

TEACHER SELF-PERCEPTIONS OF SKILLS AND BELIEFS USING  
TECHNOLOGY IN CLASSROOM PRACTICE

by

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## DEDICATION

I dedicate this work to my family and friends. The relationships I have had throughout my life contributed to the person I am today. To my grandparents who opened my eyes and my heart to the love of travel and learning. They taught me to never stop looking for answers or asking questions. To my siblings who taught me to how to disagree and forgive, and that family will always be there for you. I love you dearly. To all the people I have called friend; thank you for teaching me that there are others in the world that will also love you like family. To my in-laws, who have always loved me and treated me like their daughter. To my step- father, who has been a true grandpa to my children and loves all of us like we were his own. To my brave, strong, and fierce mother for teaching me perseverance and courage to never give up, even when life is suddenly turned upside down and changed forever.

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## ABSTRACT

New technology and innovations over the last decade have created a global economy that incorporates people communicating and making connections all over the world, twenty-four hours a day. With this continuous drive in society, there is added pressure to integrate more technology in the classroom and into the hands of students. Although there is a great push to add technology in education, studies demonstrate that teachers are reluctant to modify and change their current practice. Educational leaders, politicians, and district administration are spending valuable resources on devices to drive daily instruction in schools where teachers tend to have more of a traditional attitude and seem more reluctant when it comes to integrating technology in the classroom. Billions of dollars are being spent on technology that appears underutilized and/or used ineffectively because of a lack of teacher confidence in skills or knowledge, or personal view of importance in education. Using a quantitative approach, this study used a self-reported questionnaire to examine current teachers' perceptions of knowledge and skills, as well as rating of value using technology for communication and collaboration, compared to their reported practice.

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## ABBREVIATIONS

NCLB	No Child Left Behind Education Act
SAMR	Technology model referring to Substitution, Augmentation, Modification, and Redefinition to integrate technology in classroom instruction.
TPACK	Technology model referring to Technology, Pedagogy, and Content Knowledge
SPSS	Statistical Program for the Social Sciences
TIM	Technology Integration Matrix
ISTE	International Society of Technology in Education

## CHAPTER 1: INTRODUCTION

### **Introduction**

Technology is an essential tool to function in the world today. The current global economy is based on human connection and interaction that is supported using technology (World Forum, 2017). Educators and politicians have recognized the importance of integrating technology into educational programs, and as a result, education is experiencing an increase in classroom technology demands and access to technology in classrooms (Martin, 2011). Although access to devices has increased to meet the demand, devices are being underutilized by teachers and students in the classroom (Fullan, 2013; Magana, 2016). The purpose of this chapter is to provide an introduction and background to current issues with technology integration that may hinder implementation of these tools in classroom practice throughout education. In addition, this chapter will explain how this quantitative study is relevant to educational and political leaders as they develop systems for technology integration for teacher and student use in classrooms. This study will explore teacher professional identity related to technology integration in classrooms to bring light to possible issues with technology use in the classroom.

### **Background to the Problem**

Educational and political leaders are investing more money on technology in K-12 education than ever before. Even with the significant increase in spending for devices and training, students and teachers are still lacking the technology skills and knowledge

to demonstrate results of significant impact on student achievement (van Broekhuizen, 2015). Perhaps one reason for this lack of evidence is that teachers are expected to teach students advanced technological skills, even though they often lack the self-confidence to integrate or use technology in their own instructional practice (Fullan, 2013; Magana, 2016). Although there are substantial amounts of money spent on technology at the national, state, and local level, intentional training plans based on the needs of teachers are rarely implemented to support effective integration (Darling-Hammond et. al, 2009). In other words, devices are simply added to classrooms with the hope of an automatic shift in teacher pedagogy using technology efficiently (Al-Zaidiyeen et al., 2010; Charbonneau-Gowdy, 2015, Li, et. al, 2015).

As Fullan (2009, 2013) claims, the ineffective integration of technology in the classroom is based on the lack of system integration and the false premise that access to devices is the only element needed to integrate technology effectively in classroom instructional practice. Before spending time or money on resources it is important to bring awareness to possible barriers for educational institutions as they develop systems and structures of support for technology integration and implementation that will change teacher professional practice. In a quote by Christopher Dede (2015), faculty at the Harvard Graduate School of Education, he explained that 21<sup>st</sup> century pedagogy “must consider many things—the objectives of education, the curriculum, how assessment strategies work, the kind of technology infrastructure involved, and how leadership and policy facilitate attaining education goals” (e21 Consortium Site Program, 2019).

This signifies that teacher instructional practice is a complex structure of educational values and systems that requires more than merely adding devices to a learning environment to change teacher practice.

Clearly, further studies of how to best integrate technology in and across school systems is needed. Since teacher practice is part of their professional identity, the first step in exploring teacher's integration of technology is exploring components of their professional identity as it relates to using technology for communication and collaboration with students and adults as part of their professional practice (Kelchtermans, 1993, 1996; Day et al., 2006). Examining the role technology plays within teacher professional identity; may inform training and support plans for effective application of technology in the classroom.

According to Kelchtermans (1993), there are five areas of "tension" recognized to contribute to the development of teacher professional identity. These tension areas are self-image, self-esteem, job-motivation, task perception, and future perspective. Using the data from a teacher self-report questionnaire, this quantitative study will only examine three of the five tension areas, self-image, self-esteem, and task perception, as components related to teacher professional identity, that may hinder training and support plans for teachers using technology, specifically related to communication and collaboration.

Recognizing how teachers identify themselves using technology in the three areas of self-image, self-esteem, and task perception, in relation to their professional identity as an educator could be valuable information for implementing technology integration across school systems. Teacher perceptions of how they value or see themselves using

technology in educational practice can have a significant impact on integration in the classroom (Scherer et al., 2019). Therefore, using Kelchtermans' (1993) framework, the purpose of this study is to explore the relationship between the variables of self-image, self-esteem, and task perception in the professional identity of a teacher. This may provide information for educational systems developing plans for effective application of technology in schools (Kelchtermans, 1993, 1996; Day et al., 2006).

This study could be the first step in identifying possible areas of awareness for educational and political leaders to consider when developing technology integration systems for training and support for teachers before they spend valuable resources. For example, there are currently grant monies and allocated budget funds targeted to provide technology in schools that support personalized learning and information communication technology, however, they lack the elements recognizing training and support for implementation in the classroom (US Department of Education, 2019, World Forum 2019). This type of data could assist states, districts, and schools using these types of funds to develop systems of training and support based on what teachers need to integrate and utilize technology effectively before spending valuable resources or developing technology systems (Magana, 2016; Fullan et al., 2018).

Also important to the background of this issue, is the lack of significant evidence of change in teacher practice using technology in the classroom. Even though there is evidence that technology can assist with extending learning opportunities, developing online communication skills, and increasing student ownership of learning (van Broekhuizen, 2015; Fullan, 2020; Hattie, 2012; Magana, 2016), teachers are not using technology in their practice to support these skills (van Broekhuizen, 2015; Grunwald

Associates, 2010). Teacher practice, which is part of teacher professional identity, will have to change if technology is going to be integrated to the levels needed for students to be prepared with the cognitive and technological skills for the next generation of jobs (Anspal et al., 2018; Fullan, 2020).

### **Statement of the Problem**

The integration of technology in schools and districts is often based on the assumptions that all teachers: 1) believe technology is an essential piece to student learning, and 2) have the knowledge and confidence to use digital tools effectively in their instructional practice (Beller, 2013; Flórez et al., 2017; Siddiq et al., 2016). These two assumptions impede the use of technology in education because they do not address the need for a system embedded change of behavior, self-efficacy, and identity using technology (Bandura, 1986; Heath, 2017; Wang et al., 2011). The problem is compounded by the complexity of the system for identifying the needs of individual teachers in individual buildings and their capacity to implement change. In addition to the need for systems of training and support that will change teacher behavior, building principal behavior to support change, district leadership behavior in creating culture-based accountability, and sustaining a change in teacher professional practice using technology (Fullan, 2013; Fullan, 2020; Fullan et. al., 2018).

### **Research Question and Hypothesis**

#### **Question**

What is the relationship between the variables of self-image, self-esteem, and task perception of teachers using technology in their professional practice to collaborate and communicate with peers and students?

### Hypothesis

H1- There will be a positive relationship between the variables of self-reported confidence levels of self-esteem and self-image responses in the teacher self-reported questionnaire related to the variable of task perception, which is the self-reported level of frequency using technology tools in their instructional practice to communicate and collaborate.

H0 - There will not be a positive relationship between the variables of self-reported confidence levels of self-esteem and self-image responses in the teacher self-reported questionnaire related to the variable of task perception, which is the self-reported level of frequency using technology tools in their instructional practice to communicate and collaborate.

## **Rationale and Relevance of the Study**

### Rationale of the Study

This dissertation study is a quantitative analysis using existing data collected from a large suburban school district located in the Pacific Northwest. The data used in the study is routinely collected from a teacher self-reported questionnaire given electronically by the Digital Integration and Instructional Support Department to evaluate and support the use of technology in the district. The rationale for this type of study is to use data from a recent school implementation of technology to explore how self-image, self-esteem, and task perception in the professional identity of a teacher may provide information for educational systems developing plans for effective application of technology the classroom (Kelchtermans, 1993, 1996; Day et al., 2006).

### Relevance for the Study

Examining the role technology plays in possible tension areas of teacher professional identity that may hinder training and support plans for effective application of technology could be useful for developing effective technology systems of integration. Due to the significant amount of resources spent on technology in K-12 education, the push for preparing students to have the skills needed for the global economy, and the lack of change in teacher professional practice, information from this study could be relevant for all educational and political leaders budgeting resources and developing plans for implementing technology. Educational leaders make important decisions purchasing and developing integration plans for schools and districts, this information could assist in developing a systematic process for identifying possible tension areas that could be addressed with training and support for teachers using technology (Fullan, 2013; van Broekhuizen, 2015, Darling-Hammond et. al, 2009)

However, more importantly this study may help leaders and politicians explore a possible plan of action for system improvement, as well enlighten other research related to technology integration in the classroom. This study could be a foundation to other work in learning more about the needs of teachers related to professional identity and the adoption of technology in the classroom. As technology continues to be added to classrooms for teacher and student use, there should be studies to examine where theories-in-action are questionable, and alternatives might be needed. “Scholarly inquiries continue to be needed to sustain engagements with policy-makers and practitioners that are responsive to changed concerns and contingencies” (Knight, 2002, p. 239). Studies, such as this, that examine and evaluate relationships that may be an

underlying factor for current issues with technology integration in schools could provide initial thought for furthermore in-depth studies.

