants, but teachers also reported using social media and online forums for technology support, to research new technology tools, and to learn more efficient technology implementation. P5, P7, and P10 reported using Twitter as a social media platform to stay current with educational technology trends. Creative learning lystems (CLS) is the STEM Lab company utilized by the VASD. CLS

e-mails monthly newsletters to read about their latest trends, and P7 followed CLS on Twitter for updates and event reminders that influenced the STEM Lab.

Telestream is an online community with a question and answer forum that has been helpful to P7. Although not educator-specific, Tech Guru is an information technology application and website used by P10 to stay current with technology trends. There are Facebook groups where teachers provide technology support to each other, sharing ways to integrate technology in the classroom. Educators shared their technology experiences through social media groups to explain what worked or did not work. By sharing these personal experiences, teachers can decide what, when, and how to integrate technology, and make adjustments to meet their own curriculum needs.

Similar to Facebook groups, classroom observations were found valuable by VASD teachers. All teachers in the VASD had opportunities to cover other teachers' classes. Covering other teachers' classes provided opportunities to observe ways other teachers implemented technology (P4). Traveling to visit other school districts and observe how other teachers utilized technology had been useful for P6. P6 met teachers from other local school districts who had SMART Labs and shared ideas and collaborated among teachers. This group of collaborating teachers shared syllabi, messaged each other using Microsoft form, and shared ideas and suggestions.

The participants perceived that teachers were expected by their administrators to be career-long learners. The state of Pennsylvania Department of Education mandated that all public-school teachers successfully achieved a Pennsylvania Teaching

Certification through completion of an accredited teaching certification program and required passing the Praxis exam score (PDE: Become an Educator, 2020).

A prerequisite technology course was required to earn a Bachelor of Science in Education; however, the participants in this study had variations of the course that served that prerequisite. At the time of the interview, one participant was actively pursuing a master's degree in technology; while other participants had been more than 20 years since their last "Computers for Teachers" college coursework. College students were required to complete the mandated technology for teachers training course, but that course content becomes outdated in a matter of years.

College education major students were given instructors, instructional time, lessons to complete, and opportunities for hands-on learning that yielded understanding of the course content. However, due to the unabating technology advances, the required teacher technology course quickly becomes outdated. One participant was enrolled in a master's degree program at the time of the interview and perceived the technology course instructor as a valuable resource, viewing the technology instructor as a mentor.

P6 expressed willingness and availability to mentor teachers within the building, sharing that "We have a wide generation gap of teachers . . . some are very comfortable with the new technology and some aren't." P6, P9, P10, and P12 gave examples of experiences in roles as both mentor and mentee. During a classroom activity involving an iPad, P12 asked a colleague to provide guidance to navigate an app and understand how the app would be used for lessons. P12 viewed the colleague, who is younger with far

less years teaching experience, as a trusted mentor who successfully provided knowledge and shared experience to guide and mentor P12. When P1 described the technology mentorship within the VASD, “The younger teachers are leading the way on that.” P10 had the fewest number years of teaching experience but was a technology mentor to the teachers in his building with 20+ years teaching experience.

Age of teachers. P2 raised the question about whether or not age is a social influence on technology usage. For the past 5 years, in addition to her teaching responsibilities, P2 had been training teachers how to use the gradebook software. P2 explained, “Some people pick it up and never have any questions. And then other people, it seems like they have the same questions once a month and we have to just keep going over how to do those same exact skills.” Participants from the prekindergarten through second grade building and the sixth through eighth grade building recognized that their colleagues’ level of technology skill was not related to the number of teaching experience years.

P7 received e-mails or phone calls on a daily basis from older teachers in the building requesting assistance with technology integration; questions how to use OneDrive; file recovery; creating and editing videos; and various hands-on technology issues that arose. “Older teachers” were described as not having technology experience during college.

One social influence that was perceived to have influenced technology in the VASD educational setting was salespeople and new technology trends. P3 felt that the

VASD endeavored to maintain the reputation of having the most recent, trending technology available to staff and students to appeal to the community. P3 explained:

> "We tend to jump on the bandwagon . . . when there's a lot of things that we pay money just so we can say we have the greatest one, as opposed to actually utilizing what we have to its fullest ability."

Collaborative purchasing decisions. Financial budgets were perceived by participants to be social influencers of technology use. Teachers were in agreement that VASD often funded new technology trends but fell short when providing funds for maintaining existing technology. Participants felt that their administration was supportive of their technology integration efforts if it was financially feasible (P1, P7) and justified (P2), and autocratic in those decisions. According to one ninth through 12th grade building participant, VASD purchased updated versions of Mastercam, AutoCAD, Autodesk 2019, and CSIU (gradebook software); however, minimal changes were made to the previous versions. This same participant felt that teachers would be able to provide suggestions about which technology software updates are necessary or beneficial to curriculum. Recommendations based on teachers' experiences or usage would potentially decrease spending on unnecessary software updates.

Purchasing new technology has been cost-prohibitive but collaboratively researching or practicing new ways to implement existing technology can be done with creativity. P6 advocated VASD teachers to utilize and master what was available to use.

Another participant, P3, advocated that same philosophy, of using what was available stating the question,

> What else can I use my existing technology to do? I don't have the latest and greatest [technology], but I can do way more with it because I've researched how to do and what to do and how to push it to its limits.

One ninth through 12th grade building participant mentioned the need to revise the school's cell phone policy. P1 explained that many students have the capacity to perform tasks on their cell phones that were more readily available and more updated than a school laptop. Students have their own technology in the palm of their hands. Students waste valuable class time to find their assigned laptop on a cart, get logged on, and do Internet searches that could be completed more efficiently on their cell phones. P1 felt that a cell phone policy revision would save instructional time and allow students to use their cell phone without laptop start up delays.

Facilitating conditions – RQ4. Facilitating conditions was the fourth and final tenet identified by the UTAUT framework. The fourth research question sought to explore teachers' perceptions of what, if anything, was available to enable their technology integration efforts. The overarching theme for RQ4 was technology support, which included the four supporting subthemes of technology barriers, maintenance, attitudinal, and administrative support. Research participants described the level of technology support available in the school district and gave examples of tech support received. Various technology barriers were identified. Challenges faced when using

technology were described by participants. Sufficient and insufficient means for overcoming obstacles were explained. Participants perceived technology training as a necessary facilitating condition to enable technology use. Participants' perceptions of administrative support varied.

Tech support. Technology support was available in each of the four buildings within the VASD. The VASD employed three full-time personal computer field technicians and one administrative senior network technician. The teachers referred to the personal computer field technician position as "tech support." The senior network technician office was located in the ninth through 12th grade building. The technician administrative position was responsible for all four building's networking systems, all logins, website filters, computer updates, and Internet security. One full-time tech support person was assigned to the ninth through 12th grade building and another full-time tech support person was assigned to the sixth through eighth grade building. The same tech support person delegated the full-time position between the third through fifth grade building and the prekindergarten through second grade building. The two buildings that share 1 full-time tech support staff have scheduled 2 full and 1 half day when the personal computer field technician was available.

While tech support was spending the day in the prekindergarten through second grade building, she was available through e-mail or phone to the third through fifth grade buildings, and vice versa. P8 and P12 shared instances when they were both in need of tech support staff when she was not available in the building. Both participants explained

that an e-mail was sent and the tech support responded quickly with step-by-step instructions how to resolve the issue. P8 stated, “Tech support is wonderful.” As described by P3, “Our tech support is integral to this building in our day to day operations . . . our tech support is cutting edge.”

Participants from both buildings stated that tech support responded quickly to requests, but the two buildings would benefit from having a full-time tech support staff available. P1, P4, P7, P9, and P11 said that they routinely called tech support when they needed ink for their classroom printer; P9 and P10 recalled a time when tech support resolved a printer issue that did not involve ink refills. Other technology problems mentioned by participants to be resolved by tech support included: maintenance issues, upgraded software, uploaded software programs onto computers and laptops, and availability to assist with Skype. P6 mentioned that with new program implementation came an increased need for tech support, more so in the school year during which the interview was recorded than previous school years. P3 depended on tech support staff for new equipment and software installation, and when hardware issues (i.e. keyboard, mouse) occurred. Having an available tech support person in an educational setting was viewed as essential for successful technology implementation by the participants.

Research participants all expressed appreciation of the tech support staff within the VASD. Tech support staff were described as dependable, quick to respond, knowledgeable, and efficient. P2 explained when a technology device was not working properly, a work ticket was necessary to allow tech support to prioritize and schedule the

repair needed. P12 described tech support as efficient "if tech support is in the building," technology issued were resolved quickly after a request was sent. P5 and P6 both expressed satisfaction with response time and effectiveness of tech support.

One participant from the prekindergarten through second grade building described tech support in the building as doing a "good job" and was appreciative of the tech support for being equipped to handle problems. The prekindergarten through second grade building used online programs designed to collect data from students. The data were then uploaded to a program used by teachers to assess student progress. Tech support was a liaison for the computer programs used by the district.

In ninth through 12th grade building, P1 described tech support as "available and dedicated with real professional knowledge." Tech support was able to work with old technology and make it purposeful. With the expectation that technology costs will continue to rise, having a tech support staff who is capable of maintaining and repairing already-purchased technology devices (i.e. laptops, iPads, iPods, SMART Boards, digital cameras, and printers) is a worthwhile investment. Although tech support was evident in every building within the VASD, P2 described, "Tech support is not considered training . . . if you don't know how to work software, they're not really available for that." Technology training was necessary to build confidence in a user's technology skill. As shared by P6, confidence in using technology was achieved through hands-on practice.

Technology barriers. Participants identified challenges that interfered with technology integration as an influential factor that limited or interfered with technology

use. Some examples of technology barriers that interfered with participants' technology integration were inadequate access to technology, outdated technology devices, limited technology knowledge, and self-confidence. Technology barriers are obstacles that hinder or prevent technology usage. Technology accessibility, required maintenance, budgets, technology literacy, available training, and attitudinal barriers were identified as facilitating conditions that limit or restrict technology use among participants.

VASD is located in a geographic area with limited broadband capabilities that, on occasion, interfere with Internet accessibility. Inability to access the Internet and poor infrastructure contributed to facilitating conditions perceived by VASD K-12 teachers. Teachers' lessons plans were disrupted due to lack of Internet connections (P6, P7, P8, and P9). Frustration over Internet accessibility was evident when P12 stated, "Have you ever gone to teach a lesson and you pull it up, and it's not working at all that day?" Power outages also were blamed for interrupted Internet access.

VASD had an Internet filter system, iBoss, that limited Internet access for teachers, and enforced even more stringent guidelines for students. Another frustrating online obstacle experienced by P12 was a website that worked on a teacher login but did not allow student access. When planning lessons, teachers found websites suitable for activities and research that would be restricted to student logins. Blocked websites were reported as a technology challenges faced by VASD teachers (P2, P5).

Teachers invested personal time, planned lessons from home on their personal devices, and located online sources that would enhance a lesson, then were denied access

to the website from their school computers. Educational videos had the potential to benefit learning retention; however, streaming a video that a teacher deemed appropriate was prohibited because Amazon and Netflix were blocked. According to P2, “Even if there is something really neat that you would like to try, there are so many obstacles and it’s almost made so difficult that it’s just not worth the effort.” Teachers expressed frustration with extremely limited access to online sources and being denied when asked permission to access websites.

Participants overcame Internet obstacles, power outages, brown outs, poor infrastructure, and unplanned technology mishaps by being flexible and adapting their lessons. Participants gave examples of scenarios they experienced when lessons were impetuously adapted due to lack of Internet access. Teachers had backup plans and were able to adjust their lesson plans when Internet connections were interrupted. Infrastructure barriers were overcome by teachers having a backup plan to prevent lost instructional time. Competing teaching responsibilities limits the amount of time to learn how to use new technologies, yet teachers need to be flexible and think quickly in situations that hinder technology usage.

Maintenance. Technology devices that were not perceived as being properly maintained were reported as hindering teacher and student technology usage. Students in P11’s classroom used iPods and iPads daily. P11 stated, “I see the benefit of really keeping up with iPads and the iPods because there’s so many great things that kids could

be doing with them." P11 explained the benefits of maintaining what is useful; however, the VASD teachers lacked support to maintain existing technology devices.

Only technology support staff from each building had the protected password needed to update or download apps on iPads and iPods. Participants shared concerns about outdated and poorly maintained laptops. In all four buildings, students used laptops on a daily basis. Students were expected to work on outdated laptops that frequently caused delays in instructional time (P8). Another participant, P10, stated, "I tried to use the laptop cart and none of the laptops worked . . . It's hard to integrate things when you don't have the resources." Outdated laptop problems and complaints included not turning on, slow start up, trouble with student logins, unable to log off, shutting down while work in progress, and freezing. These issues delayed student productivity.

Attitude. The "I've always done it this way" mindset was a challenge expressed by P11 as an attitudinal barrier. P11 had experienced resistance to change from teachers when introduced to a new technology. P11 offered support to co-workers and encouraged teachers to reach out for help when struggling to integrate new technology. This attitudinal barrier was overcome through building morale. Technology trainings would boost teachers' technology self-confidence. Self-confidence is a technology user's belief in their ability to properly utilize a technology tool. Hands-on experiences with technology would be necessary to foster self-confidence (P6). Therefore, providing training opportunities are essential for technology integration.

Administration purchased a new technology tool, told the teachers to use it, and P8 stated, “there was nobody that would show us how to do it.” When P8 sent an e-mail asking for more information how to use a newly purchased technology device, the VASD technology director apologized that he also did not know how to use it. A technology coordinator used to be available to help teachers learn the step-by-step process of new technology implementation. Research participants referred to the technology coordinator position as a “technology coach.” P1, P2, P3 and P8 all expressed the usefulness and benefits of having a technology coach in the past.

The technology coach used to be available to answer technology questions, give suggestions and ideas on new ways to analyze data, find resources, or provide ways to utilize existing technology devices. Since the technology coach position was eliminated, P2 stated, “you are very much on your own and you must self-train and implement and work through all the bugs yourself. You have no support.” Without a technology coach available to VASD teachers, P8 perceived new technology tools as costing valuable time that is not available due to the existing multiple demands of teaching responsibilities. The former technology coach held instructional in-services, offered one-on-one technology trainings, worked with groups or individuals to promote technology integration, and used layman’s terminology to explain step-by-step technology instructions. Participants viewed the former technology coach position as a frequently utilized and beneficial resource to VASD teachers and employees.

Without a technology coach, VASD teachers relied on each other to share resources and ideas for useful ways to integrate and use technology tools in the classrooms (P9). P5 explained that teachers formed collaborative relationships and develop trust in their colleagues' efforts to integrate technology. Teachers were supportive of other teachers' technology implementation and were willing to assist each other in new technology efforts.

Administrative support. Participants' responses varied to the interview question: How supported have you felt in your efforts to implement and integrate technology into your class? Eight participants responded that administration was perceived as being supportive of their efforts in integrating technology. P6 explained, "I feel as though we have about 25% of them [administrators] that would adequately be able to support you in the implementation of the technology within your building and or classroom." Administrative support, however, was not defined as administration being able to fulfill the tasks assigned to the technology support staff. Rather, it was defined as approval from building principals and/or superintendents to teachers' requests to attend trainings, and fund technology implementation initiatives. However, of the 75% of administration not considered to be able to directly assist teachers with their technology implementation, P6 perceived administration as supportive through utilizing resources available and connecting teachers with people to assist district employees' technology integration efforts.

When technology tools and trainings were financially feasible, P1 felt that administration would be willing to support a teachers' request to register to attend a technology training or seminar. Teachers received e-mail invitations to attend free webinars on various technology-related topics from educational companies, and P11 felt the VASD would be supportive of a request to attend a webinar or a workshop. The webinar trainings would also meet continuing education credit requirements. P2 perceived administration as supportive if a technology request is justified as necessary.

P6 felt supported by administration in any technology attempts to implement and troubleshoot technology. P6 stated, "When a request is put in for something that's going to benefit a group of students, a building of students, the district usually has been trying to find ways to make those a reality." Finances would be necessary to support teachers' technology integration efforts. According to P12, who felt supported by administration, "We'll get the equipment if the funds are available." Teachers depended on financial backing from administration to support technology implementation efforts. P5 stated, "I, personally, feel supported. I don't feel that everyone perceives that." P5, a sixth through eight grade building participant, had past experiences mentoring teachers who struggled with the technology tools VASD purchased without providing district-wide training.

Two of the 12 participants were quick with responses that they do not feel supported, and any attempt to integrate technology is done without any guidance. P8, the participant who led a beginner-level training and missed the opportunity to attend an advanced Microsoft Teams training, explained, "I don't feel supported at all because a lot

of times we're given something to do with absolutely no help." Examples of purchased technology without offering immediate trainings were: SMART Boards, Blackboard, Exam View, online Gradebook, and Microsoft Teams.

P2, P3, P8 did not feel supported by administration in their efforts to integrate technology. P4 described administrative support as "not good." P4 explained that there was an initial push for teachers to use a new technology tool that was introduced during an in-service, but no follow-up to determine if teachers were using it or needed any assistance integrating the technology. P4 noted, "Maybe [you're] just not feeling comfortable enough with it . . . [you] kind of push it to the side, but there's not a whole lot of revisiting." P4 noted also that administration did not follow up to ask important questions such as: "Hey, are you using this? Do you need help with this?" Therefore, technology tools went underutilized or not used at all. Participants perceived that administration expects teachers to utilize technology without providing administrative support, training, or resources.

P1, P3, P4, P5, P8, and P11 perceived that administration expected the VASD teachers to make their own effort to implement and integrate technology into their classes. P2 stated,

> You don't necessarily feel supported in anything you do. It's just going to be your own effort . . .on your own time and you can choose whether you want to do it. And you're not really rewarded if you do, and they don't care if you do. They don't care if you don't.

P11 stated, “Supported? I don’t know if that’s a word for it, being supported. I feel like it’s expected.” P1 compared technology implementation to any new curriculum that teachers were expected to use without training. Teachers used trial and error methods and found support through other teachers and resources when expected to integrate new curriculum. The participants who felt that there was an administrative expectation for teachers to integrate technology found effective ways to learn how to use a new technology tool.