### **Summary**

Technology has been added to classrooms across the nation; however, most teachers still have not fully integrated the use of technology in their practice. In light of this issue, this study will use the responses from a self-reported questionnaire to examine the relationship of variables of self-esteem, self-image, and task-perception related to the use of technology for collaboration and communication. Examining the relationship of the variables of teacher professional identity on the use of technology for communication and collaboration may add insight for educational leaders developing training and support plans. Chapter two of this dissertation will review the theoretical framework defining the tension areas of teacher professional identity related to this study, as well as review the research literature on technology integration and support in the classroom. Chapter three will provide detailed information on the methodology and research design for this study, as chapter four will review the findings and results. The final chapter will discuss the implications for the findings and how it may be relevant for future studies and work related to technology use and support in the classroom.

## CHAPTER 2: LITERATURE REVIEW

### **Introduction**

As stated previously, even with the continuous drive in society and the added pressure to integrate more technology in the classroom and into the hands of students (Romeo et al., 2013), studies still demonstrate that teachers are reluctant to modify and change their current practice (Li et. al, 2015; Slack, 2013). This chapter will examine teachers' professional self and the tension areas that can contribute to development of teacher professional identity, and how that relates to technology integration in the classroom. This chapter will then add further context to the current issues with technology integration, as well as provide insight on prior research as it relates to teacher professional identity and technology integration in classrooms.

### **Theoretical Framework**

#### Development of Teacher "Professional Self"

The formation of teacher identity has been studied and recognized as an important precursor to a shift in teacher practice (Anspal et al., 2018). It has been discussed by researchers from the development and education of future educators (Beijaard et al, 2004; Volkmann & Anderson, 1998), as well as described in the discourse "in terms of the constant reinventing of themselves that teachers undergo" (p. 176, Beauchamp & Thomas, 2009) in developing their professional identity. Educational initiatives, such as technology integration, can have substantial implication on teacher professional identity (Day, 2002; Hendrikx, 2019).

As Hendrikx (2019) states, professional identity is about the answers to the question “Who are we as members of a profession?” This question hinges on who teachers think they should be as a member of the education profession, as well as what their role is or “what they do” in the workday as an educator (Day 2002; Hendrikx, 2019). Assessing and evaluating the question of who they are and what they do creates areas of tensions that develop the professional identity of a teacher (Kelchtermans, 1993, 1996; Day et al., 2006). These areas of tension may vary and shift according to different types of tasks, students, and circumstances in class or in education (Ross et al., 1996; Tschannen-Moran et al., 1998). These shifts include how teachers identify themselves with the subject knowledge, their practical application, and pedagogical beliefs (Anspal et al., 2018; Gee 2000).

However, there are other elements to consider in understanding and defining the development of teacher identity, such as the relationship between self and identity (Beauchamp & Thomas, 2009). According to a study from Day et al., (2006) concepts of self and identity for teachers are frequently used interchangeably in the literature on teacher education and professional development. However, “both are complex constructs, not least because they draw on major research and theoretical areas of philosophy, psychology, sociology and psychotherapy” (Day et al., 2006, p. 602).

There is the “personal self” and the “professional self”, which are based on the idea that the identity of a person can shift and change depending on the situation:

The situated identity of a person as a malleable presentation of self that differs according to specific definitions of situations (e.g. within schools) and the more

stable, core presentation of self that is fundamental to how a person thinks about himself or herself (Day et al., 2006, p. 603).

This supports the idea that identity formation is a complex process that evolves and begins before someone decides to become a teacher (Rodgers & Scott, 2008; Anspal et al., 2018).

Kelchtermans (1996) suggests there are five interrelated areas of tensions that contribute to the development of the professional self of a teacher. These tension areas evolve over time and influence how teachers gain their sense of professional identity, as well as self-esteem (Day et al., 2006). Together these tension areas describe how a teacher identifies themselves as a teacher, their confidence in their skills and knowledge, and how they define their role in their job (Kelchtermans, 1993; Day et al., 2006). These five areas are self-image, self-esteem, job-motivation, task perception, and future perspective.

This study will concentrate on the areas of self-image, self-esteem, and task perception to examine the tension areas of teacher professional identity that may hinder training and support plans for teachers using technology. Although job-motivation and future perspective can impact teacher professional identity, the research related to these areas of tension have focused more on teacher job satisfaction and retention. Self-image, self-esteem, and task perception have been used more for examining classroom practice, which is the focus of this study in relation to using technology (Kelchtermans, 1993; Day et al., 2006).

### Self-Image

The area of self-image in the professional identity of a teacher relates to the “normative beliefs professionals hold about the purpose, goals, values, norms and interaction patterns” (Hendrikx, 2019, p. 3). In other words, it is what a teacher believes is important in their day-to-day role as an educator. When mandates or social shifts demand change in education, such as the integration of technology in the classroom, it can have an impact of the self-image of a teacher and their professional identity (Day, 2002; Hendrikx, 2019). Relevant to this study, teachers must shift their beliefs about the goals and values of technology and how it should be used in classroom practice and application.

These practices may vary and shift according to different types of tasks, students, and circumstances in class or in their collaborative work with others (Ross et al., 1996; Tschannen-Moran et al., 1998). This includes how teachers identify themselves professionally in subject knowledge, their practical application, and pedagogical knowledge (Gee 2000; Anspal et al., 2018). For example, a primary teacher that may have struggled with math concepts in school themselves, may still lack the confidence or image to see themselves as a professional that can effectively teach higher math skills using different teaching strategies or technology tools. The way teachers identify themselves impacts their instructional and professional practice with peers and students (Ryan & Bagley, 2015; Zee & Koomen, 2015).

Perceptions and attitudes can affect the way people perceive the world, as well as how they behave in various experiences (Haddock & Maio, 2007). In Bruner’s work, *Self-Making and World Making* (1991), he claims that people in western cultures create a

narrative of “self” based on experiences shaped by the schemas, as well as the culture and memories of their family. The idea of a narrative means that people have a story of themselves that is based on the significant, sequential events of their life between themselves and the social world. Bruner shares the idea of a narrative self-being as a mental idea organized by the perspective and the autobiography of the history of the subject (1997).

Although this self- narrative is established by values and beliefs of the culture, it is also self-defined by what is constructed by the individual. Individualism is important to the development of a person’s self-image as he or she creates their own schemas based on those ideas and experiences to determine turning points or meaningful events in their life history. This implies that if teachers recognize that using technology is part of their instructional practice and perceive they have the skills and knowledge to use it effectively, they will tend to integrate it more in their practice (Magana, 2016; McKnight et al., 2016; Ertmer et al., 2010; Li et al., 2015).

### Self-Esteem

The integration of technology in education also depends on the knowledge and confidence to use digital tools effectively in their instructional practice (Beller, 2013; Ryan & Bagley, 2015; Flórez et al., 2017; Siddiq et al., 2016). Based on the work of Bandura (1977), even if teachers believe that certain pedagogical practices will assist with student outcomes, their pedagogical beliefs become “virtually useless when they lack the beliefs, they have the abilities to produce such actions” (Zee & Koomen, 2015, p. 983). These perceptions of their ability, or self-esteem in this study, is the confidence of their own ability to successfully accomplish a task under specific conditions and will

influence teachers' decisions to use technology in their practice (Bandura, 1997; Heath, 2017).

Bandura's (1997) theory suggests that an individual's perceptions of his or her abilities to perform an action/task influences that individual's effectiveness or success. It can impact how teachers decide which course of action they may pursue and if they will be successful in the face of environmental adversities (Zee & Koomen, 2015). However, it is based on a process that is multi-dimensional and happens over time based on a continuous judgement of self and the expectancy of what is likely to happen in a specific context (Bandura, 1986). "Self-efficacy judgments influence human functioning through their impact on choice behavior, on effort expenditure and perseverance, on self-hindering or self-aiding thought patterns" (Bandura, 1986, p. 362).

Educators who do not feel confident teaching in specific content areas have difficulty being effective in the classroom in those categorical fields (Ross et al., 1996; Tschannen-Moran et al., 1998). Teachers tend to integrate values and experiences from their own perceptions within their classroom practice (Tschannen-Moran et al., 1998; Tschannen-Moran & Hoy, 2001). For example, teachers that may have had difficulty within a certain content, such as science or math, as a student have a more difficult time integrating those types of lessons into their daily instruction as an educator.

Until teachers gain more knowledge or skills in the area that they perceive as difficult they will not integrate the content or tools into their practice (Tschannen-Moran & Hoy, 2001). More specifically, if teachers have never used technology to collaborate and communicate with peers and students in their practice, they could possibly lack the self-esteem to use the technology in their instructional practice. However, based on the

work of Kelchtermans (1993; 2009) and Day et al. (2006), the professional self of teachers evolves over time and can be changed as areas of tension adjust and teachers gain a different sense of self-image, self-esteem, and task perception in their professional identity. Therefore, this study is examining these areas of professional identity in relation to training and support plans for effective application of technology in schools (Kelchtermans, 1993, 1996; Day et al., 2006).

### Task Perception

When teachers are forced to shift their self-image, it can then impact their self-esteem. The area of self-esteem in the professional identity of a teacher refers to the self-evaluation of their performance in relation to the expectations of what they think their self-image should be as an educator (Kelchtermans, 1993). This is the confidence level and self-efficacy of a teacher to perform their expected tasks in their day-to-day role as a teacher. According to Kelchtermans (1993), task-perception is the link between the ideal self-image and the actual self-image.

The task perceptions of the teachers are key tasks that defined and carried out in the classroom (Day, 2002). This is the portion of the professional identity that relates to the change in behavior in the classroom and refers to the experiences of teachers in relation to the tasks that are actually performed in their classroom practice (Kelchtermans, 2009). In other words, teachers may have the self-esteem and self-image to use technology in the classroom with their students and/or peers, however, if it is not added to their daily routines for communicating or collaborating, there is a lack of integration of technology in the classroom.

The political and social push to integrate technology in classroom instruction creates a “domino effect” impacting the self-image and self-esteem in the professional identity a teacher. First, there is a shift in the self-image of a teacher who must now see themselves as a teacher who effectively uses technology in their day-to-day practice with peers and students (Day, 2002). Then in order to meet that ideal image expectation, teachers will need to know or learn how to change their practice to gain the self-esteem to use technology in the classroom (Anspal et al., 2018; Day et al., 2006, Hendrikx, 2019; Kelchtermans, 1993). That change in practice is also within the area of task perception in the professional identity of a teacher (Kelchtermans, 1993).

Even if a teacher adapts their self-image and self-esteem to integrate technology in the classroom, the task perception of using it in the classroom with students and peers is still needed in order to complete effective implementation. The findings from this study could shed light on how these three areas of professional identity, self-image, self-esteem, and task perception, are related to technology integration and use in the classroom. This type of data could help leaders create a system for training and support and the effective application of technology in schools (Kelchtermans, 1993, 1996; Day et al., 2006).

### **Review of the Literature**

This review of literature will provide additional context using recent and empirical studies related to issues of technology integration in classrooms, as well as discuss a need for developing systems when it comes to implementing and integrating support for using technology in the classroom. It will also examine research on the type of professional development and training needed to change teacher behavior using

technology, in addition to data on what is happening with technology integration in classrooms after training and support is provided for educators. Finally, this review will also discuss research related to the financial implications and burdens for government and educational agencies relevant to technology spending.

### A Need for Systems Thinking in Technology Integration

When teachers have the self-image to add technology into their instructional strategies, it can be used as an effective tool to communicate and collaborate (Fullan, 2013; Magana, 2016). Technology used effectively enables educators to have the ability to meet the individual needs of learners (Fullan et al., 2018); however, as Marcinek (2014) claims it can also be a logistical nightmare if added too quickly and not planned for effectively. Developing an effective plan for technology integration depends on the systems in place for implementation and support (Fullan & Quinn, 2016). The overall “systemness” of the organization exists when the minds and hearts of the people are working together for the betterment of the system and it is a defining characteristic of the culture (DuFour & Fullan, 2013). As Fullan (2009) explains, system embedded change and learning “requires coherence among all elements of the system” (p. 48). This coherence is a mutual, deep understanding about the purpose and the nature of the work that needs to be completed. It is the thoughts and actions of the learning community as individuals, as well as collectively working together to achieve their system goals (Fullan & Quinn, 2016).

There is only one way to achieve greater coherence, and that is through purposeful action and interaction, working on capacity, clarity, precision of practice, transparency, monitoring of progress, and continuous correction. All of

this requires the right mixture of “pressure and support”; the press for progress with supportive and focused cultures. (Fullan & Quinn, 2016, p. 2)

This is the type of system embedded change required for technology integration, as well as cultural and behavioral changes that entail altering long-held assumptions, beliefs, expectations, habits, and self-perceptions that represent the norm for some people in the organization or system (DuFour & Fullan, 2013).

The essential steps of integrating technology effectively include developing a plan for access to working technology, forming systems of support for students and teachers, and assessment and evaluation of instructional practice (Magana, 2016). These system-embedded plans should also develop a structure that is sustainable, builds capacity, and has detailed strategies to create a different mindset using technology in instruction (Fullan, 2009; Marzano & Magana, 2014). Current integration plans for technology often lack these essential elements of professional development and support to change behavior in teacher professional and instructional practice (Darling- Hammond et al., 2017), and may ignore values and skill confidence levels of the end-users (Bishop & Spector, 2014; Fraillon et al., 2014; Magana, 2016). When developing and implementing effective integration systems, there are more complex factors involved to consider, such as the self-perceptions of teachers in relation to their confidence in technology skills and their values on the need for technology in classroom instruction (Ryan & Bagley, 2015). In addition to external barriers – identified as the lack of devices, hardware, and infrastructure integrating technology – are other internal barriers (Ertmer et al., 2010; Li et al., 2015; Ryan & Bagley, 2015) to technology integration. These internal barriers include self-perceptions of skills and knowledge, as well as the

beliefs of using technological tools (Ryan & Bagley, 2015; Li et al., 2015). Because of these internal factors, there are teachers who are hesitant to use technology as a tool to support their classroom practice and still opt out of pursuing additional support to learn how to utilize technology effectively (Fullan et al., 2018; Li, et. al, 2015; Tondeur et. al., 2016).

Consequently, even with the resolution of external barriers, the level of technology integration in the classroom will ultimately be determined by the teacher (Jimoyiannis & Komis, 2006; Vokatis & Zhang, 2016; Uerz et el., 2018). If teachers do not value the importance of technology to enhance learning and have low self-perceptions of skills or knowledge to use it, they may shy away from technology in both their professional practice and instruction (Ertmer & Ottenbreit-Leftwich, 2010; Gillian & Park, 2011; Heath, 2017; Wang et al., 2011). In order to create the shift required in educational practice to meet the economic pressures of the global economy, there needs to be a strategic and systematic approach to a behavioral change in teachers regarding technology that addresses both internal and external barriers (Li et al., 2015; Ryan & Bagley, 2015; Tondeur et. al., 2016). Training and support systems should have a foundation of learning based on the needs of their staff members and how well the technology can be applied in their job functions to address any internal barriers (Fullan, 2009).

Addressing solely external barriers will not influence classroom practice (Jimoyiannis & Komis, 2006; Vokatis & Zhang, 2016; Urez et al., 2018). Meaningful change in the teacher application of technology tools for communication and collaboration with their peers or students will require whole system reform to address *all*

potential barriers, both external and internal (Charbonneau-Gowdy, 2015; Drent & Meelissen, 2008; Fullan 2013; Magana, 2016; Uerz et.al, 2018).

### Professional Development and Support

In order to develop whole system reform there must be professional development and training that addresses how teachers perceive themselves using technology in the classroom (Charbonneau-Gowdy, 2015; Drent & Meelissen, 2008; Fullan 2013; Magana, 2016; Urez et al., 2018). This type of support will aid in the development and change of their professional identities (Hendriks, 2019). According to Darling-Hammond et al.'s (2017) report entitled *Effective Teacher Professional Development*, there needs to be a well designed and implemented system of professional development that will support change in teacher practice. In this report, thirty-five different studies on professional development that yielded significant changes in teacher practice and student achievement were selected and evaluated for like characteristics. According to the findings, there were seven characteristics of professional development identified that seemed to effectively change teacher practice and improve student achievement. Three of the seven that apply to this study include:

- Active learning
- Supports for collaboration
- Modeled use of effective practice with provided coaching and expert support.

The report also included other recommendations for policy and practice for education leaders to implement in support of effective professional development, including, setting standards for professional development, conducting needs assessments, and providing

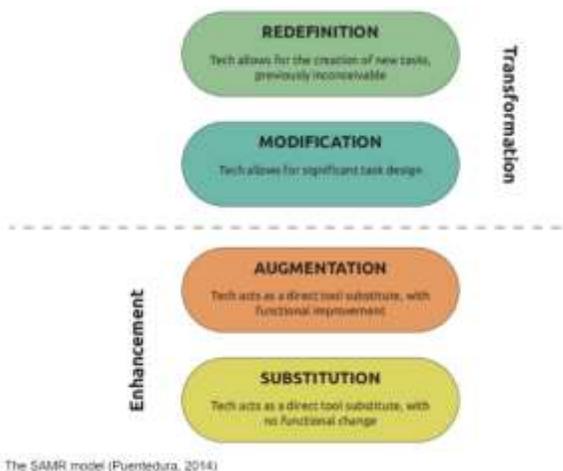
technology-facilitated opportunities for professional learning and coaching. (Darling-Hammond et al., 2017).

As previously stated, there needs to be an intentional system of support to impact how teachers see themselves as educators in their role, as well as give them the skills, knowledge, and confidence they need to implement a new practice (Darling-Hammond et al., 2017). Currently, teachers often lack the pedagogical beliefs, skills, or confidence to teach students advanced collaboration, communication, and technological skills needed in the global economy (van Broekhuizen 2015, Grunwald Associates, 2010). However, when teachers are given the support that they need to use technology in the classroom, they are more likely to also have students with higher technological skills to support student learning (McKnight et al., 2016; Zee & Koomen, 2016).

Students in classes with teachers that use technology more tend to access key principles of a learner-centered approach to instruction, such as choice and control in their learning with multiple pathways to individualized lessons with ownership and responsibility for their learning (McKnight et al., 2016). These types of learner-center principles of access, choice, and ownership correlate with improved learning and are part of the instructional culture of the classroom (Fullan et al., 2018; Hattie & Zierer, 2018; Magana, 2016). This is important, because the instructional culture of the classroom is developed based on elements of teacher professional identity and practice (Anspal et al., 2018; Rodgers & Scott, 2008). If the culture of the classroom is going to change to add technology as part of the instruction, there will also have to be support based on elements of teacher professional identity.