VASD teachers used one another as technology support. P3 stated, “We just have ourselves.” P5 stated, “I just troubleshoot with whomever I’m working with and we have always seemed to be successful with it.” P4 explained that colleagues were always willing to help with technology integration. P1 felt confident in asking colleagues for support.

One example of a time a VASD teacher used another colleague as a resource to learn how to use a technology tool was when P5 started to use ExamView. ExamView is a technology software that allowed teachers to develop their own or use a generator paper or online exams. The program allowed teachers to quickly and efficiently grade tests, monitor pre- and post-test comparisons, and progress monitor students through a data base. P5 started using ExamView 8 years ago after another teacher explained the time-saving benefits and usefulness of the tool.

According to the VASD technology director, at the time when the interviews took place, ExamView had been introduced over 10 years ago and was offered with the core

subject textbooks. The program was used in Grades 3 through 12. When first implemented, a lot of technology was purchased to support the program (i.e. scanners and classroom response units/kits or “clickers"). Scanners were made available in all of the planning rooms and common areas in the three buildings.

P5 started using ExamView 2 years after the district purchased and made it available for teachers’ use. P5 described ExamView as, “very useful in that I can quickly generate test scores; question analysis to drive instruction; and, see student growth from pretest to post-test.” It took P5 two years before starting to use the valuable tool because ExamView was made available to teachers without specific orientation to the tool. P5 started taking advantage of the benefits of using ExamView only after another teacher took the initiative to learn how to use ExamView, then took the time to explain to other teachers how to use it. When the technology coach position was still available, one of their primary responsibilities was assisting the teachers in using ExamView to collect and analyze student data.

Administration had a reputation of encouraging technology integration among teachers, and supported the concept that technology implementation had favorable student learning outcomes. Encouraging teachers and offering moral support differed from supplying the resources, training, and financial capabilities that would promote technology integration. Participants all spoke of their awareness that the financial support was necessary to support technology integration efforts. Although participants who viewed their principals as being supportive of technology integration, participants were

aware of the need for financial backing of technology purchases, cost of maintenance, and training necessary for successfully implementing new technology.

Unique challenges. Participants described unique challenges they faced when attempting to utilize available technology tools. Availability of time, accessibility of resources, and level of student and teacher technology literacy were identified to be contributing technology challenges that VASD teachers faced. Preparing a learning tool (i.e., PowerPoint or SmartBoard lesson), that was hands-on, student-centered, practical, and engaged students took a profuse amount of time, even when the teacher knew how to build or work with the technology tool. Therefore, teachers were expected to be willing to learn on their own personal time how to use and embrace technology to its maximum potential.

P1 described the challenge faced with technology integration as the need to balance real-world, hands-on, and student-centered instruction that was practical and engaging. Prekindergarten through second grade students received proper handling instruction prior to being allowed to use touch screen technology devices; although these directions did always lead to proper hands-on use. It was not uncommon for early hands-on learning experiences in P11's class to result in broken touch screen monitors. The stated challenge faced by participants from the prekindergarten through second grade building was the expectation that students would be gentle with technology tools; the realization that this age-group of learners were using expensive technology devices with poor safety awareness. Another challenge identified by the prekindergarten through

second grade participants was not having the technology tool available to use while necessary repairs were being made to screens or keyboards.

Technology literacy. Students technology literacy competency was one barrier that reportedly impacted technology use. Technology literacy is the degree to which a person is capable to effectively and efficiently use technology. VASD teachers were challenged by low technology literacy among students. Students' knowledge of basic computer operations and functions was limited, even at the high school level. According to one high school participant, students lacked necessary computer skills that should be fundamental for high school students.

One participant described the operose process of coaching 5 and 6 year-old students through their first time getting logged onto a computer. P10 used step-by-step modeling and visual aids to overcome the barrier of technology literacy among young students. Teachers devoted time and energy to hand-over-hand instruction to carry through technology education. Elementary aged students were expected to remember 15 picture passwords to access online programs (P3). Even after months of routine, regularly scheduled use, students struggled entering their password.

Summary

Several important themes emerged from interview responses of 12 research participants who were teachers in the VASD. Dominant themes from my data analysis included (a) improved professional performance through technology integration (aligned with UTAUT's performance expectancy), (b) pedagogical gains are worth the effort of

integrating technology (aligned with UTAUT's effort expectancy), (c) the importance of technology mentors and coaches (aligned with UTAUT's social influences), and (d) technology and administrator support (aligned with UTAUT's facilitating conditions). Overall, VASD teachers viewed technology tools as beneficial to themselves and to their students. Technology benefits were evident throughout the participants' responses, even though a few voiced frustration and overwhelming feelings related to learning and implementing new technology. Individual self-confidence was noted as a influencing condition that may be engendered by taking care to ensure that all four of the UTAUT's tenets are treated as priorities by the school district. Through cooperative learning, mentors, and collaboration, teachers were able to coach each other through technology implementation. Mentorship has had a positive impact on technology use among VASD teachers. Teachers perceived technology as a beneficial valuable asset to themselves and their students. Although tech support was evidently available in the four VASD buildings, participants' responses indicated that having a technology coach in the past was beneficial to promoting technology usage among teachers. Teachers were willing to assume the mentor role when a colleague asked for technology integration assistance. For the most part, the research participants expressed a commitment to attempt to implement technology, especially when that technology was perceived as feasible and recognized to be beneficial to students' learning experiences.

Several participants shared frustration with training, a lack of time to learn new technology, and the need for more frequent professional development training aimed at

increasing teachers' confidence with using technology. As a result, and given the outbreak of the COVID-19 pandemic as my project decision was being made, I decided to develop a teacher professional development program designed to give hands-on experience and engender all four tenets of the UTAUT framework. In addition to gaining valuable technology training, the training participants would benefit from an increased number of mandatory technology trainings to help ensure adequate time necessary to learn how to properly utilize technology. Therefore, to assist teachers in the VASD with technology implantation, a 3-day technology professional development project was developed for this capstone study.

Section 3: The Project

Introduction

Section 3 includes the rationale for selecting the professional development genre for the project, which is presented in the Appendix. I selected the professional development genre based on the study findings and the aim to benefit VASD teachers by providing the opportunity to expand their technology skills through hands-on training experiences. This section includes a review of the literature in which recent, scholarly articles relevant to the research findings and project are detailed. I also describe the project and its goals, followed by the plans to implement the project. A project evaluation plan is also provided. Finally, I identify and discuss project implications.

Rationale

Despite the historical problem of technology underutilization in the VASD, the teacher participants openly shared common goals of using technology for their students' and their own personal benefits. The findings of this study provided a better understanding of VASD teachers' perceptions of technology and offer insight into the opportunity for technology to be more effectively and efficiently implemented. The 12 teachers who participated in this study represented a small percentage of the teachers working in the four buildings in the VASD; however, the teachers were willing participants, and their responses captured both technology integration strengths and areas needing improvement.

In this study, I examined teachers' perceptions of integrating technology into their classrooms and curricula. After analyzing the data, my initial thought was to produce a white paper to present to the VASD administration and school board. White papers provide research-based evidence that a problem exists (Campbell, Naidoo, & Campbell, 2020) and recommend solutions (Cullen, 2018). According to Stelzner (2007), an effective white paper uses charts, quotes, and an experienced authority figure to increase credibility. With the new social and economic reality of the COVID-19 pandemic and after consultation with my project study committee, I decided to change my project genre.

I completed my data analysis just before the governor of Pennsylvania ordered a mandatory closure of all public schools due to the COVID-19 pandemic (Wolf, 2020). In response, Pennsylvania schools began to seek alternate methods of delivering education to quarantined and socially distanced students. I was sensitized to the technology needs of VASD teachers because I had just completed my data analysis and immediately recognized the need for targeted technology training for those teachers.

VASD teachers were asked by their building principals to create online learning environments for students with Internet access as well as provide paper-packet produced content to be picked up by families who do not have Internet access. Through analysis of the research data, it was evident that teachers perceived training as necessary to develop knowledge-based understanding of technology implementation. Therefore, I decided that

a professional development-training curriculum would better suit the needs of the VASD teachers than a policy white paper.

Review of the Literature

The Walden University Library provided access to databases, including: Education Resources Information Center and ProQuest Dissertations as well as peer-reviewed academic journals. I used keyword search terms related to professional development to locate scholarly articles published since 2015. The search terms included *developing teacher technology training*, *technology integration professional development*, *collaborative learning*, and *hands-on learning teacher professional development*. I employed these specific search terms in response to the need to develop a teacher technology training due to the COVID-19 pandemic and implement an online curriculum to meet students' learning needs. Professional development (PD) is defined as any formal or informal training in which teacher learning takes place with the goal of acquiring new or improved skills or increased knowledge (McMahon, 2019).

Teachers in rural school districts were provided less professional development opportunities compared to teachers in urban or suburban schools (Rotermund, DeRoche, & Ottem, 2017). This statistic may heighten administrative awareness of the need to bring meaningful professional development with hands-on learning activities to the VASD, which is situated in a rural demographic area. McMahon (2019) found that throughout the U.S. continued professional development was generally supported by administration but still not readily available to teachers.

Qualities of PD Programs

A good aim for a PD program in education should be to improve teacher learning, classroom behaviors, and ultimately student learning (Whitworth & Chiu, 2015). Andersson and Palm (2017a, 2017b, 2018) have dedicated their educational research efforts to describing effective teacher PD. PD that used group session activities were perceived by participants to have a greater impact on content retention (Andersson & Palm, 2017a). In a follow-up study, Andersson and Palm (2018) found evidence of PD features that teachers perceived as useful for improving learning outcomes, which was consistent with previous studies (i.e., Heitink, Van Der Kleij, Veldkamp, Schildkamp, & Kippers, 2016; Schneider & Randel, 2010; Vongkulluksn, Xie, & Bowman, 2018).

According to Andersson and Palm (2018), meaningful activities that teachers perceived as beneficial to learning outcomes included a focus on teaching and learning subject matter; inclusion of instructional resources, materials, and examples; active teacher learning, including hands-on practice, interactive feedback, and discussions focused on the impact of teaching on student learning; coherence between what is being taught in the program and teachers' beliefs; wider policy trends and research; time for teachers in the program; collaboration among participants; individualization of teachers' learning goals personalized by the teachers themselves; and engagement of school leaders and external expertise (p. 578)

External expertise, operationalized as training led by a credentialed presenter who was not an employee of the school district and who has a wealth of knowledge and

substantial experience, is valued by teachers when it comes to learning about new technologies (Schneider & Randel, 2010). Having an external expert who helped with PD for teachers established credibility that participants have found useful (Andersson & Palm, 2018).

Whitworth and Chiu's findings (2015) were consistent with those of Andersson and Palm's studies (2017a, 2017b, 2018). Whitworth and Chiu cited the following effective PD characteristics: activities that align with learning objectives, collaborative participation, engagement in hands-on practice to improve new skills and knowledge, and opportunities for reflections on learning. Teachers considered PD to be effective when transfer of learning occurred between training and classroom use (Baltal, Arslan, & Duru, 2015).

Effective PD was also the subject of Baltal et al's. (2015) study. Meta-analysis studies can be useful because their findings and recommendations are based on multiple independent studies on the same topic (Hunter & Schmidt, 1990). In their meta-analysis of five studies on teacher in-service training, Baltal et al. found that teacher achievement was related to in-service training when the training was effectively introduced and conducted. According to the researchers, characteristics of effective trainings included needs assessments prior to training implementation, expert opinions to ground and guide the training, pilot studies with improvements based on findings, the participation of experienced educators, and intensive duration (i.e., greater than 3 hours per week). In addition, the researchers identified effective in-service training and PD themes to include

easily identified learning objectives, group participation, action-based learning opportunities, participants gaining new knowledge, organized content, and specificity based on participant needs. It was prudent, therefore, to use the findings from this meta-analysis study for the development of my in-service training project for my study.

Qualities of Effective Technology Training

Schools need to provide opportunities to experience technology prior to investing (Rudnesky, 2006). According to Richter and Idleman (2017), there was a perceived need for more PD opportunities, and PD that led to increased self-confidence among teachers in their ability to perform new tasks. Crompton, Olszewski, and Bielefeldt (2016) surveyed 94 educators who requested and received a specific technology training. Their participants felt ill-equipped after a "one-shot training approach" (p. 497) that did not provide the time necessary to practice implementation.

Teachers' perceptions of technology integration was examined by Clark and Boyer (2016).Participants reported that PDs fostered effective teaching practices but that many technology-related PDs lacked specific purpose (Clark & Boyer, 2016). McMahon (2019) noted that technology trainings need to be strategically developed with hands-on experiential learning opportunities, while intentionally incorporating technology teaching standards for 21st century learners.

Teachers use learning objectives in classroom settings to identify students' learning expectations (Whitaker, 2013). Teachers use "students will be able to" to introduce learning objectives (Levine & Ornstein, 2006). Learning objectives serve as an

introduction for PD because they allow participants to identify what new skills will be gained. *Task design* refers to planned activities that engage participants in meaningful learning experiences (Frost & Durrant, 2013). An effective learning objective identifies the task(s) that will be achieved before engaging in learning activities. According to Norris and Kukulska-Hulme (2017), task design and multimodal communication are essential for constructive PDs. *Multimodal communication* includes the use of PowerPoint presentations, visual displays, audio examples, and/or videos to captivate participants' attention (Norris & Kukulska-Hulme, 2017).

Researchers examined characteristics of effective PDs. According to Rotermund et al. (2017), effective PDs led to improving teachers' knowledge and skills and were subject specific, content centered, and provided participant participation activities. Wilkerson, Andrews, Shaban, Laina, and Gravel (2016) explained that effective PDs included observation time, actively engaged participants, and reflections about new knowledge. Teachers need to understand ways PD content can be adapted to meet the individualized needs of teachers' classes and curriculum (McCulloch, Hollebrands, Lee, Harrison, & Mutlu, 2018; Wilkerson et al., 2016). Advocating for experiential learning time during PD would allow teachers to discover ways the tool would be advantageous to their classroom. A goal for my project, therefore, will be to increase VASD teachers' technology knowledge and skills by providing hands-on experiential learning of practical skills that teachers can apply to integrate technology in their classrooms.

Release time for PD. According to a report from the U.S. Department of Education's National Center for Education Statistics (2012), 79% of teachers reported having scheduled PD time in their contract year. *Release time from teaching* (RTFT) refers to workdays without students present (U.S. Department of Education, 2012). Statistics published by the U.S. Department of Education (2012) revealed that 51% of teachers reported receiving allocated training time during RTFT, and 50% of teachers received education credits for PDs. Teachers perceived scheduled time in the contract year for PD as most beneficial, and RTFT as the second most prevalent support toward PD initiatives (U.S. Department of Education, 2012). The teachers' perceptions demonstrated the desire for teachers to receive adequate contract time allocated for PD. Conversely, teachers' efforts to learn a new technology decreased when the technology benefits were not recognized (Harrell & Bynum, 2018). Teachers need to be proficient with new technology.

Time for collaborative learning. Teacher collaboration has been shown as a highly effective means of successful learning initiatives (Kaur & Debel, 2019; Thoma, Hutchinson, Johnson, Johnson, & Stromer, 2017). Collaboration creates opportunities for teachers to learn beyond a PD. Teacher groups allow teachers to share solutions to real-life scenarios experienced with technology implementation (Norris & Kukulska-Hulme, 2017; Thoma et al., 2017). Collaborative groups promote interpersonal communication that leads to trust between teachers (Richter & Idleman, 2017). All participants in a study conducted by Jones and Dexter (2018) found collaborative learning activities to be useful

and valuable to technology PD programs. I designed the technology PD program project for VASD teachers with collaborative learning opportunities that will enable teachers within the same buildings to foster relationships essential for promoting current and future technology skills.

Experienced mentors who have previous hands-on practice and are capable of sharing their expertise are valuable assets to the workplace (McMahon, 2019). According to Gökoglu and Çakiroglu (2017), teachers perceived mentors as advantageous to technology implementation and during trainings. Kaur and Debel (2019) explained that teachers "work better when they are motivated to work in a cooperation which helps them share their skill and knowledge through which is in fact beyond the mere exchange of information" (p. 1031). Kafyulilio, Fisser, and Voogt (2016) investigated the effects of team collaboration during a technology PD, and their analysis of focus group data revealed that knowledge-sharing and collaborative experiences during the PD increased teachers' technology knowledge and skills. Collaborative learning creates teamwork and cooperation among teachers.

Informal learning activities were perceived as beneficial to technology PD participants (Clark & Boyer, 2016; Digital Teacher, 2017; Jones & Dexter, 2018; Kaur & Debel, 2019; Norris & Kukulska-Hulme, 2017). Examples of informal learning activities were "planned and implemented . . . systematically organized, arranged, and deliberately implemented in a way it would bring significant change in teachers' classrooms" (Kaur & Debel, 2019. p. 1032). Teachers were more likely to integrate technology into their

classrooms after participating in goal-oriented PD that offered activities demonstrating the benefits of technology implementation (Bakir, 2016; Figg & Jamani, 2013; Wingo, Ivankova, & Moss, 2017). PD learning activities should be well-thought out and develop higher-order thinking strategies that lead to practical implementation (Kaur & Debel, 2019). In the technology PD training program project I developed, informal learning activities will include demonstrations of how to set up an online learning platform and breakout sessions to allow VASD teachers to implement the online learning platform specifically for their individual classroom needs.

Time for reflection. Schon (1991) explained that learning takes place through reflecting on personal experiences. Reflective journals have been used by elementary through post-graduate level educators as effective retention initiatives (Caffarella & Daffron, 2013). Norris and Kukulska-Hulme (2017) found that few teachers used technology following PD; teachers who did use a tool after training, did not utilize all features. Reflective learning was used to increase the likelihood of technology engagement following PD (The Digital Teacher, 2017). Participating in a debriefing and discussion period at the end of a technology training, allowing participants to reflect on learning and how the training will be useful in their own classrooms, was beneficial for PD learners (Digital Teacher, 2017; Norris & Kukulska-Hulme, 2017).