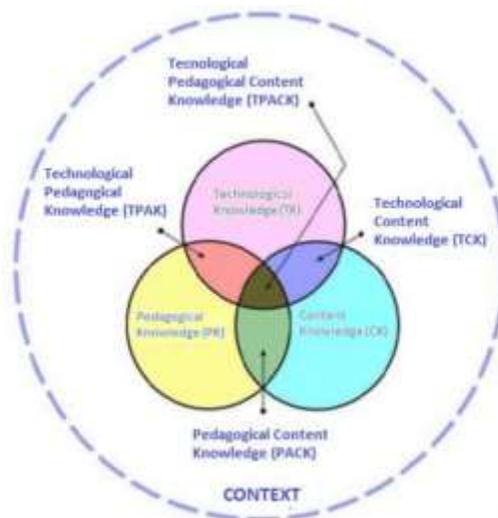
However, current models of professional development for technology integration focus more on practice and how to use the technological tool, rather than examining elements of teacher identity. For example, there are models that were developed, such as Substitution, Augmentation, Modification, and Redefinition (SAMR) and the Technology, Pedagogy, and Content Knowledge (TPACK) models, to help teachers with this transition and build self-efficacy (Li et.al., 2015). SAMR was characterized by Dr. Ruben Puentedura (2014) and was designed to help educators infuse technology into teaching and learning. TPACK refers to the relationship of how teachers learn and use to integrate technology tools during instruction (Koehler et al., 2014). These models describe the possible paths teachers take as they begin to integrate technology and change instructional practice. However, these models lack detailed information on the progression of skills and knowledge to build self-confidence to support teachers with the transition (Zhao & Bryant, 2005; Li et al. 2015).

Moreover, both models are rather abstract and require such a deep level of understanding, that teachers often cannot identify with these theories, resulting in a continued lack of change in teacher practice (Fullan, 2013; Magana, 2016).



The SAMR model (Puentedura, 2014)

**Figure 1.1 SAMR MODEL**



TPACK and Types of Knowledge (Koehler & Mishra, 2009 p.63)

**Figure 1.2 TPACK MODEL**

### Beyond Professional Development

Even when teachers have training and support to integrate digital tools, educational leaders must still recognize that, “Teachers with traditional beliefs typically use technology in more low-level ways within their classrooms” (Ryan & Bagley, 2015, p. 38). In other words, those teachers who believe they should use more traditional methods of lecture and individual student work versus more student discussion or collaborative educational practices will be more reluctant to learn about tools or skills to change their practice (Heath, 2017, Tondeur et al., 2016, Bandura, 1997, 1986).

Teachers must also have a level of self-esteem, or perception of their ability, to use the technology tools effectively during instruction (Heath, 2017). As part of the assessment and evaluation of instructional practices integrating technology, educational leaders must consider the culture, pedagogical beliefs, and self-confidence of the teachers in the learning community using technology (Heath, 2017; Tondeur et al., 2016).

Teachers will base their self-esteem, on their experiences and judgments of self to likely be successful integrating technology to change instructional practice (Bandura, 1979, 1986). Any system of professional development and support should enable teachers to reflect on their own self-perceptions of self-esteem and identity as a teacher to support a change in practice (Ross et al., 1996; Tschannen-Moran et al., 1998; Li et al., 2015). As teachers reflect on their own practice, perceptions of themselves and their identity as a teacher will evolve (Holland et al., 1998; Tschannen-Moran et al., 1998; Vokatis & Zhang, J, 2016).

### The Growing Demand for Technology in Education

As society enters into the 4<sup>th</sup> industrial revolution, economists and business leaders estimate that over 65% of the jobs children in primary grades will venture into have not been created yet (World Economic Forum, 2017). It was estimated that by 2020, over 1.5 million of these new types of positions will be “digitized” (World Economic Forum, 2017). According to Goldin and Katz (2008), there has been a race between education and technology spanned across the centuries, which fuels the demand for technology in education. Early in the 20<sup>th</sup> century, America invested in “Human Capital” by educating more youth than most European countries. Public education was free, except at the highest levels, and available even in the most rural parts of the country.

However, as the 20<sup>th</sup> century progressed, there seemed to be a shift more in the advancement of technology rather than in the advancement of educational practices. “In the first half of the century, education raced ahead of technology, but later in the century, technology raced ahead of educational gains” (Goldin & Katz, 2008, p. 8). Now in the 21<sup>st</sup> century, education is trying to catch up to the rapid advances in the development of technology. Even though there are innovative classrooms and innovative schools utilizing technology to support instruction, there is still a lack of innovative large systems improving student achievement using digital tools for communication and collaboration (Fullan, 2013; Hattie, 2012, Bishop & Spector, 2014; Fraillon et al., 2014; Li et al., 2015).

### Political and Educational Implications of Technology Spending

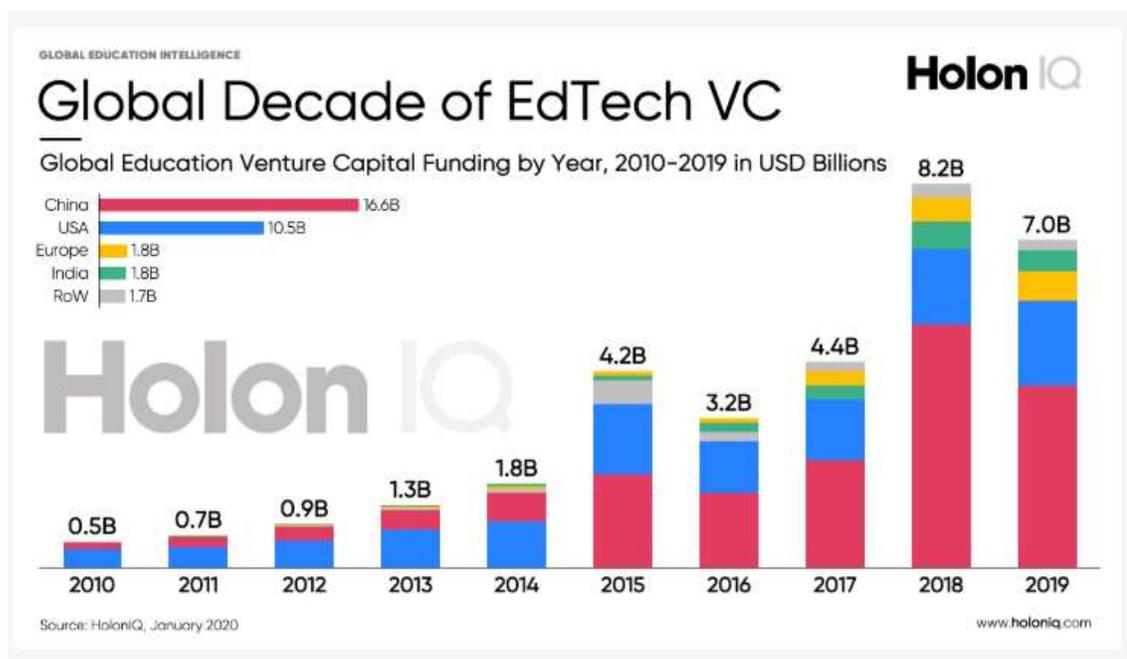
Rapid developments in the types of technology available today and what is forecasted for the future continue to change the way people use technology to perform their jobs (Ertmer & Ottenbreit-Leftwich, 2010). This evolution of technology has influenced politicians and educational leaders to monetarily support societal views on the importance of integrating technology into educational programs to prepare students for the future. “Over the past 30 years, billions of tax dollars have been spent on digital educational technology in our nation’s schools” (Magana, 2016, p. 4).

In this desperate push for more devices in the classroom, states and local school districts across the country are going into debt to support technology purchases for classroom access to devices (Diallo, 2019). Over the last three decades, billions of tax dollars have been spent on digital educational technology in our nation’s schools (Magana, 2016; Uerz et al., 2018). Currently, in smaller states, such as Idaho, there are allocated funds to provide districts with money to support technology in schools across the state, to support digital personalized mastery learning programs for students continues to grow. According to the *Idaho Statesman*, in 2018 Idaho Governor Otter, asked the legislature to increase technology funding for schools by \$10 million, even though there was a proclaimed teacher shortage because of a lack of funds for salaries. And although Idaho has one of the lowest per pupil expenditures in the nation, in 2017, the state spent \$25.6 million to support the infrastructure, classroom technology, and digital content in districts state-wide, despite the lack of any significant change in student achievement or teacher practice (Office of Performance Evaluations Idaho Legislature, 2017).

However, state and local governments are not the only government agencies spending money on the demand for technology integration in the classroom. For example, in the past decade the federal government has set policy and created initiatives to push technology into the schools and classrooms, including the authorization of the non-profit agency, Digital Promise, to support technology integration in schools to prepare students for the future and global economy (McKnight et al., 2016). In 2001, the No Child Left Behind Act (NCLB) required all levels of the governments to incorporate technology to support education and academic achievement (Merchant, 2012). “For over 100 years, American public education has been sold on a technology promise, namely, the innately transformative power of technology tools” (Magana, 2016, p. 4).

For the last three fiscal years the United States Department of Education has budgeted \$28 million for educational technology, as well as millions in special funds for professional development to support innovation in teacher education (US Department of Education, 2019). These types of expenditures to push technology in the classrooms has also impacted the private and public industry of educational technology. According to an independent study for the venture capital company, Holon IQ (2020), there was \$500 million spent in 2010 on venture capital for education technology companies. That number has increased by 14 times to approximately \$7 billion dollars in 2019 (Figure 1). Analysts are predicting there will be another increase of almost triple that of the prior decade over the next 10 years totaling at \$87 billion dollars spent to invest in the demand for technology in the classroom (Holon IQ, 2020). Although the capital funding of educational technology in the United States appears to have stayed the same, more money invested globally at the industry level in educational technology provides opportunities

for leaders at the local, state, and federal level to purchase more technology and digital resources to meet demands and expectations. Despite the inconclusive evidence of the impact of technology on student achievement, there is still a strong push of increased spending at the national, state, and local level to integrate technology into education to support student achievement (Fullan, 2013; Marzano & Magana, 2014; Hattie, 2012; Lim et al. 2013; Li, et al., 2015).



**Figure 1.3** Venture capital growth for educational technology (Holon IQ, 2020).

### Reality of Technology in the Classroom

The increase in money spent on technology for classroom education has increased the number of devices and digital tools in schools across the nation, which has also added pressure on teachers at the classroom level (van Broekhuizen, 2015). Teachers are being asked to use these devices to support student learning, however, the evidence that technology devices support academic achievement is varied (Fullan, 2013; Hattie, 2012; Lim et al. 2013; Marzano & Magana, 2014). Because of the rapid push and

implementation of devices without a plan, technology in the classroom is typically used infrequently and sporadically, or use is limited because of curricular constraints and lack of training (Bishop & Spector, 2014; Eteokleous, 2008; Fraillon et al., 2014; Lim & Chai, 2008). Schools may be improving in terms of adding technology in the classroom to meet the demands, yet, multiple sources of data indicate that teachers are slow to change their practice of how they utilize technology in ways that have been demonstrated to support student achievement (Al-Zaidiyeen et al., 2010; Fullan, 2013; Fullan et al., 2018; Marzano & Magana, 2014).