Formative assessments. Andersson and Palm (2018) emphasized the use of formative assessment activities that aide in identifying the learning needs of PD participants. Formative assessments provide opportunities for both the teacher and learner

to evaluate progress and allow participants to build on existing knowledge (Suskie & Banta, 2009). Wilkerson et al. (2016) used modeling-based formative assessment during technology PD programs. Participants modeled new skills which allowed ongoing assessment to occur throughout the program. Model-based assessment motivated participants to stay attentive and kept them actively engaged in learning (Wilkerson et al., 2016). As a result of these findings, formative assessment should be embedded an any PD to develop technology integration.

Budgetary Considerations

Budgets influence teachers' technology usage (Won Hur, Shannon, & Wolf, 2016). Lack of funding contributes to the lack of technology integration (Dinc, 2019; Harrell & Bynum, 2018). Financial planning is critical to planning and implementing technology trainings. Budgeting would be essential for planning multiple technology PDs throughout the school year and would be more effective than a one-time PD approach (Dalal, Archambault, & Shelton, 2017). On-going PDs throughout the school year increased teachers' technology integration (Dalal et al., 2017). In addition, Villarreal (2018) reported that administrators with positive perceptions toward technology supported technology initiatives, and 65% of administrators allocated specific technology initiatives funds.

McMahon (2019) recommended that technology budgets should include professional development, and as much as one third of a technology budget should be allocated to technology integration education efforts. The COVID-19 pandemic forced

school districts across the state to implement online learning platforms to meet the demands of social distanced learning. As a result, PD budgets were made priorities and were supported by VASD administrators.

Knowles's Adult Learning Theory

Malcolm Knowles's adult learning theory (1980) described andragogy as how adults learn and identified five assumptions of adult learners: self-concept of learners, role of past experiences, readiness to learn, orientation to learning, and internal motivation. These assumptions were built on the understanding that adults: are self-directed learners, new learning builds on previous experiences, are ready to learn because they see new knowledge as useful, interest in content of learned material, and have personal desires that motivate learning (Knowles, 1973). These same adult learner assumptions were used in the development of the technology training PD program.

Applying the principles of andragogy for my project, VASD teachers need to know the purpose of learning and how the new knowledge they will gain will be beneficial before taking part of a training (Kamish & Özonur, 2019). The technology PD training offered to VASD will identify practical uses of Edgenuity and the benefits of implementation. The Edgenuity PD training builds on previous experiences that VASD teachers had during the 2019-2020 school year when online instruction was implemented during school shutdowns. The VASD teachers will apply previous knowledge to gain new skills and use new technology tools to meet the demands of teaching their students through a pandemic.

Adult learners take ownership and responsibility for learning (Knowles, Holton, & Swanson, 1998; Powell & Bodur, 2019). Taking ownership of their new online learning platform, the VASD teachers will take new skills from the technology PD training and apply in an effective and manageable online curriculum that meets their professional needs. Adult learners have unique individualized reasons and motivations for learning and use self-efficacy to learn. Knowles acknowledged the effectiveness of Albert Bandura's social learning theory and the "positive educational purposes as the development of attitudes, beliefs, and performance skills have also been demonstrated" (Knowles, 1973, p. 80). By extension, Knowles's acknowledgment of Bandura's contributions to learning theory prompts a brief overview here.

Bandura's Social Learning Theory

Bandura's (1977) social learning theory was used as the framework to build a teacher technology PD program. A PD modeled after social learning theory would include opportunities for learning to occur through verbal and visual styles of observational learning (Strickland-Davis, Kosloski, & Reed,2019) such as verbal instructions, demonstrations, displays, and multimedia styles (i.e., PowerPoint and instructional videos). Bandura's social learning theory connected learning to self-efficacy. The aim of a technology PD program would be to build teachers' confidence and self-efficacy of technology that would create effective learning environments (Khlaif, 2018; Li, Murnen, Zhou, Wu, & Murnen, 2019). According to Bandura (2009), "self-efficacy theory provides a conceptual framework within which to study the determinants

of effective work design and the mechanisms through which they enhance organizational functioning" (p. 182). In addition, self-efficacy among teachers was increased after participating in technology PD programs modeled after Bandura's social learning theory (Rowbotham, 2015; Spence, 2016; Strickland-Davis et al., 2019; Zonoubi, Rasekh, & Tavakoli, 2017).

A PD program modeled with social learning theory would include the modelling of desired skills by an instructor for participants to observe. According to Bandura (1977), learning can occur through observation, and practice leads to confidence. Hands-on practice allows teachers to gain confidence in newly acquired skills and supports their efforts of building new skills. Development of the project was modeled with the social learning theory design to foster creative ways for collaborative learning to occur in social contexts through both observational and hands-on experiences with the goal of increasing teachers' confidence in technology use and self-efficacy.

Synthesis

The literature review presented research-driven evidence of the effectiveness of teachers' technology PD Based on the themes that emerged from my research study, the literature review examined studies that support the benefits of teacher technology trainings. Themes from my research study and the literature review support the need to develop a PD to meet the technology training needs of teachers. Qualities of effective trainings were analyzed. Meaningful activities, action-based learning, group and collaborative learning sessions, organized content, reflective learning, and transfer of

learning were features presented in effective PD. Supporting evidence from the literature review was used to develop a project for the VASD.

Project Description

The project resulting from the study is a 3-day training designed to increase VASD teachers' skill sets and confidence in implementing new technology tools. In Pennsylvania, the amended Act 48 – An Act Relating to the Public School System (1999), mandates that all certified teachers are required to complete ongoing professional education. Act 48 credits may include, but are not limited to, attending professional training hours (PDE Frequently Asked Questions – ACT 48, 2016). The continuing professional education requirements of Act 48 may be achieved through 180 hours of professional programs or activities (PDE Frequently Asked Questions – ACT 48, 2016), and this 3-day technology training would count toward continuing education credits. Through PD trainings, teachers gain useful skills and knowledge that can be incorporated into their curriculum.

The 3-day technology training has learning objectives that align with checklist criteria that are relevant to the technology tool's functionality. The desired outcome of a teacher technology training is technology-proficiency among teachers. The goal of a technology training program is to provide teachers with the knowledge and skills necessary to use a new technology tool, and a desired outcome would be an increase in the use of the new technology tool by the teachers. Teachers will be able to apply their new knowledge to effectively and efficiently integrate the tool into their curriculum.

Gaining self-confidence for using a new tool is another goal of the program. These project goals are aligned with the findings from my data analysis as shown in Table 3.

Table 3

Project Goals

Research question	Theme or subtheme	Program goal
1	Improved performance	Participant will recognize benefits of technology tool
2	Pedagogical gains	Participant will be able to utilize the technology tool to meet occupational expectations
2	Worthwhile time investment	Participants will recognize and value the time invested in attending technology PD training
2	Self-confidence	Participants' technology self-confidence will increase
3	Tech mentors/coaches	Participants will have opportunities to help one another
4	Technology support	Participants will explore tech support options and ways to mitigate tech barriers

Resources and Supports

Resources. Based on the large number of participants I would expect for the PD, one resource that would be required for a face-to-face program would be the high school auditorium. Another would be computer labs or computer cart resources for the teachers to get hands-on practice. During small group sessions, participants will be assigned specific classrooms according to grade level or subject taught. The technology tool needs to be available in each classroom and on all computers used for hands-on training. A laptop with the Smart Board application and projector would be needed in the large group sessions. Participants will receive a take-home packet including copies of the PowerPoint presentation and a list of any helpful resources for learning to use the new technology. If the training had to be conducted virtually due to the COVID pandemic, then an additional resource requirement would be a web-based meeting platform, like ZOOM or Microsoft Teams.

Supports. I would be the primary person conducting the training. Depending on the number of participants, additional tech support personnel would be helpful by visiting classrooms during small group practice sessions to provide technical and information support about the technology being trained.

Potential Barriers and Solutions

The teachers would need to obtain release time from their normal classroom duties to attend the 3-day PD. One workaround for this challenge would be to schedule the PD the week or 2 weeks before the commencement of normal classes. Another

potential barrier to current face-to-face training is the Corona Virus, also known as the COVID-19 pandemic. If we are still experiencing high levels of infections, then teachers would be hesitant to gather in a large assembly for 3-days of training. A potential workaround for this barrier would be to conduct the training using a virtual format. If the virtual contingency were pursued, then additional support would be needed to ensure that each teacher who attends the training had the software application on their work computer at home, as well as a reliable Internet connection and virtual meeting platform.

Implementation and Timeline

Implementing the proposed technology training (Appendix) would begin upon project approval from Walden University. I will begin by presenting the proposed training to the VASD superintendent and with approval, then present to the additional administrative personnel. After allowing time for administrative review, I would welcome a meeting to answer any questions pertaining to the proposed training and adjust as needed based on feedback. After local approval, I will recommend scheduling the training for the next available 3-day professional development workshop. A timetable of a 3-day professional development is outlined in Table 4.

Table 4

Professional Development Schedule

Time Period	Training Element	Methods
Day 1	Modules 1 & 2	PowerPoint with online support website links; videos; step-by-step demonstrations; summary & review
Day 2	Module 3	Reflective learning; PowerPoint; demonstration; Q & A session; small groups
Day 3	Module 4 & 5	PowerPoint; hands-on learning; implementation; discussion

Leading up to and throughout the training I emphasized emphasize the importance of hands-on experience needed to gain confidence and efficiency with new technology. The goals and learning objectives were designed in alignment with themes that emerged from participants' responses while focusing on the need to increase teachers' technology skills and confidence. Evidence from my literature review suggests that PD trainings developed with collaborative learning experiences and hands-on opportunities lead to increased technology literacy, increased technology skills, and can result in increased technology utilization. The following sections include relevant details necessary for implementing an approved 3-day technology training.

Transfer of learning. Throughout the program, participants will be given opportunities to provide examples of when and how they will apply the technology tool

in their classroom. Allowing teachers to share real-life technology usage scenarios promotes transfer of learning monitoring to occur on a personal level according to the teachers' grade level and subject taught. Participants will be divided into groups accordingly and each group will be given a classroom scenario to apply the technology tool. Transfer of learning will occur as teachers brainstorm ways to use the tool through real application hands-on learning. After groups completed the hands-on activities, participants will meet as a whole group to share their experiences.

Reflective discussion. Upon completion of the program, a reflective discussion will allow participants to reflect on ways to build on previous knowledge, explore what they learned, and share how this new learning will impact their classroom. This reflection time will be another method used to monitor transfer of learning. Program participants will be able to reflect on what they learned and share ideas about how to incorporate the new technology into their classroom. Participants will be given a take-home packet that includes program content and instructions to use as needed for future reference for successful transfer of learning in their classrooms.

Course evaluation. It will be explained to participants that the school district principals will receive completed individual final course evaluations. This final course evaluation will provide additional motivation for transfer of learning (Caffarella & Daffron, 2013). A possible open-ended question on the final course evaluation will ask participants to explain how their knowledge of the technology tool will benefit their classroom. The overall project evaluation plan is provided in detail following this section.

Program structure. More than one format will be used within the training program. Large group face-to-face format, small group format, and action-based brainstorming sessions (Caffarella & Daffron, 2013) will be scheduled throughout the technology training program. The initial introduction of the new technology tool will occur though a large group format. When participants are given the opportunity to break into groups specific to their content area, the small group sessions will be similar to a workshop format where the "emphasis is placed on participants being able to use what they have learned in different situations such as in their workplaces or various life roles they play" (Caffarella & Daffron, 2013, p. 263). Finally, the action-based brainstorming sessions will allow participants to work together to develop strategies to effectively apply the new technology.

Time and place. Prior to the start of a new school year, the VASD requires teachers to attend 5in-service days. Three of these in-service days could be used for a mandatory technology training program. In order to obtain ACT48 credits, the training will need to be approved by an administrator who will arrange online registration. Teachers will preregister for the program and sign in upon arrival each day to earn their continuing education credits. In the past, teachers met in the high school auditorium for in-service training. The auditorium will be used to introduce the topics to all teachers. Teachers will then be assigned classrooms to break into small groups. Laptop carts will be delivered for use in the classrooms with Internet accessibility for hands-on technology training. If the training is required to be delivered virtually due to the COVID pandemic,

current district policies governing such training will be implemented to address the time and place requirements for the training.

Schedule. Day 1 will include a four-hour large group session to introduce the new tool. This will take place in the high school auditorium. The second day will provide additional large group education of the tool, followed by small-group format. Participants will be encouraged to write down any questions or problems they faced during hands-on learning to share during the next day's large group session. The final day of the program will include a large group session, then small groups session, followed by brainstorm and reflection time in small groups. Then, individuals will be encouraged to apply what they have learned to their own classrooms. Transfer of learning will occur by allowing individual participants to have free time with the technology tool in their own setting. Free time will provide set-up time and allow participants to engage in hands-on learning. Often times with technology, an individual can see how the tool is used and believe they have the understanding of how to use the technology; however, without the assistance of an expert walking them through each step, they identify areas for additional practice and development.

The time used on their own to experiment with the tool will give teachers a better understanding of what questions to ask during the wrap-up discussion time. The final day will conclude with all participants returning to a large group session in the auditorium. This large group session time will be used to answer any questions and address any problems an individual may have encountered. A reflective wrap-up will reiterate the

benefits of using the tool, and also provide reassurance in participants' abilities to confidently apply their new knowledge. Upon completion of the program, participants will receive, complete, and return the course evaluation to the program coordinator. The submitted course evaluation will be required to receive ACT48 credits.

If virtual meetings are required due to the COVID pandemic, large group sessions will be conducted in a general session virtual meeting space with small group breakouts provided within subgroup meeting spaces (ZOOM calls these *Rooms* and *Workspaces*). If this is the case, then participant teachers will practice using their assigned computer hardware and software resources from home.

Roles and Responsibilities.

I will serve in the role of instructor. My responsibilities will include designing, preparing, and presenting the EdGenuity PD training program including a PowerPoint presentation, hand-outs, and evaluations (see Appendix). EdGenuity is an online learning platform used by VASD teachers to provide distance learning during the COVID pandemic. Additionally, I will be responsible for scheduling the in-service days, arranging refreshments to be provided for Day 1 (if applicable due to face-to-face meeting), and providing a schedule of the 3-day training to administration and participants (Appendix). Ensuring laptops are charged and available for participants' use will be arranged in advance with the district's technology director, and I will prepare by setting up an example EdGenuity classroom.

VASD teachers will be the participants in the PD training. Participants will be responsible for signing an attendance sheet each training day for eligibility to receive ACT48 credits. In addition to achieving each PD day's learning objectives, participants will be responsible for procuring and recharging the provided laptops each day. Participants will establish an EdGenuity classroom that they will be responsible for maintaining upon completion of the technology training.

Project Evaluation Plan

Program evaluation is an on-going process that occurs before, during, and after a PD project (Lodico, Spaulding, & Voegtle, 2010). The primary stakeholders, the teachers who participate in the training, will be provided formative assessments during the training and summative assessment at the training's conclusion. Formative evaluations will be conducted through open discussion about what is being taught and learned to ensure participants' understanding of new material (Suskie & Bantie, 2009). A summative evaluation will be given at the end of the program to assess the learning outcomes of the program (Suskie & Bantie, 2009). Secondary stakeholders will include the administrators who authorize the training to take place, as well as the students who eventually benefit from the training outcomes.

The program participants' feedback will be collected in the form of a survey that will be used as data for the improvement of future technology PD. Results will be reported to the secondary stakeholders to identify perceived effectiveness and benefits, to identify opportunities for improvement, and to recommend changes for future technology

training. An end-of-course survey will be combined with scheduled question and answer sessions to serve as the data collection tools for project evaluation (see Appendix). The survey questions and discussion points seek to ascertain the following project evaluation criteria.

- The extent to which participants' technology knowledge and skills increased as a result of the training.
- The extent to which participants feel confident in their ability to implement and use the technology in their classrooms.
- The appropriateness of the time spent on instruction and hands-on experiences for practice.
- The extent to which the training program adequately conveyed the benefits of the technology tool.

The program evaluation will also help to determine if goals and learning objectives were effectively met from the perspective of the teachers who participated in the training. Evaluating whether or not a program should continue to be offered in the future is another benefit of program evaluation (Long, n.d.). The guiding questions for a program evaluation will reveal if the program outcomes successfully achieved. These include the participants' proficiency with the tool, ability to identify benefits of using the tool, and gaining confidence in ability for using the technology.

Project Implications

The project discussed here and presented in the Appendix will have a direct impact on social change within the VASD. By offering technology training, teachers will gain beneficial skills that will positively impact their students and learning outcomes. Teachers who participate in the proposed technology training will gain self-confidence and increased technology literacy that promotes technology usage. Although the VASD administration and teachers are the primary stakeholders in this project, the VASD students will benefit from the project when teachers are prepared to offer technology instruction that leads to improved student engagement and learning. In the larger context, the school district, its annual budget, and the community tax base will benefit when expensive technology investments are more fully utilized by the classroom teachers.

Summary

In this section, I provided details of the project that resulted from this study. A 3-day teacher technology training will allow the teachers participants to learn how to use a new technology tool through instruction and hands-on supervised experience. The learning objectives should align with the program's goal of providing teachers with the knowledge and skills necessary to become proficient using a new technology tool. One goal of providing this training to teachers is that the school district will experience an increase in technology utilization overall, which is a recognized need within the rural district. Increasing teacher confidence and willingness to utilize technology will also benefit the district monetarily by helping to justify the expense of purchasing and

maintaining technology throughout the school year. Aligning with the VASD's mission of fostering learning in a supporting environment, the project's outcomes will benefit participants by educating teachers on the skills necessary to incorporate new technology into their work environment.

Section 4: Reflections and Conclusions

I begin Section 4 by presenting my views about the project strengths and limitations for addressing the problem. Recommendations for alternative approaches are then offered along with additional suggestions for addressing the problem. I then explain the development and evaluation of the project, detail my learning from the research experience, and self-reflect upon myself as a researcher. The leadership and change subsection includes a description of possibilities for promoting positive social change based on the study. I then share my reflection on the importance of the work, implications for social change, and directions for recommended future research. The conclusion in this section contains my personal aspirations for the project outcomes.

Project Strengths and Limitations

The one limitation and two strengths that I identified related to this project are presented in the following subsections.

Limitation

One limitation for the implementation of this project will be the ratio of trainers to teachers. Currently, there are only four experienced technology trainers and 200 teachers in the district should the project be implemented. One way to mitigate the impact of this limitation would be to run the suggested training multiple times. To accomplish this, however, it may be necessary to relieve the trainer(s) of some of their teaching loads so they could devote more time to conducting and evaluating the technology training outlined in the Appendix.

Strengths

The goal of educational research is to improve educational procedures, practices, and policies (Creswell, 2015). This study brings about awareness to both strengths and weaknesses that currently exist related to technology usage within the VASD. One of the strengths of this study was bringing awareness to VASD teachers' perceptions of technology. Another strength was that this study identified teachers as mentors and recognized the collaboration efforts present in the VASD. Participants revealed that teachers who have experienced successful technology integration and implementation assume voluntary mentor roles. Teachers who need technology mentors feel comfortable asking colleagues for advice and assistance to implement new technology successfully.

Recommendations for Alternative Approaches

I analyzed the interview responses of 12 VASD teachers in this study. Three teachers from each grade-level building were interviewed to provide a representation of each VASD building. A different approach to this study would be to include more teachers from only one VASD building. Interviewing more teachers from one building would narrow the focus to grade-specific technology needs. Another approach to framing the problem of technology underutilization would be to include interviews with building principals.. Data collected from principals would be difficult to keep anonymous within a small school district but would add another perspective that would provide an administrative focus on the problem.

An alternative approach to a 3-day technology training would be offering VASD teachers on-going PD time specifically for question-answer sessions. These sessions would be held during allotted PD time after school and would provide engaging collaboration opportunities for the teachers while promoting the development of advanced technology skills. An additional benefit would be that VASD teachers would be receiving individualized training specific to their grade-level and personal needs.

Through this project, teachers will gain valuable skills needed for classroom technology integration strategies. One problem is the lack of technology trainers available in the geographic region requires an increase in the trainer-to-teacher ratio. Having more trainers would allow smaller discussion groups and opportunities for individualized hands-on experiences intended for grade-specific teachers. An alternative approach would be to hire additional trainers from outside areas. Researching funding opportunities and applying for grants would be necessary to cover additional expenses associated with hiring additional trainers.

Scholarship, Project Development, and Evaluation

Scholarship

Reflecting on my doctoral experiences, I gained insight that has been and will continue to be beneficial as a teacher, coworker, and lifelong learner. Learning research practices and procedures has prepared me to view data from a different perspective. The doctoral process forced me to step out of my comfort zone. I also realized that I was setting an example for my children and my students as a lifelong learner. I often asked

myself questions to find the depth of meaning, not only in my research but in other research articles that I read. My writing skills and my ability to communicate effectively have improved. Through this experience, I have gained confidence needed to be an advocate for social change as technology advancements require continual training. As I continue to develop critical-thinking skills, I feel better equipped to prepare future educators in a technology-driven community of learning.

Project Development

The PD project development for this capstone study was largely a research-derived reaction to the COVID-19 pandemic. The pandemic forced K–12 grade teachers across the United States to learn how to use an online learning platform in haste while simultaneously dealing with personal crises. Teachers responded to meet the needs of their students by uploading curriculum, hosting Zoom meetings, reaching out by e-mail and phone calls to students and families, and monitoring students' progress all while supporting the emotional needs of students, students' families, coworkers, and their own families.

The COVID-19 pandemic required immediate action that did not allow time for training to occur before implementation. The imminence and urgency of the unforeseen situation made educators and administrators aware of the need for increased and improved technology training. Administrators realized how inadequately prepared the VASD was to initiate a new online learning tool. Implementing an online learning platform has forced teachers to grapple with implementing and using Edgenuity.

Edgenuity is the learning platform that the VASD implemented to meet the demands of social distancing during COVID-19. Teachers were forced to learn how to navigate, use, and implement technology that was new and unfamiliar as an only option to finish the last quarter of the school year. While VASD is planning a return to school this fall, implementing the proposed project to enhance teacher efficacy using EdGenuity, for example, could be an important hedge against the unknown future of K–12 education during the ongoing COVID-19 pandemic.

Leadership and Change

Promoting social change through presenting and implementing the findings of this study was my primary goal of conducting research. As a VASD employee, I take pride in my teaching profession. I feel a sense of responsibility to ensuring meaningful educational opportunities are available to all students I serve but also a sense of advocacy. Good leaders advocate for the people they lead. This research provided me with the leadership opportunity to advocate for VASD teachers' use of technology. The COVID-19 pandemic presented an opportunity to advocate for the need for continuous technology PD in a school district that historically struggled with technology integration. Providing technology training is necessary to prepare teachers. VASD teachers were forced to learn how to integrate a new online LMS to meet the needs of their home-bound students during the COVID-19 crisis. The VASD reacted to heading the call to provide distance learning to the students they serve. I feel honored to have had this opportunity to facilitate technology integration awareness. Having the project to

implement in the VASD will provide school leaders with a new tool that will enable proactive preparedness through increased technology utilization, which was the original research problem that prompted this study.

Reflection on Importance of the Work

Technology integration has been and will continue to be the focus of many educational researchers. Implementing technology training for teachers will also continue to be a narrow focus in my role as an educator. I strive to promote social change through bringing awareness to the needs of teachers who may struggle with technology utilization. The VASD will benefit from this study by the administration being made aware of VASD teachers' perceptions of available technology. Bringing awareness to the need to be proactive, rather than reactive, regarding essential training best suited to meet teachers' curriculum and instructional needs is what I hope to accomplish through this study.

Implications, Applications, and Directions for Future Research

Implications

The research implications include direct benefits to VASD stakeholders, including teachers, administrators, and students. The project training program I developed was designed in response to meet the technology training needs of the VASD teachers and administrators during the COVID-19 pandemic. The findings of this study revealed that teachers perceived lack of time and available training as barriers to technology integration. Through a professional training program, teachers will be afforded the time

necessary to dedicate their efforts and focus their attention on gaining meaningful skills that will benefit them in their classrooms.

Applications

In this study, I identified factors that influenced VASD teachers' technology use. Understanding teachers' perceptions of technology helped identify VASD's technology strengths and weaknesses. In response, I developed a PD program to build teachers' confidence and self-efficacy to implement technology that benefits their students' learning environment. Students benefit when their teachers are provided with training that promotes technology implementation. This project was designed to develop collaborative relationships, foster technology learning, and seek training opportunities that build teachers' technology skills.

Directions for Future Research

One recommendation for future research is to investigate the teachers' perceptions after attending technology PD trainings. Another recommendation for future research is to investigate the students' learning outcomes before and after technology integration to determine if a relationship exists between teachers' technology usage and student academic achievement. The VASD teachers, administrators, and students can benefit from this study by understanding how technology improves learning experiences, the importance of maintaining technology devices, and the benefits of providing training for teachers who rely on technology for their daily job responsibilities.

Conclusion

Whether the technology training is required to gain new skills or to build on previous skills, I will advocate for social change through continued technology training that creates a better learning environment for teachers and students. Technology will continue to advance; therefore, teachers need to be properly equipped to advance with technology. The findings of this study can be used to promote the awareness of the need to implement technology trainings as a proactive approach instead of a reactive approach.

Prior to my research, I spoke with teachers from the VASD buildings, other than the middle school building where I teach, on rare occasions. This study afforded me an opportunity to meet teachers in the VASD who I would not have met otherwise. As a middle school teacher, I work primarily in the sixth through eighth grade building. As a researcher, I realize the importance of building rapport with participants. This doctoral journey was an opportunity for me to build rapport with faculty outside of my building. In the field of education, sharing personal teaching experiences build relationships that positively affect classroom management (Agyemang, Dzandu, & Boateng, 2016). Teacher technology use varies among the four buildings within the VASD. I was unaware of the technology usage and needs of the elementary teachers. This study brought to light the importance of mentor relationships but also led to the realization that teachers from the various buildings can build on students' previous technology experiences.

Students in the elementary school are learning how to type, how to use passwords, and how to use online educational resources. As grade levels advance, students should be

given opportunities to build on the previous technology skills they have learned. Through the data collection process for this study, I was able to reach out to teachers from all VASD buildings. My hope is to continue to build rapport with teachers to share my knowledge of technology, what worked for me, what did not work, and what I learned through any and all technology integration experiences. Building teacher relationships could impact future social change that has the potential to improve technology integration for teachers and their students. In contemplating my learning through the doctoral program and my personal mantra for teaching technology education, I am reminded of the quote that has been attributed to the acclaimed theater actress, Helen Hayes (1900–1993), “The expert at anything was once a beginner” (origin unknown). I believe that my research has the potential to make educators more aware of the technology expert within each of them.

References

Pennsylvania General Assembly. (1999). Act 48 – An act relating to the public school system. Retrieved from https://www.legis.state.pa.us/cfdocs/legis/li/uconsCheck.cfm?yr=1999&sessInd=0&act=48

Agyemang, F. G., Dzandu, M. D., & Boateng, H. (2016). Knowledge sharing among teachers: The role of the big five personality traits. *Journal of Information and Knowledge Management Systems, 46*(1), 64-84. https://doi.org/10.1080/0969594X.2018.1430685

Alasela, A., Olufunmilola, O., Akindele, O., & Olabo, O. (2016). Enhancing learning through information and communication technology: University of Ilorin pre-service teachers' perception. *Malaysian Journal of Distant Education, 18*(1), 71-85. https://doi.org/10.21315/mjde2016.18.1.5

Allen, C. (2015). Reacting to the technology splurge: Information and communications technology (ICT) training for EFL teachers in the one-to-one era. *Teacher Trainer: A Practical Journal for Those Who Train, Mentor & Educate TESOL Teachers*, *29*(3), 19-21.

Andersson, C., & Palm, T. (2017a). The characteristics of formative assessment that enhance student achievement in mathematics. *Education Inquiry, 8*(2), 104-122. https://doi.org/10.1080/20004508.2016.1275185

Andersson, C., & Palm, T. (2017b). The impact of formative assessment on student

achievement: A study of the effects of changes to classroom practice after a comprehensive professional development programme. *Learning and Instruction, 49,* 92-102. https://doi.org/10.1016/j.learninstruc.2016.12.006

Andersson, C., & Palm, T. (2018). Reasons for teachers' successful development of a formative assessment practice through professional development – a motivation perspective. *Assessment in Education: Principles, Policy & Practice, 25*(6), 576-597. https://doi.org/10.1080/0969594X.2018.1430685

Ashari, Z. S. M., Azmi, N., Yaacob, Y., Alshurdin, S. H. N., & Low, K. (2018). Interaction behavior on Edmodo in biology: Integrating UTAUT model. *International Journal of Engineering & Technology, 7*(3.7), 104-108. https://doi.org/10.14419/ijet.v7i3.7.16248

Bakir, N. (2016). Technology and teacher education: A brief glimpse of the research and practice that have shaped the field. *Tech Trends, 60,* 21-19. https://doi.org/10.1007/s11528-015-0013-4

Baltal, N., Arslan, M., & Duru, H. (2015). The effect of in-service training courses on teacher achievement: A meta-analysis study. *Journal of Education and Training Studies, 3*(5), 254-263. https://doi.org/10.11114/jects.v315.1037

Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice Hall.

Bandura, A. (2009). Cultivate self-efficacy for personal and organizational effectiveness. In E. A. Locke (Ed.), *Handbook of principles of organization behavior* (2nd ed., pp. 179-200). New York, NY: Wiley.

Batane, T., & Ngwako, A. (2017). Technology use by pre-service teachers during teaching practice: Are new teachers embracing technology right away in their first teaching experience? *Australian Journal of Educational Technology*, *33*(1), 50-61. Retrieved from https://doi.org/10.14742/ajet.2299

Bogdan, R. C., & Biklen, S. K. (2007). *Qualitative research for education: An introduction to theories and methods* (5th ed.). Boston, MA: Pearson.

Brabeck, K., Fisher, K., & Pitler, H. (2004). Building better instruction: How technology supports nine research-proven instructional strategies. *Learning & Leading With Technology, 31*(5), 6-11 Retrieved from https://www.learningandleading-digital.com/

Britt, D. (2015). How to better engage online students with online strategies. *College Student Journal*, *49*(3), 399-404. https://www.questia.com/library/p1917/college-student-journalBrown, C., Englehardt, J., & Mathers, H. (2016). Examining preservice teachers' conceptual and practical understandings of adopting iPads into their teaching of young children. *Teaching & Teacher Education*, *60*, 179-190. Retrieved from https://doi.org/10.1016/j.tate.2016.08.018

Buchanan, T., Sainter, P., & Saunders, G. (2013). Factors affecting faculty use of learning technologies: Implications for models of technology adoption. *Journal of Computing in Higher Education*, *25*(1), 1-11. Retrieved from https://link.springer.com/article/10.1007/s12528-013-9066-6

Bumbuardner, K., Strong, R., Murphrey, T., & Dooley, L. (2014). Examining the

blogging habits of agricultural leadership students: Understanding motivation, use, and self-efficacy. *Journal of Agricultural Education, 55*(3), 32-42. https://www.jae-online.org/ Bunte, M. P. (2017, May 31). *Blackboard learn review*. Retrieved from https://www.betterbuys.com/lms/reviews/blackboard-learn/

Burrell, A. R., Cavanagh, M., Young, S., & Carter, H. (2015). Team-based curriculum design as an agent of change. *TeachingiIn Higher Education*, *20*(8), 753-766. https://doi.org/10.1080/13562517.2015.1085856

Caffarella, S., & Daffron, S. (2013). *Planning programs for adult learners: A practical guide* (3rd ed.). San Francisco, CA: Jossey-Bass.

Campbell, K., Naidoo, J., & Campbell, S. (2020). Hard or soft sell? Understanding white papers as content marketing. *IEEE Transactions on Professional Communication*, *63*(1), 21-38. https://doi.org/10.1109/TPC.2019.296100

Churches, R., & Terry, R. (2007). *NLP for teachers: How to be a highly effective teacher*. Manhattan, NY: Crown House Publishing, Ltd.

Clark, C., & Boyer, D. D. (2016). Twenty-first century technology integration staff development: A phenomenology. *Journal of Computers in Education*, *3*, 1-20.

Cooper, C. H., Jr. (2014). *The relationship between teachers' perceptions about job-embedded professional development and teacher efficacy in implementing technology.* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database. (Order No. 1526444024)

Copper, J., & Semich, G. (2014). YouTube as a teacher training tool: Information and communication technology as a delivery instrument for professional development. *International Journal of Information & communication Technology Education, 10*(4), 30-40. https://doi.org/10.4018/ijicte.2014100103

Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches.* Thousand Oaks, CA: Sage Publications.

Creswell, J. W. (2015). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (5th ed.). Boston, MA: Pearson.

Crompton, H., Olszewski, B., & Bielefeldt, T. (2016). The mobile learning training needs of educators in technology-enabled environments. *Professional Development in Education, 42*(3), 482-501. https://doi.org/10.1080/19415257.2014.1001033

Cullen, M. (2018, February 7). How to write and format a white paper: The definitive guide. *Instructional Solutions*. Retrieved from https://www.instructionalsolutions.com/blog/how-to-write-white-paper

Dalal, M., Archambault, L., & Shelton, C. (2017). Professional development for international teachers: Examining TPACK and technology integration decision making. *Journal of Research on Technology in Education, 49*(3-4), 117-133. Retrieved from https://members.aect.org/pdf/Proceedings/proceedings17/2017/17_10.pdf

Daloz, L. (2013). *Mentor: Guiding the journey of adult learners*. San Francisco, CA: Jossey-Bass.

Darban, M., & Polites, G. (2016). Do emotions matter in technology training? Exploring their effects on individual perceptions and willingness to learn. *Computers in Human Behavior, 62,* 644-657. https://doi.org/10.1016/j.chb.2016.04.028

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13,* 319-340. https://doi.org/10.2307/249008

De Bruyckere, P., Kirschner, P. A., & Hulshof, C. D. (2016). Technology in education: What teachers should know. *American Educator*, *40*(1), 12-18. Retrieved from https://www.aft.org/

Digital Teacher. (2017, March 30). Learning from EdTech [Blog post]. Retrieved from https://thedigitalteacher.com

Dinc, E. (2019). Prospective teachers' perceptions of barriers to technology integration in education. *Contemporary Educational Technology, 10*(4), 381-398. https://doi.org/10.3035/cet.634187

Ellicott, V. (2018). Thinking about the coding process in qualitative data analysis. *The Qualitative Report, 23*(11), 2850-2861. Retrieved from https://nsuworks.nova.edu/cgi/viewcontent.cgi?article=3560&context=tqr

Eutsler, L., & Antonenko, P. (2018). Predictors of portable technology adoption intentions to support elementary children reading. *Educational & Informational Technology, 23*(5). https://doi.org/10.1007/s10639-018-9700z

Evrim, B. (2016). Investigating faculty technology mentoring as a university-wide

professional development model. *Journal of Computing in Higher Education, 28*(1), 45-71. https://doi.org/10.1007/s12528-015-9104-7

Fania, T., & Ghaemib, F. (2011). Implications of Vygotsky's zone of proximal development (ZPD) in teacher education: ZPTD and self-scaffolding. *International Conference on Education and Educational Psychology, 29*, 1549-1554. https://doi.org/10.1016/jsbspro.2011.11.396

Figg, C., & Jamani, J. (2013). Transforming classroom practice: Technology PD that works! *Teaching & Learning, 8*(1), 87-98. Retrieved from https://www.researchgate.net/publication/318749888_Transforming_Classroom_Practice_Technology_Professional_Development_that_Works

Frost, D., & Durrant, J. (2013). *Teacher-led development work: Guidance and support.* New York, New York: Routledge.