The pressure to use technology in the classroom has put educators and districts in a place where they are creating budgets with limited resources to spend millions of dollars on technology that is underutilized in the classroom (van Broekhuizen, 2015; Fullan et al., 2018). The issues of technology not being used then becomes intensified by the contrasting views of how to first employ technology so that it will lead to digital tools that are purchased and used effectively to support learning (Fullan, 2020; van Broekhuizen, 2015). Due to a lack of understanding for planning technology implementation, state and district level leaders are spending money to make these purchases without assessing the needs of the teachers who will be required to change their practice using the technology for enhanced student learning (Magana 2016; Fullan, 2020; Romeo et al., 2013; van Broekhuizen, 2015).

To be clear, research *does* support the use of technology as a tool to communicate and collaborate when it is implemented in congruence with positive teacher educational values and instructional strategies. This justifies the demand at the classroom level (Magana, 2016; Fullan, 2013; Fullan et al., 2018). As claimed by Hattie (2012), using

technology as a tool for communication and collaboration for students to gain autonomy and student ownership in learning is an effective way to implement technology in the classroom. Using technology tools for communication and collaboration to support instruction demonstrates the largest effective size in student academic growth and skills of technological literacy. Technological literacy includes the knowledge, skills and attitudes related to the use of technology in everyday life (Koehler et al., 2014). Gathering, evaluating, and using information to solve problems, conduct research, or to work collaboratively are part of the technological skills that have been demonstrated to increase student achievement (Hattie, 2012; Magana, 2016; McKnight et al., 2016).

The idea for teachers and students to connect technological skills with informational skills and computational thinking is the force that is driving the demand for technology in the classroom to support the future economy (Barr & Stephenson, 2011; Uerz et al., 2018; Voogt & Roblin, 2010; Voogt et al., 2015). Technological and informational skills are also cognitive processes that can be carried out effectively by a computer or processing agent that can be beneficial in personalized learning (Hattie, 2012; Magana, 2016, Fullan 2019, Fullan, 2020; Uerz et al., 2018; Wing, 2008). Although the push is to integrate technology in the classroom to support these technological and informational skills, it does not appear to be occurring in classroom practice.

Technology is still not being utilized to support these types of skills:

Based on an analysis of three years of direct classroom observations in K-12 schools across 39 states and 11 countries, AdvancED found there are still relatively few classrooms in which the use of digital tools and technology is a

regular part of a student's school experience. In more than half (52.7 percent) of classrooms direct observations show no evidence students are using technology to gather, evaluate, or use information for learning; two-thirds of classrooms show no evidence of students using technology to solve problems, conduct research, or to work collaboratively (van Broekhuizen, 2015, p. 2).

Teachers are either not using technology at all or using technology in ways that do not support technological skills that impact student learning (McKnight et al., 2016; Tamim et al. 2011). Teachers need the experience and support using technological skills in their classroom as part of their professional identity, before change in practice can occur (Fullan, 2020). As previously stated, change in teacher professional identity and practice using technology improves student achievement – not the integration of devices or digital programs alone (De Bruyckere et al., 2016; Fullan et al., 2018; Hatti & Zierer, 2018; Marzano et al., 2015).

### **Summary**

There has been significant research supporting the use of technology in the classroom for student communication and collaboration to increase student technological and information skills (Hattie, 2012; Magana, 2016; McKnight et al., 2016; Tamim et al. 2011). The idea of students gaining technological and information skills, that support the global economy, from using more technology in the classroom has influenced political and educational expenditures on devices for education (Barr & Stephenson, 2011; Uerz et al., 2018; Voogt & Roblin, 2010; Voogt et al., 2015). Political and educational leaders are budgeting and purchasing more technology for classrooms; however, technology is still being underutilized (Diallo, 2019; Fullan, 2020).

It is recommended that states and districts use systems thinking when developing plans to integrate and implement technology in the classroom (DuFour & Fullan, 2013; Fullan & Quinn, 2016; Fullan, 2020). Part of the system created should identify and address internal barriers, such as training needs for educators based on their self-esteem, self-image, and task-perception (Charbonneau-Gowdy, 2015; Drent & Meelissen, 2008; Fullan 2013; Hendrix, 2019; Magana, 2016; Uerz et.al, 2018). Professional development and training implemented should also sustain a shift in teacher behavior using technology in the classroom (Darling-Hammond et al., 2017).

The training and support should include elements of teacher professional identity and not just focus on learning the tool (Anspal et al., 2018; Rodgers & Scott, 2008). As research on technology adoption in education has increased since 2009, the discussion continues to inform others that the adoption of technology in the classroom is complex and “determined not only by the conditions schools provide to help teachers use technology but also motivational traits, self-beliefs, and beliefs about technology and its use” (Scherer & Teo, 2019, p. 90). Chapter three of this dissertation will provide information on the methods and procedures used to examine teacher beliefs about technology related to self-esteem, self-image, and task-perception. As stated by Scherer & Teo (2019), this is an example of a preliminary study to take a deeper look at possible relationships of other traits of teachers using technology in the classroom beyond conditions of just access to devices and tools.

## CHAPTER 3: METHODOLOGY

### **Introduction**

This chapter will review the methods, materials, and subjects as the structural framework for this study. This will include a detailed description of the rationale, research question, defining variables and constructs. In addition, this chapter will cover the procedural information needed related to data collection, measurement, and participant details to replicate this study.

### Research and Design Rationale

The impetus for this study was to shed light on the issue of spending technology money and resources effectively, as well as providing opportunities for new knowledge in determining possible support and training needs for the professional development of teachers implementing technology in their instructional practice. Research on technology adoption models in education has increased since 2009, however, models have focused more on skill and confidence levels, instead of more complex barriers, such as motivational traits, self-beliefs, and beliefs about technology and its use (Scherer & Teo, 2019). The rationale for this study was to examine possible relationships of other complex internal barriers related to teacher professional identity, such as self-image, self-esteem, and task-perception, which is self-reported frequency of use, that may exist when planning systems for technology integration in classrooms (Day et al., 2006; Ertmer et al., 2010; Kelchtermans, 1993).

The design for this research was based on using pre-existing data, from a self-reported questionnaire from teachers using technology in the classroom, to examine relationships of variables, such as self-image, self-esteem, and task-perception related to using technology to communicate and collaborate with peers and students. This study is relevant to educational and political leaders developing budgets and strategies for future expenditures on digital resources and devices, as well as identifying needs when implementing stronger integration and support plans.

#### Research Question:

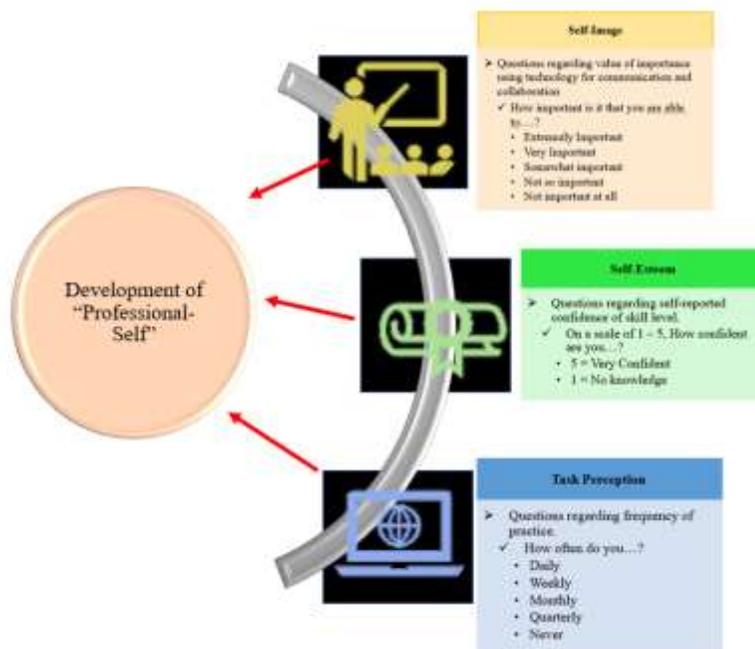
##### Question

What is the relationship between the variables of self-image, self-esteem, and task perception of teachers using technology in their professional practice to collaborate and communicate with peers and students?

#### Defining Variables: Self-Image, Self- Esteem, and Task Perceptions

Three interrelated areas of tension suggested to contribute to the development of the “professional self” of teachers included self-image, self-esteem, and task perception (Day et al., 2006; Kelchtermans, 1993). For this study, the professional self of a teacher was defined by the three different areas of tensions related to using technology for communication and collaboration with peers and students. The three tension areas, of image, esteem, and task, were the variables used to: 1) describe how important technology was in their self-image as a teacher 2) rate their confidence of skills and knowledge using technology tools related to collaboration and communication 3) the frequency of using technology in the role of their job to communicate and collaborate with peers and students (Day et al., 2006; Kelchtermans, 1993).

In this study, the definition of self-image of a teacher was based on how he or she described themselves in their practice (Day et al., 2006; Kelchtermans, 1993). Am I a teacher who thinks it is important to use technology to communicate and collaborate with students and peers? The variable of self-esteem for this study was defined as the evolution of skills as a teacher (Day et al., 2006, Kelchtermans, 1993). This was based on the premise of how the teacher rated their own ability and confidence to use the tools to communicate and collaborate. Am I a teacher that has the skills and ability to use technology as a tool to communicate and collaborate with students and staff? The third variable used in this study was task perception. This was defined by how teachers applied using technology in their perceived role of their job. In other words, it was the frequency of using technology as a tool to communicate or collaborate with students or peers. If I am a teacher that has the skills and the self-esteem to use technology to communicate and collaborate with students and peers, how often do I do this application in my instructional practice?