Gökoglu, S., & Çakiroglu, Ü. (2017). Determining the roles of mentors in the teachers use of technology implementation of system-based mentoring model. *Educational Sciences: Theory & Practice, 17*(1), 191-215. https://doi.org/10.12738/estp.2017.1.0234

Güven, B., & Yilmaz, G. (2016). Effect of designed in-service training to secondary school mathematics teachers technology usage levels. *Education & Science / Egitim Ve Bilim, 41*(188), 35-66. https://doi.org/10.15390/EB.2016.6646

Handal, B., Cavanagh, M., Wood, L., & Petocz, P. (2011). Factors leading to the adoption of a learning technology: The case of graphic calculators. *Australasian*

Journal of Educational Technology, *27*(2), 343-360. Retrieved from https://ajet.org.au/index.php/AJET

Harrell, S., & Bynum, Y. (2018). Factors affecting technology integration in the classroom. *Alabama Journal of Educational Leadership, 5*, 12–18. Retrieved from https://www.icpel.org/uploads/1/5/6/2/15622000/ajel_volume_5_2018.pdf

Heitink, M., Van Der Kleij, F., Veldkamp, B., Schildkamp, K., & Kippers, W. (2016). A systematic review of prerequisites for implementing assessment for leaning in classroom practice. *Educational Research Review,* 17, 50-62. Retrieved from https://pdfs.semanticscholar.org/5f83/4abaafa872dc28889c3fbcfc7598e93afdcb.pdf

Hsu, P. (2016). Examining current beliefs, practices and barriers about technology integration: A case study. *Tech Trends: Linking Research & Practice to Improve Learning*, *60*(1), 30-40. https://doi.org/10.1007/s11528-015-0014-3

Hu, H., & Garimella, U. (2017). Excellence in elementary school science (EESS): Teacher's perceptions & technology integration from a professional development. *Journal of Computers In Mathematics & Science Teaching*, 36. Retrieved from https://www-dev.aace.org/pubs/jcmst/

Hunter, J. E., & Schmidt, F. L. (1990). *Methods of meta-analysis: Correcting error and bias in research findings*. Newbury Park, CA: Sage Publishing.

Huzzie-Brown, A. (2018). *Beliefs vs behavior of elementary teachers integrating technology in mathematics.* Retrieved from ProQuest Dissertation and Theses

database.

Jeong, H. I., & Kim, Y. (2017). The acceptance of computer technology by teachers in early childhood education. *Interactive Learning Environments, 25*(4), 496-512. https://doi.org/10.1080/10494820.2016.1143376

Jones, M., & Dexter, S. (2018). Teacher perspectives on technology integration professional development: Formal, informal, and independent learning activities. *Journal of Educational Multimedia and Hypermedia, 27*(1), 83-102. Retrieved from https://www.learntechlib.org/primary/p/178511/.

Kabakci-Yurdakul, I., Usavas, O., & Becit-Isciturk, G. (2014). An integrated approach for preservice teachers' acceptance and use of technology: UTAUT-PST scale. *Eurasian Journal of Educational Research,* 55, 21-35. http://ejer.com.tr/

Kafyulilio, A., Fisser, P., & Voogt, J. (2016). Teacher design in teams as a PD arrangement for developing technology integration knowledge and skills of science teachers in Tanzania. *Education Information Technology (21),* 301-318. Retrieved from https://www.semanticscholar.org/paper/Teacher-design-in-teams-as-a-professional-for-and-Kafyulilo-Fisser/c522ba5eb17066f89ca0e02e2295b18443ae3cef

Kamish, H., & Özonur, M. (2019). Students learning styles in vocational education. *International Journal of Curriculum and Instruction (11)*1. 209-220. http://ijci.wcci-international.org/

Karsenti, T. (2016). The interactive whiteboard: Uses, benefits and challenges. A survey

of 11,683 students and 1,131 teachers. *Canadian Journal of Learning & Technology, 42*(5), 1-22. https://www.cjlt.ca/

Kaur, J., & Debel, O. (2019). Teacher collaboration and professional development in secondary schools of Ethiopia: A literature review. *IAHRW International Journal of Social Sciences, 7*(5). 1031-1034. Retrieved from https://www.tandfonline.com/doi/full/10.1080/13803611.2018.1509719

Khlaif, Z. (2018). Teachers' perceptions of factors affecting their adoption and acceptance of mobile technology in K-12 settings. *Computers in the Schools: Interdisciplinary Journal of Practice, Theory, and Applied Research, 35*(1), 49-67. https://doi.org/10.1080/07380569.2018.1428001

Knowles, M. S. (1973). *The adult learner: A neglected species*. Houston, TX: Gulf Publishing Company.

Knowles, M. S. (1980). *The modern practice of adult education: From pedagogy to andragogy*. New York, NY: Cambridge.

Knowles, M. S., Holton, E. F., & Swanson, R. A. (1998). *The adult learner: The definitive classic in adult education and human resource development (5th ed.).* Houston, TX: Gulf Publishing.

Kraky, J. (2012). Providing technology training at Keystone College. *International Journal of Instructional Media, 1*, 39. Retrieved from https://www.questia.com/library/journal/1G1-282067844/providing-technology-training-at-keystone-college

Levine, D., & Ornstein, A. (2006). *Foundations of education*. Boston, MA: Houghton Mifflin Company.

Li, L., Murnen, T., Zhou, Y., Wu, M. L., & Murnen, T. (2019). Globalizing technology education for teachers: The dual challenge of strengthening skills and changing perceptions. *Journal of Technology and Teacher Education, 27*(1), 97-116. Retrieved from https://www.learntechlib.org/primary/p/184713/

Little-Wiles, J., & Naimi, L. L. (2011). Faculty perceptions of and experiences in using the Blackboard Learning Management system. *Conflict Resolutions & Negotiation, 4,* 1-13. Retrieved from https://www.franklinpublishing.net

Lodico, M., Spaulding, D., & Voegtle, K. (2010). *Methods in educational research: From theory to practice.* (Laureate Education, Inc., 2nd ed.). San Francisco, CA: John Wiley & Sons.

Long, N. (n.d.). *Coding and the interpretation of data*. [PowerPoint slides]. Retrieved from https://class.waldenu.edu

Maich, K., Rhijn, T., Woods, H., & Brochu, K. (2017). Teachers' perceptions of the need for assistive technology training in Newfoundland and Labrador's rural schools. *Canadian Journal of Learning & Technology, 43*(2), 1-26. Retrieved from https://www.cjlt.ca/index.php/cjlt/issue/view/1929

Maruping, L., Bala, H., Venkatesh, V., & Brown, S. (2017). Going beyond intention: Integrating behavioral expectation into the unified theory of acceptance and use of technology. *Journal of the Association for Information Science & Technology,*

68(3), 623-637. https://doi.org/10.1002/asi.23699

Masino, M. (2015). Integration of Blackboard in the online learning environment. *Journal Of Instructional Pedagogies*, *16.* Retrieved from https://www.aabri.com/jip.html

McCulloch, A., Hollebrands, K., Lee, H., Harrison, T., & Mutlu, A. (2018). Factors that influence secondary mathematics teachers' integration of technology in mathematics lessons, *Computers & Education, 123*, 26-40. Retrieved from https://par.nsf.gov/servlets/purl/10118954

McGrath, C., Palmgren, P., & Lilijedahl, M. (2018). Twelve tips for conducting qualitative research interviews. *Medical Teacher, 41*(9), 1002-1006. Retrieved from https://www.tandfonline.com/doi/full/10.1080/0142159X.2018.1497149

McKnight, K., O'Malley, K., Ruzic, R., Horsley, M., Franey, J., & Bassett, K. (2016). Teaching in a digital age: How educators use technology to improve student learning. *Journal of Research on Technology in Education, 48*(3), 194-211. Retrieved from https://www.tandfonline.com/doi/full/10.1080/15391523.2016.1175856

McMahon, M. (2019). Social aspects of technology in education. *Salem Press Encyclopedia (7)*. Retrieved from https://www.salempress.com/

Meritt, J., Gibson, D., Christensen, R., & Knezek, G. (2013). Interactive technologies for teacher training: Comparing performance and assessment in second life and simschool. *Proceedings of the IADIS International Conference on Cognition &*

Exploratory Learning in Digital Age, 411-415. Retrieved from http://www.iadisportal.org/digital-library/iadis-international-conference-cognition-and-exploratory-learning-in-digital-age-2013

Merriam, S. B. (2009). *Qualitative research: A guide to design and implementation*. San Francisco, CA: Jossey-Bass.

Merriam, S. B., & Grenier, R. S. (2019). *Qualitative research in practice: Examples for discussion and analysis* (2nd ed.) San Francisco, CA: Jossey-Bass.

Merriam, S. B., & Tisdell, E. J. (2016). *Qualitative research: A guide to design and implementation* (4th ed.) Hoboken, NJ: Jossey-Bass.

Mitchell, G., Wohleb, E., & Skinner, L. (2016). Perceptions of public educators regarding accessibility to technology and the importance of integrating technology across the curriculum. *Journal For Research In Business Education, 57*(2), 14-25. https://doi:10.1177/2158244012440813

Mouakket, S., & Bettayeb, A. (2015). Investigating the factors influencing continuance usage intention of learning management systems by university instructors. *International Journal of Web Information Systems, 11*(4), 491-509. https://doi.org/10.1108/IJWIS-03-2015-0008

Norris, L., & Kukulska-Hulme, A. (2017). Teacher training and PD in mobile pedagogy for English language teaching. *International association for mobile learning.* 112-137. Retrieved from https://www.academia.edu/35132520/CH_4_TEACHER_TRAINING_AND_PD_

IN_MOBILE_PEDAGOGY_FOR_ENGLISH_LANGUAGE_TEACHING

PDE Frequently Asked Questions – ACT 48. (2016). Retrieved from http://www.education.pa.gov/Documents/Teachers-Administrators/Act%2048-PERMS/FAQ%20Act%2048%20Continuing%20Professional%20Education%20Requirements.pdf

Pennsylvania Department of Education. (2020). *Become and educator*. Retrieved from https://www.education.pa.gov/Educators/Certification/BecomeAnEducator/Pages/default.aspx

Powell, C. G., & Bodur, Y. (2019). Teachers' perceptions of an online professional development experience: Implications for a design and implementation framework. *Teaching and Teacher Education, 77,* 19-30. https://doi.org/10.1016/j.tate.2018.09.004

Proctor, M., & Marks, Y. (2013). A survey of exemplar teachers' perceptions, use, and access of computer-based games and technology for classroom instruction. *Computers & Education, 62,* 171-180. https://doi.org/10.1016/j.compedu.2012.10.022

Reigeluth, C., Beatty, B., & Myers, R. (2016). The learner-centered paradigm of instruction. In C.M. Reigeluth, B.Beatty, & R. Myers (Eds.) *Instructional-design theories and models: The learner-centered paradigm of education.* New York, NY: Routledge.

Richter, S., & Idleman, L. (2017). Online teaching efficacy: A product of professional

development and ongoing support. *International Journal of Nursing Education Scholarship, 14*(1). https://doi.org/10.1515/ijnes-2016-0033

Riel, J., Lawless, K., & Brown, S. (2016). Listening to teachers: Using weekly online teacher logs for ROPD to identify teachers' persistent challenges when implementing a blended learning curriculum. *Journal of Online Learning Research, 2*(2), 169-200. Retrieved from https://www.learntechlib.org/primary/p/171358/

Roblin, N. P., Tondeur, J., Voogt, J., Bruggeman, B., Mathieu, G., & van Braak, J. (2018). Practical considerations informing teachers' technology integration decisions: The case of tablet PCs. *Technology, Pedagogy, and Education, 27*(2), 165-181. https://www.tandfonline.com/doi/full/10.1080/1475939X.2017.1414714

Rotermund, S., DeRoche, J., & Ottem, R. (2017). Teacher professional development by selected teachers and school characteristics: 2011-2012 [Stats in Brief]. NCES 2017-200. U.S. Department of Education. *National Center for Education Statistics*.

Rowbotham, M. A. (2015). The impact of faculty development on teacher self-efficacy, skills and perspectives. *Illinois Education Research Council, 1*, 2–28.

Rucker, R., & Frass, L. R. (2017). Migrating learning management systems in higher education: Faculty members' perceptions of system usage and training when transitioning from Blackboard Vista to Desire2Learn. *Journal of Educational Technology Systems*, *46*(2), 259-277. Retrieved from

https://journals.sagepub.com/doi/abs/10.1177/0047239517711954

Rudnesky, F. (2006). Raise the bar for everyone with technology integration. *Principal Leadership: Middle Level Edition, 6*(6), 34. Retrieved from https:// nassp.org/Portals/0/Content/53400.pdf

Ruggiero, D., & Mong, C. J. (2015). The teacher technology integration experience: Practice and reflection in the classroom. *Journal of Information Technology Education: Research*, 14, 161-178. Retrieved from https://jite.org/documents/Vol14/JITEv14ResearchP161-178Ruggiero0958.pdf

Ryan, G., & Bernard, H. (2003). Techniques to identify theme. *Field Methods, 15*(1), 85-109. Retrieved from https://journals.sagepub.com/doi/10.1177/1525822X02239569

Saldana, J. (2008). *Coding manual for qualitative researchers*. Los Angeles, CA: Sage Publication.

Sargeant, J. (2012). Qualitative research part II: Participants, analysis, and quality assurance. *Journal of Graduate Medical Education, 4*(1), 1–3. https://doi.org/10.4300/JGME-D-11-00307.1

Schneider, M., & Randel, B. (2010). Research on characteristics of effective professional development programs for enhancing educator's skills in informative assessment. In H. L. Andrade & G. J. Cizek (Eds.), *Handbook of formative assessment* (Chapter 15, pp. 251-276). Abingdon, VA: Routledge.

Schon, D. (1991). *The reflective practitioner: How professionals think in action.* New

York, NY: Basic Books, Inc.

Shenton, A. (2004). Strategies for ensuring trustworthiness in qualitative research project. *Education for Information, 22*(63), 63-75. https://doi.org/10.3233/EFI-2004-22201

Spence, C. (2016). Impact of professional development in response to intervention on secondary teachers' efficacy (Doctoral dissertation). Retrieved from http://scholarworks.waldenu.edu/dissertations

Starks Ray, C. (2015). *Perceptions of high school teachers on integrating technology following professional development* (Doctoral dissertation). Retrieved from http://scholarworks.waldenu.edu/dissertations

Stelzner, M. (2007). *Writing white papers: How to capture readers and keep them engaged.* Poway, CA: White Paper Source Publishing.

Stokes-Beverly, C., & Simoy, I. (2016). U.S. Department of Education. *Advancing educational technology in teacher preparation: Policy brief.* Retrieved from https://tech.ed.gov/files/2016/12/Ed-Tech-in-Teacher-Preparation-Brief.pdf

Strickland-Davis, S., Kosloski, M., & Reed, P. (2019). The impact of professional development grounded in social learning on community college faculty efficacy. *Community College Journal of Research and Practice*. *44*(7). 492-507. https://doi.10.1080/10668926.2019.1616006

Sumak, B., Pusnik, M., Hericko, M., & Sorgo, A. (2017). Differences between prospective, existing, and former users of interactive whiteboards on external

factors affecting their adoption, usage, and abandonment. *Computers in Human Behavior, 72,* 733-756. https://doi.org/10.1016/j.chb.2016.09.006

Suskie, L., & Banta, T. W. (2009). *Assessing student learning: A common sense guide* (2nd ed.). San Francisco, CA: Jossey Bass.

Taylor, L., & Parsons, J. (2011). Improving student engagement. *Current Issues in Education, 14*(1). Retrieved from http://cie.asu.edu/

Teo, T., & Zhou, M. (2017). The influence of teachers' conceptions of teaching and learning on their technology acceptance. *Interactive Learning Environments, 25*(4), 513-527. Retrieved from https://www.tandfonline.com/doi/abs/10.1080/10494820.2016.1143844?scroll=top&needAccess=true&journalCode=nile20

Thoma, J., Hutchinson, A., Johnson, D., Johnson, K., & Stromer, E. (2017). Planning for technology integration in a professional learning community. *The Reading Teacher, 71*(2), 167-175.https://doi.org/10.1002/trtr.1604

Thurlings, M., & Den Brok, P. (2017). Learning outcomes of teacher professional development activities: a meta-study. *Educational Review, 69*(5), 554-576. Retrieved from https://www.tandfonline.com/doi/full/10.1080/00131911.2017.1281226

Tondeur, J., Braak, J., Ertmer, P., & Ottenbreit-Leftwich, A. (2017). Understanding the relationship between teachers' pedagogical beliefs and technology use in education: A systematic review of qualitative evidence. *Educational Technology*

Research & Development, 65(3), 555-575. https://doi.1007/s11423-016-9481-2

Tosuntas, S. B., Karadag, E., & Orhan, S. (2015). The factors affecting acceptance and use of interactive whiteboard within the scope of FATIH project: A structural equation model based on the unified theory of acceptance and use of technology. *Computers & Education, 81,* 169-178. https://doi.org/10.1016/j.compedu.2014.10.009

U.S. Department of Education. (2012). *2012 revision of NCES statistical standards: Final*. Retrieved from: https://nces.ed.gov/statprog/2012/

U.S. Department of Education. (2017). *Reimaging the role of technology in education: 2017 National education technology plan update.* Retrieved from https://tech.ed.gov/files/2017/01/NETP17.pdf

U.S. Department of Education. (2019). *Every student succeeds act: A new education law*. Retrieved from https://www.ed.gov/essa

Vannatta, R. A., & Fordham, N. (2004). Teacher dispositions as predictors of classroom technology use. *Journal of Research on Technology in Education, 36*(3), 253-271. Retrieved from https://www.learntechlib.org/p/98185/

Varnell, P. (2016). Transitioning to the learning management system Moodle from Blackboard: Impacts to faculty. *Online Journal of Distant Learning Administration, 19*(2), 1-8. Retrieved from https://www.westga.edu/~distance/ojdla/summer192/varnell192.html

Venkatesh, V. (2000). Determinants of perceived ease of use: Integrating control,

intrinsic motivation, and emotion into the technology acceptance model. *Information Systems Research, 11*(4), 342-365. Retrieved from www.jstor.org/stable/23011042

Venkatesh, V., Morris, M., Davis, G., & Davis, F. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly, 27*(3), 425-478. https://doi.org/10.2307/30036540

Venkatesh, V., Thong, J., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly, 36*(1), 157-178. https://doi.org/10.2307/41410412

Venkatesh, V., Thong, J., & Xu, X. (2016). Unified theory of acceptance and use of technology: A synthesis and the road ahead. *Journal of the Association for Informed Systems, (17)*5, 328-376. Retrieved from http://www.vvenkatesh.com/wp-content/uploads/dlm_uploads/2016/01/2016_JAIS_Venkatesh-et-al.-UTAUT.pdf

Villarreal, J. (2018). *Correlation study between school administrators' technology leadership preparation and technology integration.* Retrieved from ProQuest Dissertation and Theses database.