**Figure 1.4 Defining Variables**

#### Context/Background Information

The participants of this study were sampled from a large suburban school district located outside in the Pacific Northwest. This district supported students from five different, smaller suburban communities in the western location of the larger county. It was the largest school district in the state with approximately over 40,000 students and 4,000 staff members. Of the total student population, over 25% received free or reduced lunch, 10% qualified for Special Education services, 7% were English second language learners, and over 500 hundred students were considered homeless.

#### Population and Data Collection

The data used in the study was routinely collected by the Digital Integration and Instructional Support Department to assess and evaluate the use of technology in the district. The participants in this study included all teachers in the population across the district that completed the routine surveys. As such, data was collected from 865

teachers from 55 building in 3 different geographical regions of the district. Of the 865 teachers, 46% were secondary teachers for grades 6<sup>th</sup> through 12<sup>th</sup>, 54% were elementary teachers for grades K through 5<sup>th</sup>, and 11% of all participants taught students in special programs, such as Special Services or Title I. Special Services in this district were defined as any Special Education or English as a Second Language professionals teaching students.

The electronic questionnaires used in this study were administered using the Microsoft Forms application in Office 365. The questionnaire data for this study was collected twice over a one-year period in the spring of 2018 and the fall of the 2019 school year. The self-reporting surveys were emailed out from the building administrators and requested to be completed as part of routine gathering of data on technology in the schools. The Digital Integration and Instructional Support team also sent out two reminders asking all staff to please complete the technology questionnaires. The electronic questionnaires were open for response for two-week periods each time.

#### Instrumentation and Operationalization

The quantitative data utilized in this study was part of a 32 question self-assessment digital online survey created as part of the systematic data collection of the district (Appendix A). This survey was the second of two surveys developed by the digital integration department. The first survey created and utilized by the district integration team was based on the models of more skill knowledge and competence, such as TPACK. TPACK refers to the relationship of how teachers learn and use to integrate technology tools during instruction (Koehler et al., 2014).

Based on reports from digital leads and administrators in the buildings and further research, the department decided to gather more detailed information to support the teachers in their district with technology implementation in the classroom. The integration team adapted and developed the second questionnaire that was used in this study. The second questionnaire became part of the routine practice of the team to gather data on the teachers in their district. This second questionnaire contained questions related more to teacher professional development of self-esteem, self-image, and task-perception (Day et al., 2006, Kelchtermans, 1993).

The pre-existing data used in this study was from the routine support system of training and support in their district. Specifically, 13 of the 32 questions were used to configure constructs for the variables of self-image, self-esteem, and task perception because these questions related to the purpose and rationale of this study. It is important to note that all questions related to self-esteem and self-image were based off a set criterion of skills needed to utilize the collaborative technology platform in Office 365, including OneDrive, Outlook, SharePoint, and the Microsoft Teams platform. This study used the pre-existing data from these questionnaires to maintain the purpose of examining the relationship of the variables of self-image, self-esteem, and task-perception from teachers implementing technology in the classroom. A questionnaire was not created specifically for this study because this research was not intended to study a valid instrument for measuring or predicting variables of professional identity related to technology adoption.

**Table 1** Questionnaire items used as variable and constructs in the study.

<b>Self-Image</b>	<b>Self-Esteem</b>	<b>Task-Perception (Frequency in Application)</b>
<ol style="list-style-type: none"> <li>1. On a scale of 1-5, how confident are you with sharing a document saved in OneDrive?</li> <li>2. On a scale of 1-5, how confident are you with locating files that others have shared with you in the cloud?</li> <li>3. On a scale of 1-5, how confident are you with creating a link for a document saved in OneDrive?</li> <li>4. On a scale of 1-5, how confident are you with locating your Teams SharePoint files in Office 365?</li> <li>5. On a scale of 1-5, how confident are you with copying files to your Team SharePoint files?</li> <li>6. On a scale of 1-5, how confident are you with uploading files to your Team SharePoint files?</li> <li>7. On a scale of 1-5, how confident are you with locating your teams/groups in Microsoft Teams?</li> </ol>	<ol style="list-style-type: none"> <li>1. How important do you think it is to be able to share a document saved in OneDrive?</li> <li>2. How important do you think it is to use digital tools, other than email or text, to collaborate with colleagues?</li> <li>3. How important do you think it is to use (digital tools) technology, other than email or text, to work with Students?</li> <li>4. How important do you think it is to use a learning management system with students as instructional support?</li> </ol>	<ol style="list-style-type: none"> <li>1. How often do you use digital tools, other than email or text, to work with Students?</li> <li>2. How often do you use digital tools, other than email or text, to collaborate with colleagues?</li> </ol>

As presented in Table 1, each question used in this study that related to self-image and self-esteem was measured by a 5-point Likert scale. Questions related to task perception were measured by units of frequency including daily, weekly, monthly, quarterly, never. Data from the responses was sorted in 3 categories based on the types of questions related to confidence of skill-level, beliefs of self-image, and task perceptions, or frequency of application, using technology to communicate and collaborate with peers and students.

These questions were developed as part of the routine data collection based on the progression of skills and success criteria created by the Digital Integration and Instructional Support Department (Appendix B and C). This criterion is defined as the “success criteria” for the platforms used in training offered at the district. The intent of this study was to examine possible relationships between variables of self-esteem, self-image, and task-perception from existing data to inform educational and political leaders of potential factors that could interfere with training and support for technology implementation.

The constructs for the variables measured in this study were based on responses to the questions from the existing data related to the three-tension areas of teacher professional identity, self-image, self-esteem, and task perception, using technology for communication and collaboration. The responses to the questions were operationalized and given a value of a score between 1 – 5 as needed depending on the response value that was given for each item used in this study from the questionnaire.

A Cronbach’s alpha was conducted on each of the measures in the survey to establish internal consistency and reliability (Field, 2016). Cronbach's alpha is utilized to

evaluate the degree to which a set of items measures a construct variable. The scale for all three constructs had a level of internal consistency, as determined by a Cronbach's alpha above 0.7.

The construct to measure the variable of self-image was derived from the series of responses to the questions identified in Table 1 rating the importance of teachers using different tools of technology in their practice to communicate and collaborate with peers and students. The value scale options were Extremely Important, Very Important, Somewhat Important, Not so Important, and Not Important at All. The value statements were given a numerical value of 1 – 5 to analyze data, with 5 equaling Extremely Important down to 1 equaling Not Important at All. A mean was configured as a construct for the variable of self-image using the responses from the 865 participants on the 4 questions identified in Table 1 from the District self-reported questionnaire (Appendix A). The questions from the questionnaire to measure the underlying construct of self-image scale had a level of internal consistency, as determined by a Cronbach's alpha of 0.80.

The construct used to measure the variable of self-esteem was also created from the mean scores of the responses in Table 1 on the self-reported questionnaire. Teachers rated their confidence levels on a scale from 1-5 using different tools in technology used to communicate and collaborate with others. Five being on the scale as very confident using the skill or tool and one being no knowledge or confidence using the skill or tool. A mean was configured as a construct for the variable of self-esteem using the responses from the 865 participants on the 7 questions identified in Table 1 from the District self-reported questionnaire (Appendix A). The questions from the questionnaire to measure

the underlying construct of self-esteem scale had a level of internal consistency, as determined by a Cronbach's alpha of 0.94.

The construct used to measure task-perception was configured from the responses on the self-reported questionnaire identified in Table 1 asking about the frequency that teachers report using technology to communicate and collaborate with peers and students. Teachers had the option to report daily, weekly, monthly, quarterly, or never. Again, a mean was configured as a construct for this variable using the responses from the 865 participants on the 2 questions identified in Table 1 from the District self-reported questionnaire (Appendix A). The questions from the questionnaire to measure the underlying construct of task-perception scale had a level of internal consistency, as determined by a Cronbach's alpha of 0.83.

### Data Analysis

This study examined the relationship between self-image, self-esteem, and task perceptions using technology based on the assessment questionnaire. The Statistical Package for Social Sciences (SPSS 25) program was used in the analysis of this study. The data was analyzed using an exploratory data analysis to evaluate and summarize the descriptive characteristics of the data. The data was analyzed using a Pearson's correlation to determine if there was a linear relationship between the variables used in this study for self-esteem, self-image, and task-perception of teachers using technology in the classroom. Assumptions were considered and tested for linear relationships, significant outliers, and normality.

Since this research was an examination of possible relationships without identifying dependent and independent variables, a Pearson's partial correlation was also

used to study the linear relationship between two of the variables after controlling for the effects of one of the other variables (Field, 2016). A Pearson's partial correlation analysis was completed three times and a different variable was controlled for the effect in each analysis. Each variable of self-esteem, self-image, and task-perception were used as two of the variables in this study when the effects of the third variable were held constant

### Ethical Procedures

There was approval from Boise State's Institutional Review Board, as well as the school board of the district to use this data in order to complete this study. Every effort was made to protect the confidentiality of each participant to protect their identity. Final approval and explanations of how data was used in this study was published and made public in the consent agenda of the school board meeting of the district. All surveys and digital data collected for this survey were stored on a protected drive secured by Azure protection policies of Microsoft and the school district where the data originated.

### Assumptions, Limitations, Scope, and Delimitations

Since the survey data used in this study is completed as part of the routine practices of one district in the Pacific Northwest, there will be limitations based on the collection procedures of the district. The surveys were sent out electronically through the district email system as a link using the Microsoft Forms program. Staff members who do not get the email or overlook the email, may not have the opportunity to take the survey. The survey is also electronic, therefore, staff members who do not have the confidence to complete online surveys or use Microsoft Forms may also ignore the questionnaire or unable to access the survey. It is also important to note that the questions used to rate the skills of technology used for communication and collaboration in this

study were limited specifically to the use of Office 365 programs, including OneDrive, Outlook, SharePoint, and the Microsoft Teams platform.

The scope of the study is to investigate the possible tensions of teachers related to self-image, self-esteem, and task perceptions that could affect the additional purchases of devices and the development of training programs created to support teachers using technology. To narrow this scope, the study was limited to certified teachers who replied to the survey and did not include any classified support staff or certified administrators. There is an assumption that teachers will self-report their perceptions to the best of their ability and views on the three areas of tension including, self-image, self-esteem, and tasks perceptions.

### **Summary**

This chapter reviewed the design rationale and methods for this surface level study examining the data from teacher self-reported questionnaires. The responses for this study were selected from a pre-existing questionnaire utilized routinely in a large school district in the Pacific Northwest. The questions selected also specifically related to the three areas, self-esteem, self-image, and task-perception, which is frequency of use of technology, related to teacher professional identity. Constructs used to measure the three variables examined were configured using the means of the subsets of questions, which were tested for internal consistency using a Cronbach's alpha test in the SPSS 25 program. Chapter four of this study will review the findings from the data analysis that was completed.

## CHAPTER 4: FINDINGS

### **Introduction**

The purpose of this chapter is to summarize the data used for this study, explain how it was analyzed, and present results in relation to the research question. The problem this study was addressing is the issue of the integration of technology in schools and districts based on the assumptions that all teachers: 1) believe technology is an essential piece to student learning, 2) have the knowledge and confidence to use digital tools effectively in their instructional practice (Beller, 2013; Flórez et al., 2017; Siddiq et al., 2016). These assumptions impede the use of technology in education because they do not address the need for a system embedded change of behavior, self-efficacy, and identity using technology (Bandura, 1986; Wang, Moore, Roehrig, Gillian & Park, 2011; Heath, 2017).

#### Descriptive Findings:

The data used for this study was analyzed using SPSS 25. Thirteen questions used from a self-reported questionnaire were utilized to measure areas of self-esteem, self-image, and task perception. Frequency distributions were completed to gain a better summary and description of the data, as well as test for normality. Testing for bias and assumptions, each construct variable was plotted in simple scatterplots boxplots to assess linearity and outliers. The data used for this study met all tests for bias and assumptions, so a Pearson's correlation was completed and then a partial correlation were completed; holding each variable constant.

**Table 2**      **Frequency Statistics Self- Image**

	N	Mean	Std. Dev.
How important do you think it is to be able to share a document saved in OneDrive?	865	3.75	1.23
How important do you think it is to use digital tools, other than email or text, to collaborate with colleagues?	865	3.72	.96
How important do you think it is to use (digital tools) technology, other than email or text, to work with Students?	865	3.97	.88
How important do you think it is to use a learning management system with students as instructional support?	865	3.33	1.17

*5= Extremely Important, 4= Very Important, 3= Somewhat Important, 2= Not so Important, and 1= Not Important at All*

**Table 3**      **Frequency Statistics Task-Perception**

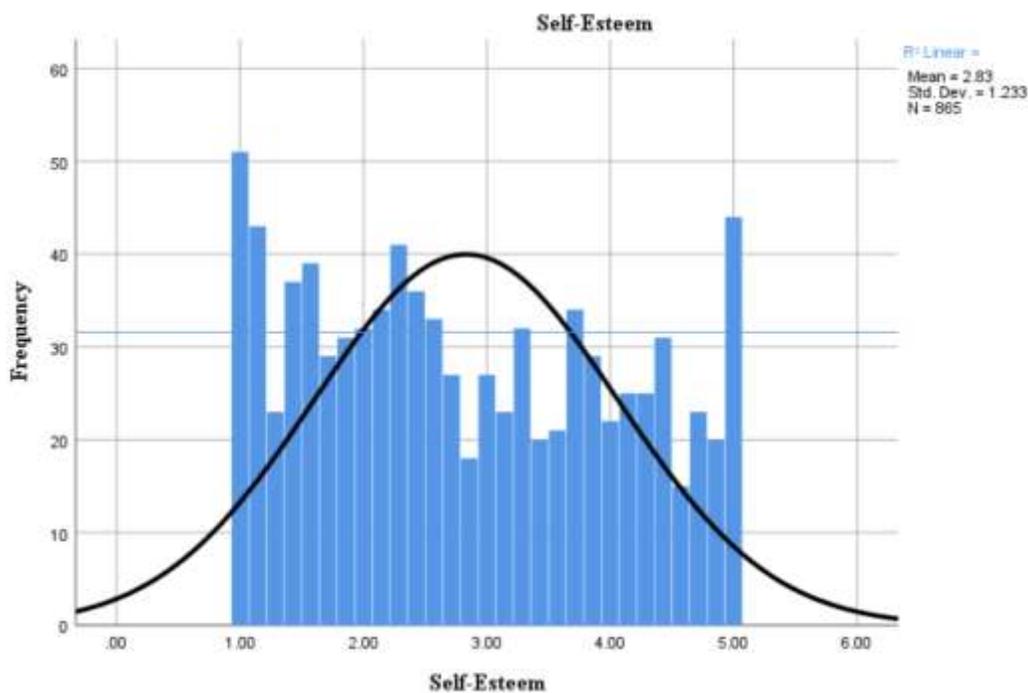
	N	Mean	Std. Dev.
How often do you use digital tools, other than email or text, to work with Students?	865	3.61	1.28
How often do you use digital tools, other than email or text, to collaborate with colleagues?	865	2.91	1.23

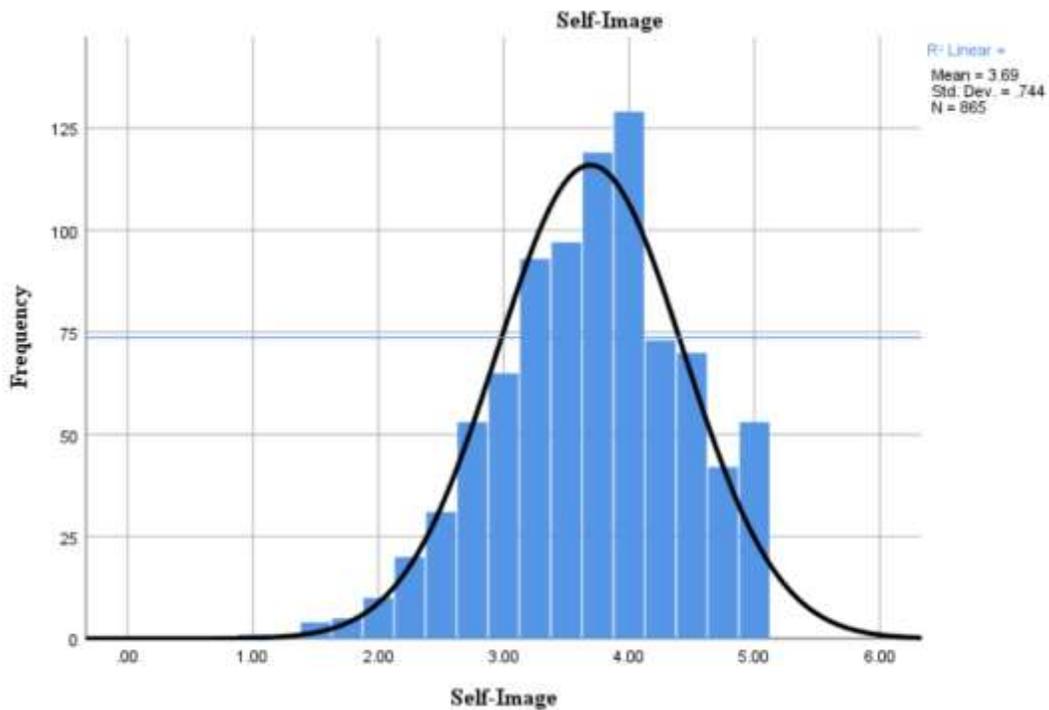
*5= Daily, 4= Weekly, 3= Monthly, 2= Quarterly, and 1= Never*

**Table 4** Frequency Statistics Self- Esteem

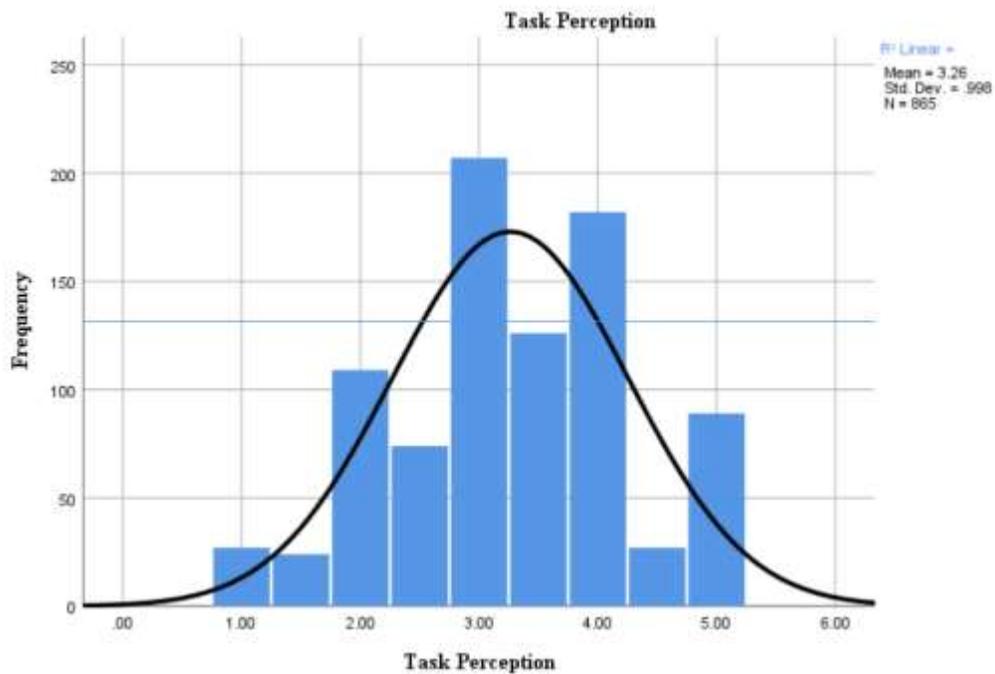
	N	Mean	Std. Dev.
How confident are you with sharing a document saved in OneDrive?	865	3.32	1.48
How confident are you with locating files that others have shared with you in the cloud?	865	3.06	1.44
How confident are you with creating a link for a document saved in OneDrive?	865	2.54	1.50
How confident are you with locating your Teams SharePoint files in Office 365?	865	2.92	1.41
How confident are you with copying files to your Team SharePoint files?	865	2.41	1.36
How confident are you with uploading files to your Team SharePoint files?	865	2.52	1.44
How confident are you with locating your teams/groups in Microsoft Teams?	865	3.06	1.51

*Scale of 1 -5; 5 feeling very confident and 1 having no knowledge*

**Chart 1** Frequency Histogram- Self-Esteem



**Chart 2** Frequency Histogram- Self-Image



**Chart 3** Frequency Histogram- Task Perception

### Correlation Analysis

**Question:** What is the relationship between the variables of self-image, self-esteem, and task perception of teacher's self-report using technology in the classroom?