Vongkulluksn, V., Xie, K., & Bowman, M. (2018). The role of value on teachers internalization of external barriers and externalization of personal beliefs for classroom technology integration, *Computers & Education, 118*, 70-81. Retrieved from https://www.sciencedirect.com/journal/computers-and-education/vol/118

Vu, P., & Feinstein, S. (2017). An exploratory multiple case study about using game-based learning in STEM classrooms. *International Journal of Research in Education and Science, 3*(2), 582-588. Retrieved from https://www.ijres.net/index.php/ijres/article/view/156

Wang, L., & Wu, Y. (2015). The exploration of elementary school teachers' Internet self-efficacy and information commitments: A study in Taiwan. *Educational Technology & Society, 18*(1), 211-222. Retrieved from https://www.j-ets.net/

Weingarten, R. (2020, January 15). About share my lesson. Retrieved from https://sharemylesson.com/about-us

Whitaker, T. (2013). *What great teachers do differently: 17 things that matter most* (2nd ed.) New York, NY: Routledge.

Whitworth, B., & Chiu, J. (2015). Professional development and teacher change: The missing leadership link. *Journal of Science Teacher Education, 26*, 121-137. https://doi.org/10.1007/s10972-014-9411-2

Wilkerson, M. H., Andrews, C., Shaban, Y., Laina, V., & Gravel, B. E. (2016). What's the technology for? Teacher attention and pedagogical goals in a modeling-focused professional development workshop. *Journal of Science Teacher Education, 27*(1), 11-33. https://doi.org/10.1007/s10972-016-9453-8

Willis, J., & Cifuentes, L. (2005). Training teachers to integrate technology into the classroom curriculum: Online versus face-to-face course delivery. *Journal of Technology & Teacher Education, 13*(1), 43-63. Retrieved from

https://www.learntechlib.org/primary/p/6568/.

Wing Fat Lau, W., & Hoi Kau Yuen, A. (2013). Educational technology training workshops for mathematics teachers: An exploration of perception changes. *Australian Journal of Educational Technology, 29*(4), 595-61. https://doi.org/10.14742/ajet.335

Wingo, N., Ivankova, N. V., & Moss, J. A. (2017). Faculty perceptions about teaching online: Exploring the literature using the technology acceptance model as an organizing framework. *Online Learning*, *21*(1), 15-35. Retrieved from https://olj.onlinelearningconsortium.org/index.php/olj/article/view/761

Wolf, T. (2020). *Governor announces closure of Pennsylvania schools.* Retrieved from https://www.governor.pa.gov/newsroom/governor-wolf-announces-closure-of-pennsylvania-schools/

Won Hur, J., Shannon, D., & Wolf, S. (2016). An investigation of relationships between internal and external factors affecting technology integration in classrooms. *Journal of Digital Learning in Teacher Education, 32,* 105-114. Retrieved from https://www.tandfonline.com/doi/abs/10.1080/21532974.2016.1169959

Zonoubi, R., Rasekh, A. E., & Tavakoli, M. (2017). EFL teacher self-efficacy development in professional learning communities. *System: An International Journal of Educational Technology and Applied Linguistics, 66*(6), 1-12. Retrieved from https://isiarticles.com/bundles/Article/pre/pdf/112564.pdf

Appendix A: An Edgenuity Professional Development for Teachers

Executive Summary

This 3-day professional development project was designed to meet teachers' technology training needs based on evidence from a doctoral research study that explored teachers' perceptions of technology utilization. Research participants included teachers who had been employed by the school district during a large-scale technology initiative that was abandoned after one year. Research questions were guided by the four tenants of the unified theory of acceptance and use of technology (UTAUT) that influence teachers' technology utilization, including (a) performance expectancy, (b) effort expectancy, (c) social influences, and (d) facilitating conditions (Venkatesh, 2000). The findings revealed five themes that most influenced teacher decisions to utilize technology. The main themes included (a) occupational expectancy to integrate technology, (b) time investment required for technology integration verses the perceived valence of its use, (c) the value of technology mentors, (d) accessibility of technical support personnel, and (e) administrator support for technology integration. The overarching goal for the project is to provide a research-derived professional development experience that will increase the utilization of technology by teachers district-wide.

Edgenuity was chosen for the focus of this professional development because it is cost-effective and widely used as an online learning platform that provides curriculum and tools that enables teachers to meet the needs of various level learners. In response to the COVID-19 pandemic, school districts across the United States have had to find

alternative methods of delivering instruction. Edgenuity will meet the needs of teachers and students by delivering curriculum using online instruction, regardless where instruction and learning take place. Whether education is conducted in a brick and mortar classroom or in the home, Edgenuity can meet the instructional needs of teachers and the educational needs of their student.

This 3-day professional development will provide teachers with the opportunity to: recognize Edgenuity usage benefits, gain useful technology skills to meet their occupational needs, and increase teachers' self-confidence in their technology capabilities, all while recognizing the significant value of the time invested in learning how to integrate technology tools in their curriculum. The project is divided into four parts. Following this executive summary is a 3-day, hour-by-hour, schedule outline for the training. Following the hourly schedule are 45 PowerPoint® slides that frames the content to be presented and discussed during the training. Finally, the project concludes with a short evaluation for participants to fill out that the instructor will use to improve future training when scheduled.

Please direct questions to: Larry Schuessler.

Purpose

The purpose of the program is to provide the school district with technology training to increase proficiency in EdGenuity, the district's online learning platform. Teachers will receive instruction as well as hands-on learning opportunities to accomplish goals of the program. The program goals and learning objectives are presented in the following sections.

Program Goals

Program goals address how the program will facilitate future change and explain the need for the program (Caffarella & Daffron, 2013). Overall, the expected knowledge-based outcome of the technology training program is that teachers will gain understanding and recognize additional benefits of using EdGenuity. The skill-based program outcome is that teachers will more effectively and efficiently use the technology tool. Specific program goals are as follows:

- Participant will recognize benefits of technology tool
- Participant will be able to utilize the technology tool to meet occupational expectations
- Participants will recognize and value the time invested in attending technology PD training
- Participants' technology self-confidence will increase
- Participants will have opportunities to help one another
- Participants will explore tech support options and ways to mitigate tech barriers

Learning Outcomes

Transfer of learning occurs when a participant can apply the knowledge or skills gained from a training program in daily life (Caffarella & Daffron, 2013). Early in the program, identifying what is expected to be learned during the program will help transfer of learning to occur (Caffarella & Daffron, 2013). Accordingly, when offering a technology training program for teachers, several transfer of learning factors will enhance the learning experiences of the participants and encourage transfer to occur. Participants will be expected to learn how to use a new technology tool with an understanding of how to apply their new knowledge of the tool to their own classrooms. By gaining a firm understanding of the technology tool, participants would have a positive attitude toward application of the new tool.

According to Caffarella and Daffron (2013), a participant is motivated by the need to gain a new skill from a program that will benefit their work environment and/or increase their self-confidence in using new skills or information. “Immediate application of the new information given in a program is very important” (Caffarella & Daffron, 2013, p. 218). Offering positive encouragement throughout the program and addressing the benefits of learning/using the new technology tool will promote positive attitudes toward applying new information.

Specifically, there are three learning outcomes aligned with the skills-based program outcomes. Upon completion of the technology training program, the teachers will be able to:

1. Correctly identify and describe the functions of EdGenuity tools, guiding using a checklist procedure.
2. Access and successfully exit or close down EdGenuity.
3. Demonstrate proficient use of EdGenuity as evidenced by performing the functions covered during the training, as requested by the instructor.

These learning objectives reflect the need for teachers to understand how EdGenuity can benefit their students and enhance their classroom management skills. Identifying the benefits of the technology tool will be summarized in a reflective discussion upon successful demonstration of learning objectives to solidify learning (Caffarella & Daffron, 2013).

Target Audience

The district's teachers are the target audience for the training program. The district adopted the online learning platform to meet the needs of its students during the COVID pandemic. Therefore, teachers were not initially afforded training opportunities to become familiar with the benefits of utilizing EdGenuity.

Components

The six components of the 3-day training will include the confluence of (a) direct instruction, (b) a PowerPoint presentation, (c) reflective learning, (d) question and answer

period, (e) breakout groups, and (f) hands-on learning/practice exercises. The purpose of combining these multiple forms of learning is to increase retention and your ability to apply what you have learning in your classroom setting. Participants will have opportunities to discuss EdGenuity components, processes, and functions after presentations and demonstrations have been provided.

Timeline and Activities

The training will begin at 8:00 a.m. each day. A professional development schedule (included below) will be provided to teachers explaining the timeline of training events. Day 1 activities include an introduction to EdGenuity followed by learning objectives so teachers understand the benefits of participating in the training. Powerpoint slides 1-18 will be presented on Day 1. Day 2 timeline will include a reflective discussion summarizing the previous day's training. Slides 19-31 will be used to explain performance expectancy of EdGenuity. A breakout group activity will allow small group participation for teachers to share grade-specific ideas for implementing and utilizing the tools within EdGenuity. The final day of training will include slides 32-45 with explanations of set-up, planning, and implementation of EdGenuity. Hands-on activities will increase confidence and help teachers gain a better understanding of how EdGenuity will be used in their classroom. A reflective wrap-up discussion will summarize relevant key points of the training.

Trainer Notes

Prior to conducting the training, I will reach out to EdGenuity consultants to inform them of our planned training. When a school district purchases a new technology tool, a sales representative would be helpful in providing and scheduling a program instructor. According to Rudnesky (2006), schools should investigate through experience before investing in technology tools. Many technology vendors provide demonstrations and encourage teachers to use devices before committing to a technology investment (Rudnesky, 2006). Like test driving a car, a salesperson allows you to "try before you buy." As the primary trainer, I will document training events and outcomes to make improvements for future iterations of the training.

Module Formats

One PowerPoint presentation will be used during the 3-day training. The PowerPoint slides will be numbered. The slides presented each day will be identified on each day's training schedule. These designated slides will be used as the training modules to present the components EdGenuity and the tools therein.

Implementation Plan

As described above, my hope is to co-present with or have a portion of the training provided by an EdGenuity consultant. To instruct teachers on how to effectively implement the new technology, I will strive to achieve the criteria for effective training programs described by Caffarella and Daffron (2013). Those criteria include

- Knowledgeable about the tool.

- Competent teaching ability.
- Background and experience relevant to the participants and their need for working with the tool.
- Closely related to the previous criterion, understanding and demonstrating empathy for the learners.
- Credibility based on experience, enthusiasm, well organized, familiar with organization's needs.
- Use a personal touch during instruction.
- Provide effective demonstrations.

Barriers that can be exacerbated by lack of involvement can be mitigated through demonstrations about the effectiveness of using the new tool, by providing examples of real-world application necessary for transfer of learning to occur, and by providing participants time for supervised hands-on practice with the new technology (Caffarella & Daffron (2013).

Program Evaluation Plan

Formative evaluations will take place during the program by asking participants to demonstrate or explain specific applications of EdGenuity before advancing to the next portion of the training. A summative evaluation (see this Appendix, p. 162) will be completed by participants upon concluding the program. The summative evaluation will include open-ended questions for participants to answer and return to the trainer. This evaluation will be used to fulfill professional development requirements needed for

participants to receive ACT 48 teacher professional development credits. The formative and summative evaluations will also be used to help the instructor gauge the effectiveness of the training and make improvements for future trainings based on responses.

Technology Training Professional Development Schedule: DAY 1

(PowerPoint® slides #1-18)

8:00 Networking & Refreshments

8:15 Superintendent's welcome

8:30 Module 1: Introduction to EdGenuity

Learning Objectives & Goals for Day 1: Increasing Valence: Explore & discuss how teachers will benefit from using Edgenuity

Explore & discuss how will students benefit from using Edgenuity

Edgenuity CUBIE (Concepts, Uses, Benefits, Implementation, Ease)

10:00 15-Minute Networking Break

10:15 Technical Support Accessibility: EdGenuity Support, Links, and Videos

11:30 Lunch

12:30 Review: Reflections, Questions, Observations

1:15 Module 2: Familiarization and Practice

Performance Expectancy: How to Get Started

Performance Expectancy: Step-by-Step Demonstration

2:00 Networking Break

2:15 Social Influence & Increasing Valence – Brainstorm Teacher Ideas for Using Edgenuity

Performance Expectancy: Participant Practice with Laptops

3:30 Summarize and Review Takeaways

4:00 Close Day 1

Technology Training Professional Development Schedule: DAY 2

(PowerPoint® slides #19-31)

8:00 am Review of Day 1: Summary of EdGenuity C.U.B.I.E.

8:15 Reflective Discussion of Day 1: Teachers' experiences Question & Answers with Discussion

8:45 Module 3: Performance Expectancy – Participants will be able to utilize the technology tool to meet teaching occupational expectations.

How else can EdGenuity help you? Advanced EdGenuity.

Create User Group

Add Course

View & Edit

Course Actions

Customizing Courses

www.edgenuity.com

10:00 Networking Break

10:15 Genuity Demonstration & How To's on setting up your EdGenuity Class

Noon Lunch

1:00 Questions & Review? Discusion of challenges getting your EdGenuity classstarted in the practice session this morning?

1:15 Breakout Groups: Small group discussions to share how you will use EdGenuity in specified grade levels and subjects.

Write down any questions!

Brainstorm/Reflective Discussion

Hands-on! Are you ready for more practice? Practice creating your EdGenuity Class (Take a 15 minute break at your convenience (we'll do it for real tomorrow in your own classrooms).

3:30 Reflections on the first 2 days learning (discussion).

Technology Training Professional Development Schedule: DAY 3

(PowerPoint® slides # 32-45)

8:00 am Review and let's get started!

8:15 Module 4: EdGenuity Gradebook, Reviewing Projects, the Dashboard, Progress Reports, and Support

10:00- 15 Minute networking break

10:15 Module 5: Hands-On

- Participants will recognize the benefits of integration and use of Edgenuity.
- Participants' technology self-confidence will increase.
- Participants will recognize and value the time invested in technology training.

Implementation! Teachers leave to go work in their own classrooms & set up EdGenuity for this school year. Use this time to work on your own EdGenuity classroom. Instructors will roam to visit participants' classrooms during this period.

Lunch on your own. Return by 2:30 pm.

2:30 pm Guided Discussion for EdGenuity Action Planning

1. List one or two EdGenuity skills you learned and share how those skills will help you in your role as instructional leader.

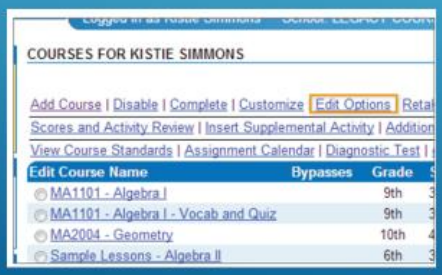
2. List one or two EdGenuity skills that you feel needs to be developed further. Share how developing those skills would make you a better instructional leader.
3. Identify one specific skill and share your plan for developing that skill. Guided mentoring and self-directed coaching are excellent resources to identify. Share how you will implement this plan, as well as your estimated timeline for how long it will take to master the identified skill.

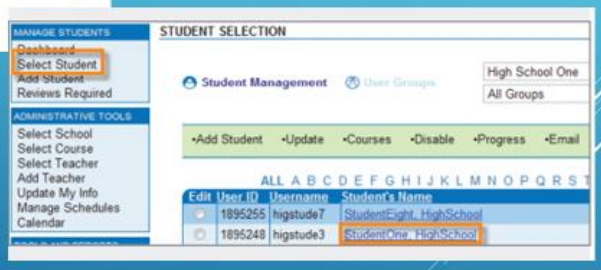
Closing: Thank you for your commitment to learning, teaching, and integrating technology in your classes!

Complete the training program evaluation before leaving.

View & Edit Options

1. Click **Select Student**.
2. Click the student's name.
3. Click the radio button next to the course you want to change.
4. Click **Edit Options**.





LEARNING OBJECTIVES:

Participants will recognize the benefits of technology tools.

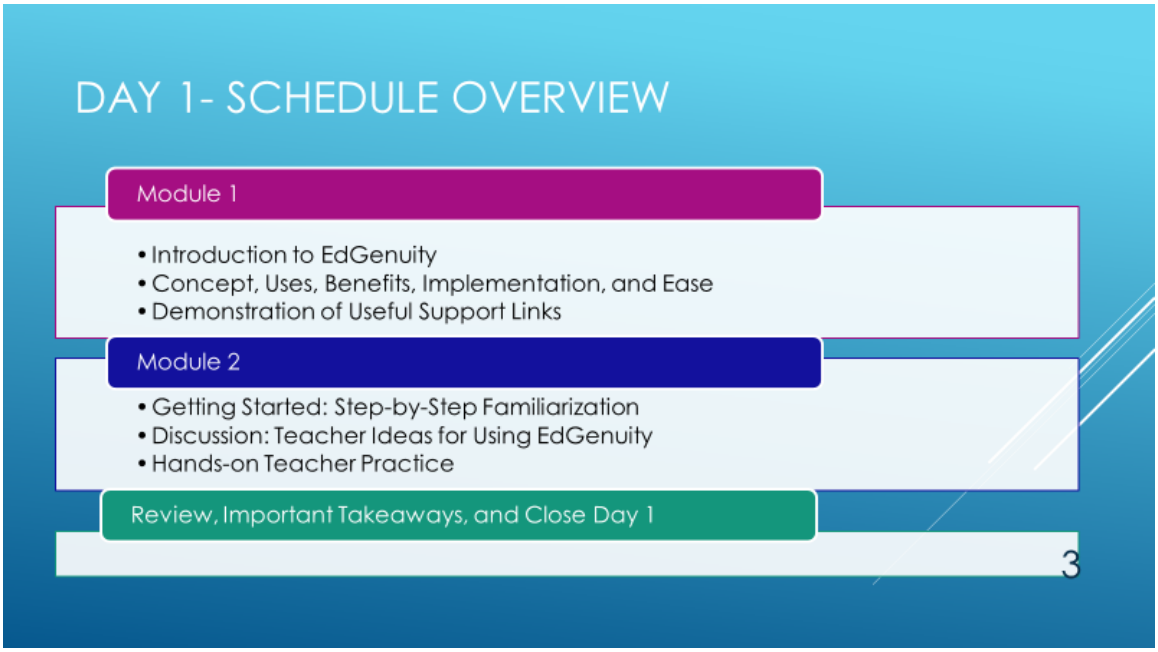
Participants will be able to utilize the technology tool to meet teaching occupational expectations.

Participants will recognize the benefits of integration and use of the technology.

Participants' technology self-confidence will increase.

Participants will recognize and value the time invested in technology training.

2


DAY 1- SCHEDULE OVERVIEW
Module 1
• Introduction to EdGenuity
• Concept, Uses, Benefits, Implementation, and Ease
• Demonstration of Useful Support Links
Module 2
• Getting Started: Step-by-Step Familiarization
• Discussion: Teacher Ideas for Using EdGenuity
• Hands-on Teacher Practice
Review, Important Takeaways, and Close Day 1
3


Edgenuity™
▸How Edgenuity can help you!
▸How Edgenuity can help your students!
4

EFFORT EXPECTANCY

C.U.B.I.E.

- Concept
- Uses
- Benefits
- Implementation
- Ease

5

Check it out.

https://www.edgenuity.com/video-library/?vid=6117420362001

Edgenuity the Student Experience

https://www.edgenuity.com/video-library/?vid=5978276525001

7

https://www.awai.com/2019/02/how-to-get-started-making-money-as-a-writer/

MODULE 2

GETTING STARTED: STEP-BY-STEP FAMILIARIZATION

DISCUSSION: TEACHER IDEAS FOR USING EDGENUITY

HANDS-ON TEACHER PRACTICE

8

Login Information

Educator Login: http://learn.edgenuity.com/educator
Student Login: http://learn.edgenuity.com/student

Check Plugins

1. On the login page for the Web Administrator click the **Check Plugins** link
   a. The Virtual Classroom login page has a Check Plugins link that performs the same action
2. A window will open with required plugins listed with the required version, version found on the computer, and the status of each plugin
3. Any plugins that do not meet the minimum requirements will have a red **X** next to them
4. Click the name of the indicated plugin to be directed to the download/installation site for that plugin

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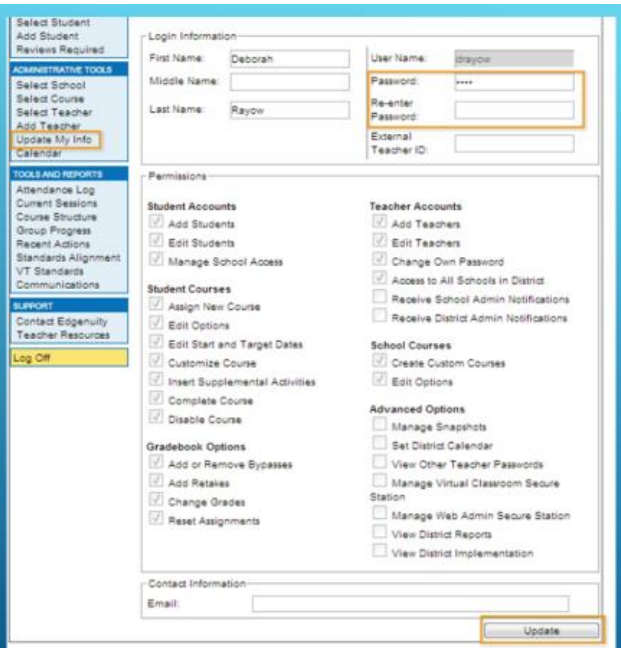
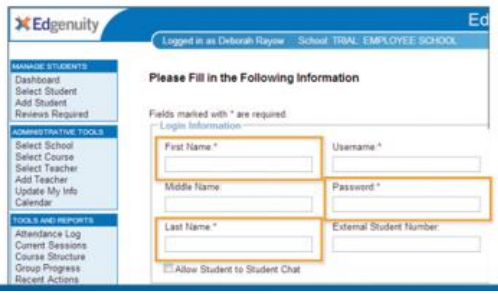


10

Enroll a Student

1. Click **Add Student** in the Manage Students section.
2. Enter required information.
   - First Name
   - Last Name
   - Password
3. Enter optional information.
   - Other Information
   - Demographic Data
   - Educational Background
   - User Options
   - Text-to-Speech and Text Translation may not be enabled for your school (if these features are not available, contact your District Administrator)
   - Address and Contact Information
   - Parent Contact Information (which can activate our automatic email student progress report and portal tools)
4. Click **Add Student**.
   Username is automatically generated

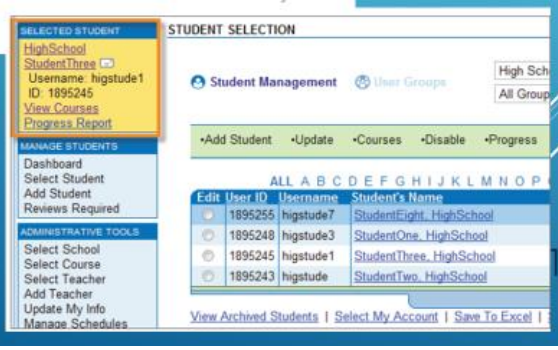


11

Selected Student Section

Once you have created a new student account or selected an existing student account, the Selected Student section appears in the upper-left corner with the student's name. You can:

1. Click the student's name to edit the student's account information.
2. Click the envelope to send the student an email.
3. Click **View Courses** to see the student's course list.
4. Click **Progress Report** to view details about the student's performance. Whenever you are making a change that affects a single student, be sure to double-check the Selected Student section to ensure that you are working with the correct student.



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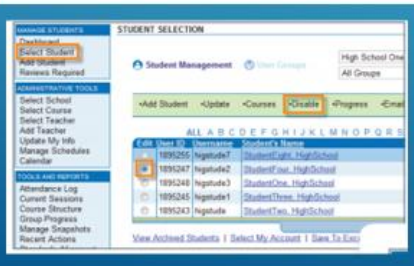
Archive and Re-enable a Student's Account

1. To archive (disable) a student's account, click **Select Student** in the Manage Students section.
2. A list of student names will appear.
3. Click the **Edit** radio button next to the student's User ID.
4. Click **Disable** on the toolbar above the student list.
5. Click **OK** on the warning message to proceed.
6. To enable a student's account, click **Select Student** in the Manage Students section.
7. Click the View **Archived Students** link.
8. The Archived Students list will appear.
9. Click the **Edit** radio button next to the student's User ID.
10. Click **Enable** on the toolbar above the student list.
11. The student will now be back on the active student roster.



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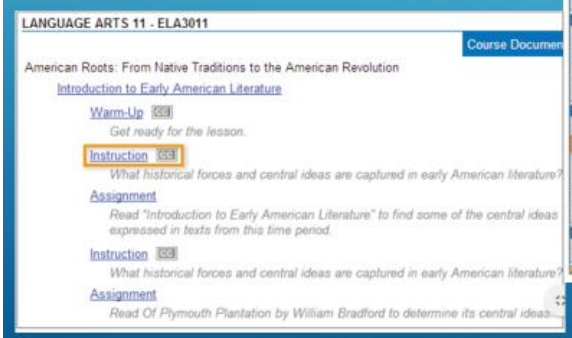
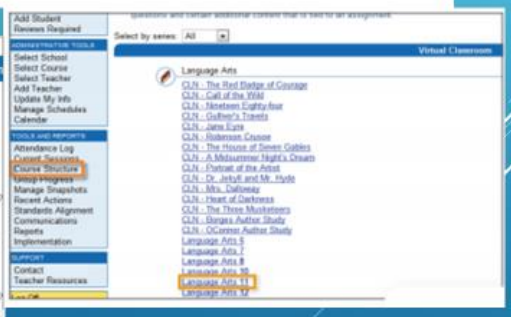
Preview Course Content in the Web Administrator

1. Click **Course Structure** in the Tools and Reports section.
2. Click the name of the course you want to preview.
3. Click the **Course Documents** link to check for course resources.
4. Click on the activity name to preview it.





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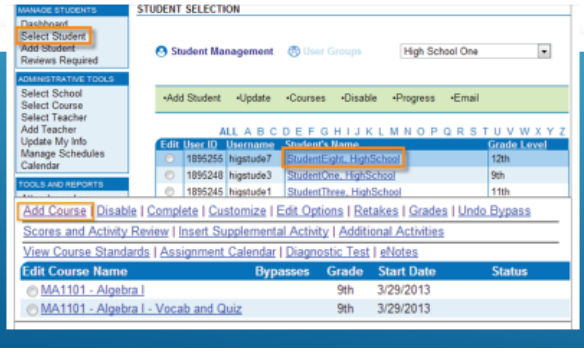
Assign Courses

1. Click **Select Student** in the Manage Students section.
2. Click the student's name.
3. Click **Add Course.**
4. Use the drop-down menus to filter the course list.
5. Click **Search.**
6. Click the checkbox to the left of the course(s) to be added.
7. Click **Add Selected Courses.**
8. Click **Submit.**
9. You may add more courses or return to the student's course list.

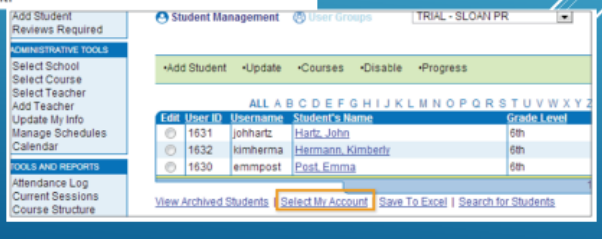


View Courses in the Virtual Classroom

1. Click **Select Student** in the Manage Students section.
2. Scroll to the bottom of the page and click **Select My Account.**
3. Your account information will appear in the Selected Student section and you can work with your account as though it were a student's account.
4. Click **Add Course.**
5. Use the drop-down menus to filter the course list.
6. Click **Search.**
7. Click the checkbox to the left of the course(s) to be added.
8. Click **Add Selected Courses.**

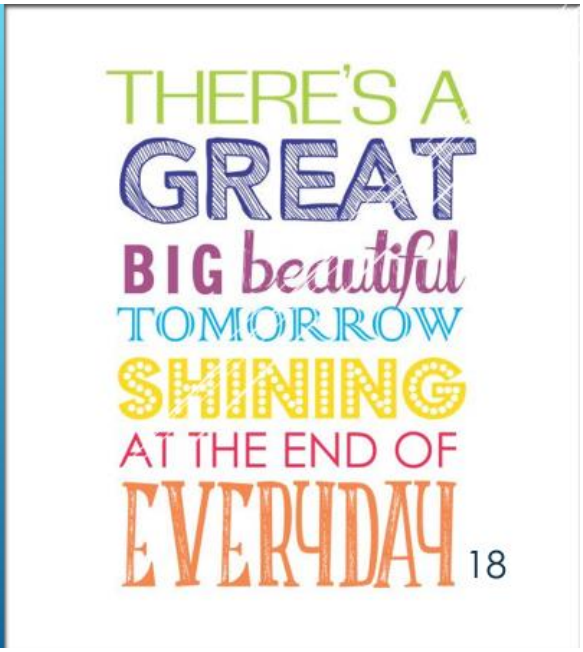
When you log into the Virtual Classroom using your teacher account, you may preview the course from the student's perspective and/or use the course for whole-group instruction.

*Please note this process will utilize a license from your account.



DAY 1:
SUMMARY &
REVIEW

Photo credit: https://www.pinterest.com/pin/492385584026716251/



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Day 2: Schedule Overview

Participants will be able to utilize the technology tool to meet teaching occupational expectations.

Module 3

- View Course
- Create User Group
- Add Course
- View & Edit
- Course Actions
- Customizing Courses

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Create a User Group

1. Click **Select Student** in the Manage Students section.
2. Click **User Groups**.
3. Click **Create New Group**.
   a. Note that the taskbar has turned pink and that the Edit column now has checkboxes (multiple selection) rather than radio buttons (single selection)
4. Name the group.
5. Click **Add Group**.
6. Click **User Groups** again.
   a. Note that the taskbar has turned pink and that the Edit column now has checkboxes (multiple selection) rather than radio buttons (single selection)
7. Click the checkbox(es) next to the students who are to be added to the group.
   a. You can select one student at a time or select multiple students
   b. To locate students more easily, try the alphabet at the top (to filter by last name) or use the **Search for Students** link at the bottom
8. Hover over the **Add to Group** link and click the user group to which you would like to add the selected students.

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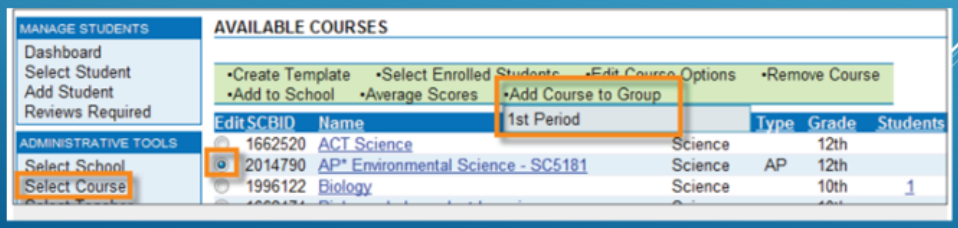
Adding a Course to a User Group

1. Click **Select Course** in the Administrative Tools section.
2. Click the **Edit** radio button for the course you want to add to a user group.
3. Hover over the **Add Course to Group** link.
4. Click the name of the user group to which you want to add the course.

NOTE: Assigning a course to a user group will only affect students that were already in the user group when the course was added to the user group.



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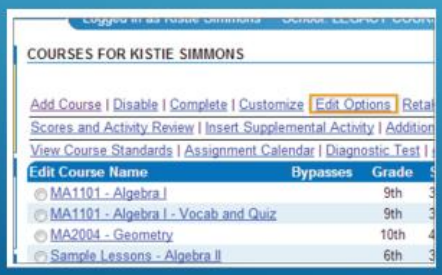
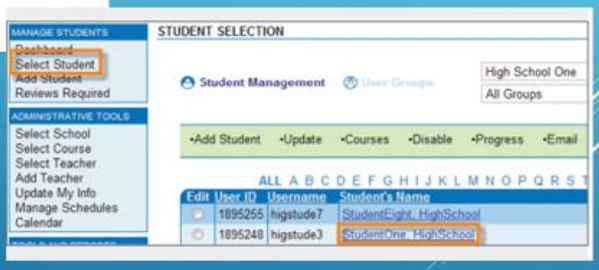
View & Edit Options

1. Click **Select Student**.
2. Click the student's name.
3. Click the radio button next to the course you want to change.
4. Click **Edit Options**.





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Possible options:

- **Course Name**: Change name to match course customization or district course name
- **Assessment Thresholds**: Grades necessary to pass assessments
- **Grade Weights**: Values that make up a student's course grade; must sum to 100%
- **Time Limits**: Time allowed per assessment
- **Auto Grading Method:** Adjusts level of input from teachers for the student's grades
- **Starting Date**: The date the course started
- **Target Date**: The date the student should finish the course
- **Assessment Options**: Spiral Review, Allow eNotes on Assessments, Allow Save and Exit on Tests/Cumulative Exams, Auto Progression

- **Fail Attempts Allowed**: How many attempts a student has for an assessment without teacher approval for additional retakes
- **Teacher Review**: Locks quizzes, tests, or exams until a teacher has reviewed student work and unlocked the assessment
- **Pre-testing**: With this option enabled, students can pretest out of lessons by demonstrating mastery on a 10-question quiz. Pretesting uses one fail attempt.
- **Quiz Review Method**: Controls whether students can review their correct and incorrect answers on assessment attempts.
- **Prescriptive Testing**: Delivers a diagnostic pre-test at the beginning of a course and then builds a customized course based on student performance.
- **Reason**: Enter a reason for changes made to the student's course

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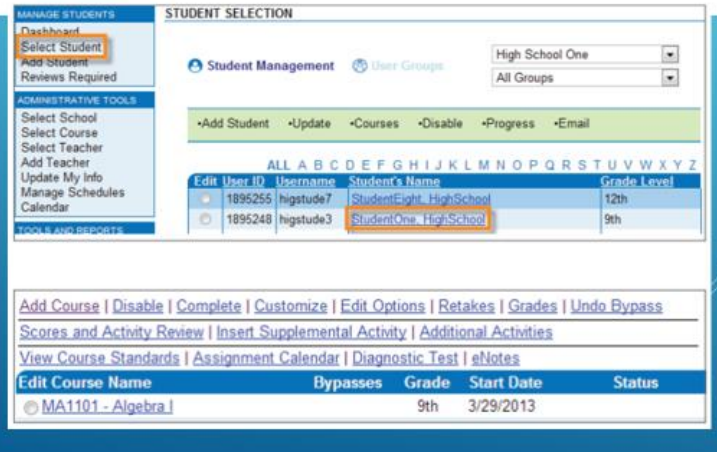
Course Actions

1. Click **Select Student**.
2. Click the student's name.
3. Click the radio button next to the course on which you want to take an action.



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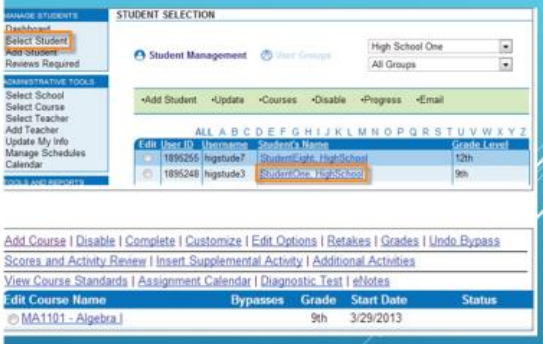
4. Click an action:

- **Add Course**: Add a course to a student account
- **Disable**: Make a course unavailable to the student
- **Complete**: Mark a course as finished
- **Customize**: Add or remove lessons from a course
- **Edit Options**: Change grade weights and other course options
- **Retakes**: Allow additional retakes for assessments
- **Grades**: View and edit grades, see attempt detail for activities
- **Undo Bypass**: Reactivate a bypassed lesson
- **Scores and Activity Review:** See scores on submitted work, grade essays and projects, and leave feedback for students



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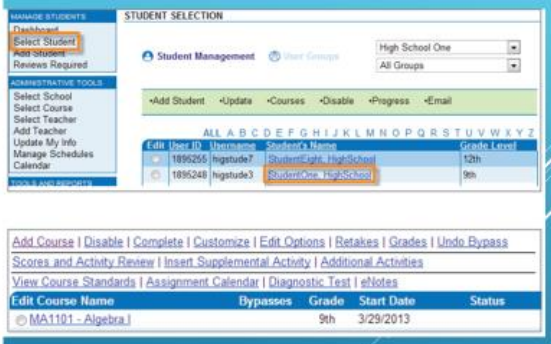
- **Insert Supplemental Activity**: Add additional lessons from other Edgenuity courses
- **Additional Activities**: Insert grades for class work completed outside the Edgenuity program into the grading structure
- **View Course Standards**: View standards correlations for course
- **Assignment Calendar**: View an individual student's daily assignment calendar
- **Diagnostic Test**: View the customized course automatically built for the student based on his or her Diagnostic/Prescriptive Test performance
- **eNotes**: View a student's eNotes



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Customize a Student's Course

1. From a student's course list, select the course to be customized by clicking the **Edit** radio button.
2. Click the **Customize** link above.
3. Once all the appropriate items have been removed, click the **Continue** link at the bottom right of the page.
4. After confirming that the time values are acceptable, click the **Continue** link in the bottom right corner of the screen.
5. Once the assessment thresholds and grade weights have been confirmed, click the **Continue** link in the bottom right corner of the screen.
6. Click the **Submit** link in the bottom right corner of the screen to complete the customization.

NOTE: The time displayed here represents active course time. Students will need to be logged into Edgenuity for additional time to account for taking and reviewing eNotes, viewing scores and feedback, completing retakes, and doing projects and extended reading assignments. In general, add approximately 20% to the course time displayed here to compute expected total login time.

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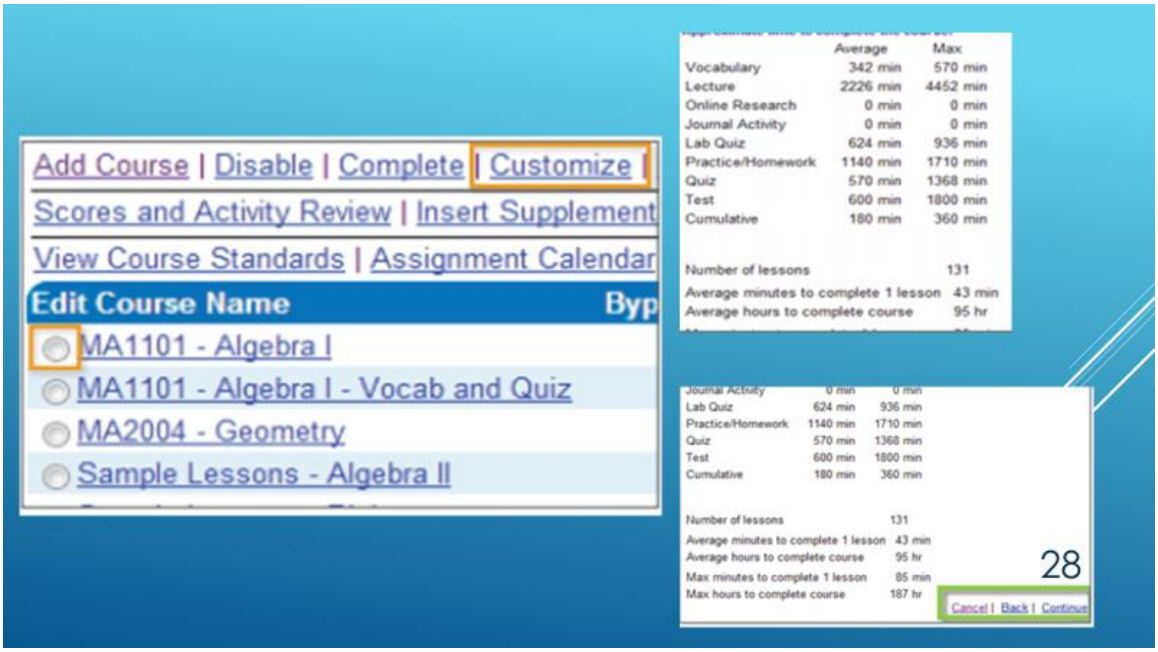
Add Course | Disable | Complete | Customize |
Scores and Activity Review | Insert Supplement
View Course Standards | Assignment Calendar
Edit Course Name
MA1101 - Algebra I
MA1101 - Algebra I - Vocab and Quiz
MA2004 - Geometry
Sample Lessons - Algebra II
Average Max
Vocabulary 342 min 570 min
Lecture 2226 min 4452 min
Online Research 0 min 0 min
Journal Activity 0 min 0 min
Lab Quiz 624 min 936 min
Practice/Homework 1140 min 1710 min
Quiz 570 min 1368 min
Test 600 min 1800 min
Cumulative 180 min 360 min
Number of lessons 131
Average minutes to complete 1 lesson 43 min
Average hours to complete course 95 hr
Max minutes to complete 1 lesson 85 min
Max hours to complete course 187 hr
28
Cancel | Back | Continue


Sharing Our Bright Ideas
Edgenuity Blog:
https://blog.edgenuity.com/
Edgenuity Where Learning Clicks
29
We gather information from educators, innovators, and leaders about the latest ideas and trends in education and edtech to fuel success for every student, teacher, and administrator.


BREAK OUT GROUPS
30


WHAT HAVE YOU LEARNED?
Photo credit: https://www.aafp.org/news/blogs/freshperspectives/entry/patients_have_plenty_to_teach.html
Summary & Takeaways
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Day 3 – Schedule Overview

Module 4

- Gradebook
- Reviewing Projects
- Dashboard
- Progress Reports
- Support

Module 5

- Hands-on

Review, Important Takeaways, and Closing

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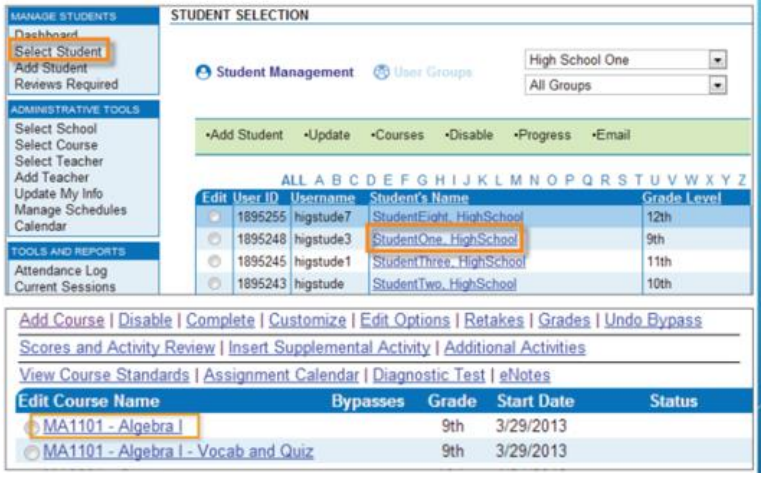
Gradebook

1. Click **Select Student**.
2. Click the student's name.
3. Click the course name.



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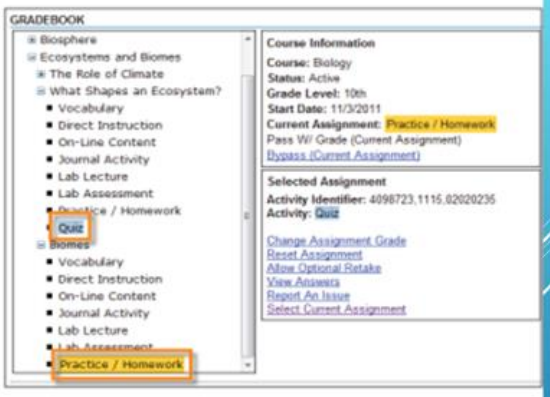
4. Click the + and - signs to expand/collapse the activity list
   - The yellow highlighted activity is the activity in which the student is currently working
   - The blue highlighted activity is the assignment you are currently viewing
   - A blue and yellow highlight on the same item indicates you are viewing the assignment in which the student is also currently working
5. Click on an activity
   - The corresponding grade information will appear at the bottom of the screen



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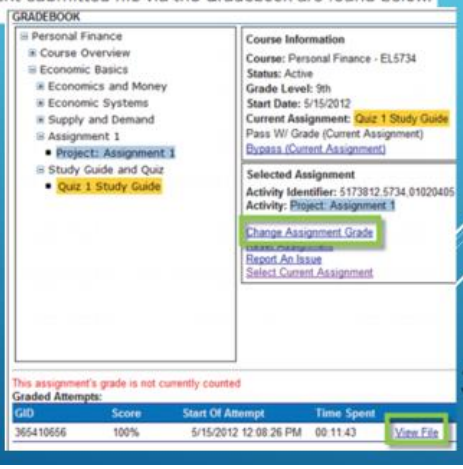
Reviewing Projects from the Gradebook

If a student has uploaded a file or document as part of an assignment, teachers can then download the file to review it and provide a grade. Instructions on how to download a student-submitted file via the Gradebook are found below.

1. Open the student's Gradebook for the course.
2. Navigate to the assignment in question.
3. Click the **View File** link in the Graded Attempts section.
4. Click the **Change Assignment Grade** link to supply a score.

Please note that teachers will also need to have the same software installed on their computers as the students have in order to review student assignments and provide scores.



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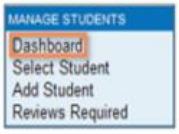
Dashboard

To access the Dashboard, click **Dashboard** in the Manage Students section.



One of the following alerts may appear next to a student's name:

- **Teacher Review Alert:** A teacher must review the student's work before the student can begin an assessment
  - Click directly on the alert to open the hot spot options
  - Click the **Review** button to be redirected to the Gradebook where you can review the student's work
  - Click the **Complete** button to complete the Teacher Review

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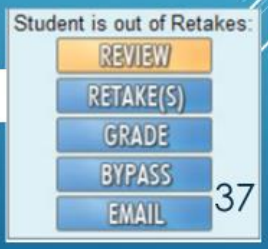
- **Out of Retakes Alert:** The student has used all available retakes but has not yet earned a passing score
  - Click directly on the alert to open the hot spot options
  - Click the **Review** button to be redirected to the Gradebook where you can review the student's work
  - Click the **Retakes** button to give the student an additional retake
  - Click the **Grade** button to change the student's assessment grade
  - Click the **Bypass** button to skip the assessment so that the student can move forward in the course
  - Click the **Email** button to initiate an email with the student



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Activities Alert: The student has submitted work that must be scored by a teacher, such as an essay or project

- Click directly on the alert to open the hot spot options.
- Click the **Review** button to be redirected to the Gradebook where you can review the student's work
- Click **View Essays** to view essays

Other Hot Spots that allow users to manipulate student and course information are:

- ID – Student Options
- Course – Course Options
- Start Date – Modify the course's start date
- Target Date – Modify the course's target date

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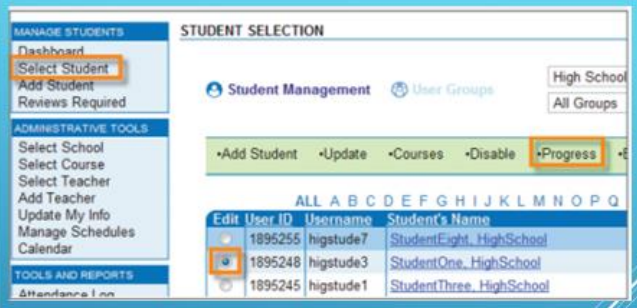
Progress Reports

1. Click **Select Student**.
2. Click the radio button next to the student's name.
3. Click **Progress**.
4. The Progress Report will display.
5. Select the course whose Progress Report you wish to view from the drop-down menu and then click the **Get Progress** link.
   - **Complete**: Percent of course completed based on the time allotted to finish course
   - **Overall Grade**: Grade based on work completed



- **Complete (Count)**: Percentage of activities completed to date
- **Start Date**: Date student began the course
- **Target Date**: Date set for course completion

- **Relative Grade**: Student's grade if no other work is completed in the course and all remaining activities are counted as 0%
- **Actual Grade**: Grade based on the overall grade in relation to the student being on-time for course completion; must have Start and Target Dates for this grade to populate

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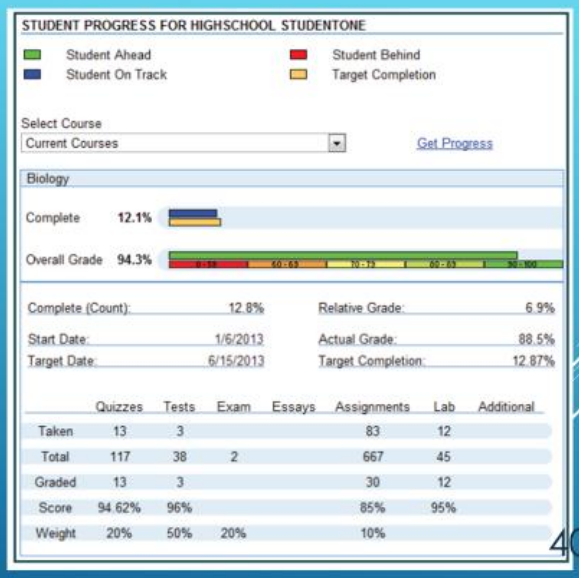
- **Target Completion**: The percentage complete the student should be based on their Start and Target Dates
- **Taken**: The number of activities completed
- **Total**: The number of activities in course
- **Graded**: The number of activities that factor into the student's grade
- **Score**: Grade average for each type of activity
- **Weight**: Percentage weight of activities toward course



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Course Documents

Many courses include reference documents in the Course Documents section. Depending on the course, you may have access to alignments, syllabi templates, scope and sequence documents, rubrics and exemplars, and general course information. To access these documents, follow the instructions below.

1. Click the **Course Structure** link in the Tools and Reports section on the left side of the screen.
2. Click the name of the desired course.
3. Click the **Course Documents** tab to expand the Course Documents section.
4. Open any of the documents or files by clicking the title.

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Support

Help is always available in the Support section of the Web Administrator.

Email:

1. Click **Contact Edgenuity** in the Support section.
2. Select the type of issue.
3. Enter preferred contact method information.
4. Enter a description of the issue.
5. Click **Submit**.

Phone:

1-877-202-0338 and press option 3	
Monday through Friday	7:30 am – 8:00 pm ET
Saturday	9:00 am – 5:30 pm ET

Please note that times are subject to change

Teacher Resources

Training support is available 24 hours a day, 7 days a week via eCommunity

1. Click **Teacher Resources** in the Support section.
2. Click on the **eCommunity** link.

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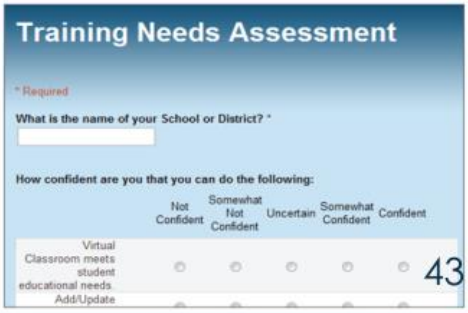
Consultant Evaluation

1. Click **Teacher Resources** in the Support section.
2. Click the **Consultant Evaluation** link.
3. Fill out the form that appears in a new window.
4. Click **Submit** when finished.

Training Needs Assessment

1. Click **Teacher Resources** in the Support section.
2. Click the **Training Needs Assessment** link.
3. Fill out the form that appears in a new window.
4. Click **Submit** when finished.



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The Edgenuity website is user-friendly and provides a variety of resources for teachers and students:
https://www.edgenuity.com/
Edgenuity Video library offers a variety of informative videos:
https://www.edgenuity.com/video-library/?vid=5978276525001

Photo Credit: https://www.vectorstock.com/royalty-free-vector/computer-keyboard-with-thank-you-key-business-vector-9659356

Program Evaluation

Please complete and return this evaluation before you leave today. Your program evaluation is required for you to receive ACT 48 PD credit. Your responses will help the instructor better understand how to improve future technology trainings.

1. Please provide an example of new knowledge or skills that you acquired regarding the technology tool we covered during this training program.

2. Please provide an example of how you will apply new knowledge/skills into your classroom.

3. As a result of learning how to use the new technology tool, please describe your confidence level in your ability to implement changes into your classrooms?

4. What portion/features of the training program did you find most beneficial?

5. Would you increase, decrease, or keep the same amount of allotted time for hands-on experience?

6. Please provide additional comments or suggestions to improve this technology training professional development:

Project References

Caffarella, S., & Daffron, S. (2013). *Planning programs for adult learners: A practical guide.* (3rd edition). San Francisco, CA: Jossey-Bass.

Rudnesky, F. (2006). Raise the bar for everyone with technology integration. *Principal Leadership: Middle Level Edition, 6*(6), 34. https://nassp.org/Portals/0/Content/53400.pdf

Venkatesh, V. (2000). Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the technology acceptance model. *Information Systems Research, 11*(4), 342-365. www.jstor.org/stable/23011042