Pearson's correlation was run to assess the relationship between the variables of self-esteem, self-image, and task perception. Responses from 865 participants were utilized. Mean self-esteem level was 2.83 (SD = 1.23), mean self-image level was 3.69 (SD = .744) and mean task perception frequency was 3.26 (SD = 1.00).

As shown in Table 5, bivariate Pearson's correlation established that there was a moderate, positive correlation between self-image and task-perception, or frequency of using technology with students and peers, as well as between self-image and self-esteem. There was also a moderate positive correlation between or frequency of using technology with students and peers.

**Table 5**      **Pearson Correlation for Main Study Variables**

Variable	Self-Esteem	Self-Image	Task-Perception
Self-Esteem	1.00		
Self- Image	.405*	1.00	
Task-Perception	.354*	.503*	1.00

**Note.** \*statistically significant at  $p < .001$  level.

### Pearson's Partial Correlation:

Since there was not a distinction between dependent or independent variables in the Pearson's correlation ran in this study, a partial correlation was run to further examine the relationship between the variables of self-esteem, self-image, and task-perception. As shown in Table 6, there is still a positive correlation between self-image and task-

perception, or frequency of using technology with students and peers, as well as between self-image and self-esteem.

**Table 6 Pearson Correlation for Main Study Variables with Partial Correlation**

Constant Variable	Self-Esteem	Self-Image	Task- Perception
Self-Esteem		0.21*	0.19*
Self- Image	0.21*		
Task-Perception	0.19*	0.42*	

**Note.** \*statistically significant at  $p < .001$  level; Task PC = Partial correlation Task-Perception; Image PC = Partial correlation Self-Image.

### Summary

There was a statistically significant relationship between the variables of self-image, self-esteem, and task perception, which is the frequency teachers self-report using technology in their professional practice to collaborate and communicate with peers and students. Therefore, we can reject the null hypothesis and accept the alternative hypothesis that there was a positive relationship between all three variables. The next chapter of this dissertation study will discuss the implications and possible next steps using the information from this research.

## CHAPTER 5: SUMMARY, CONCLUSION, AND DISCUSSION

### **Introduction**

The purpose of this study was to examine relationships between self-image, self-esteem, and task perception as they contribute to the professional identity of a teacher that may hinder training and support plans for effective application of technology in schools (Kelchtermans, 1993, 1996; Day et al., 2006). This chapter includes a discussion of the findings in relation to the theoretical framework and the literature on spending, support, and practice of technology in the classroom. It will conclude with implications and recommendations for future studies.

### **Summary of Findings and Implications**

As indicated in the problem statement of this study, educational and political leaders continue to spend more money on technology in K-12 education, while students and teachers lack the technology skills and knowledge to demonstrate results of significant impact on student achievement (van Broekhuizen, 2015). Educators often lack the self-confidence to integrate or use technology in their own instructional practice (Fullan, 2013; Magana, 2016). Although teachers need additional support and training, the needs of teachers are rarely addressed to support effective integration (Darling-Hammond et. al, 2009). Rather, devices are often added to schools and classrooms with the hope of an automatic shift in teacher pedagogy using technology efficiently, without attending to professional identity as it relates to the change of behavior in the classroom

using technology (Al-Zaidiyeen, et al., 2010; Charbonneau-Gowdy, 2015, Day, 2002; Fullan, 2020; Li et. al, 2015).

Relevant to this problem, the research question for this study examined the relationship of tension areas in teacher professional identity that may hinder the support and implementation of using technology in the classroom. This was an introductory examination of possible relationships between the variables of self-esteem, self-image, and task-perception related to teacher professional identity. The information in this study could be the first step in identifying areas of awareness for educational and political leaders as they purchase technology and develop integration systems for training and support.

The focus of the research question was to examine data to discover any relationships between teacher self-reported self-esteem using technology for communication and collaboration, their self-image of what they believe their role is using technology, and task perception, which is their frequency using technology in the classroom. The data reflected significant relationships between all three tension areas of self-esteem and self-image related to task-perception, which is the frequency that teachers self-reported use of technology in their classroom. The findings in this initial examination support the theory that there are some internal barriers related to teacher professional identity, such as self-esteem, self-image, and task-perception that play a role in developing classroom practice (Kelchtermans, 1993, 1996; Day et al., 2006).

Although this research was only a preliminary examination of possible relationships that exist between variables of self-esteem, self-image, and task-perception related to teacher professional identity, the analysis of the data demonstrated a

complexity in the relationships that should be studied further. For example, when the variables were held constant using partial correlation analysis, there was a stronger positive correlation related to self-image and the other two variables of self-esteem and task-perception. For instance, 35% of the responses for task-perception were related to self-esteem, whereas 50% of the responses to task perception were related self-image. In addition, 40% of the responses for self-esteem were related to self-image as well. In other words, if teachers do not have the self-image, or see themselves using technology as part of their identity, they were more likely to report that they did not use as often in their practice, which is consistent with the theoretical framework of this study.

### Theoretical Implications

The adoption of technology in the classroom “cannot be restricted to merely technology-related factors” (Tondeur et al., 2008, p. 2542). There must be a more nuanced way of assessing and evaluating the factors associated with professional identity related to technology integration (Aldunate & Nussbaum, 2013; Scherer & Teo, 2019; Tondeur et al., 2008). Even if a teacher adapts their self-esteem to integrate technology in the classroom, there still needs to be a shift in the self-image to see a change in task perception, or frequency, of using technology in the classroom with students and peers: “Teachers' technology acceptance can be considered a complex construct as it is determined not only by the conditions schools provide to help teachers use technology but also motivational traits, self-beliefs, and beliefs about technology and its use” (Scherer & Teo, 2019, p. 90)

As highlighted in this study, there is a need to understand more about how variables of self-image, self-esteem, and task perception relate to teacher professional

identity, contribute to the development of teacher professional and instructional practice, especially related to using technology in the classroom (Kelchtermans, 1993, 1996; Day et al., 2006). Although this study examined the constructs of self-esteem, self-image, and task-perception specifically related to using technology in the classroom to communicate and collaborate, this work could also be studied further in other areas of teacher professional learning and practice based on the context of the theoretical framework used in this paper. Examining further how constructs of self-esteem, self-image, and task-perception, as used in this study, play a role in the development of teacher classroom and professional practice could influence other research in developing systems for educational support and professional development based on this theoretical framework.

#### Implications for Systems Thinking

As Fullan (2013, 2020) and others claim (Charbonneau-Gowdy, 2015; Drent & Meelissen, 2008; Fullan 2013; Magana, 2016; Uerz et.al, 2018), the ineffective integration of technology in the classroom is impacted by the lack of systems thinking integration. “Systems thinking can be explained as the ability to see the whole beyond its parts and to see the parts in the context of the whole” (Shaked & Schechter, 2020, p. 2). The false premise that access to devices is the only element needed to support the effective integration of technology in classroom does not address the need for a shift in practice that must occur at a system level (Fullan & Quinn, 2016). Implementing systems for deploying devices with a planned process for developing, assessing and evaluating professional development for teachers will support learning and growth in self-esteem and self-image to support a change in practice. “Embedding processes such as these (process for developing, assessing and evaluating professional development) in the

structure of departmental practice commits it to learning” (Knight, 2002, p. 238). There is a need for a system that examines more complex factors related to professional identity when implementing technology in classroom instruction beyond just providing access (Ryan & Bagley, 2015).

In systems of technology implementation, external barriers of access and infrastructure are easier to define and observe. However, the less obvious internal barriers related to the areas of professional identity, as exemplified in this study, are just as important to effective technology integration (Ertmer et al., 2010; Li et al., 2015; Ryan & Bagley, 2015; Sherer & Teo, 2019). Systems for assessing and evaluating internal barriers, such as self-esteem, self-image, and task perception need to be included with the same processes that collect information regarding external barriers (Fullan et al., 2018; Li, et al., 2015; Tondeur et al., 2016). Teachers who have a self-image of being hesitant to use technology as a tool to support their classroom practice may still opt out of pursuing additional support to gain the self-esteem to use technology effectively. A systematic approach for assessment and support may help identify areas of need and enable leaders to target these needs as teachers work towards implementing technology in the classroom.

The level of technology integration in the classroom will ultimately be determined by the teacher (Jimoyiannis & Komis, 2006; Vokatis & Zhang, 2016; Uerz et al., 2018). A strategic and systematic approach to a behavioral change in teachers will address internal and external barriers (Ertmer et al., 2010; Li et al., 2015; Ryan & Bagley, 2015). Systems leadership utilized to focus innovation and to build capacity creates a high degree of coherence in an educational system (Mourshed et al., 2010). As stated before,

this coherence in the system is a mutual, deep understanding about the purpose and the nature of the work that needs to be completed. It is the thoughts and actions of the learning community as individuals, as well as collectively working together to achieve their system goals (Fullan & Quinn, 2016).

The coherence in systems provides opportunities for consistency in effective strategies and shared understanding of reform policies that are needed in pedagogical shifts of teacher classroom practice, such as technology integration (Fullan & Quinn, 2016). This is important for educational leaders designing structures of training and support. Structures based on needs of staff members, such as self-image and self-esteem can be applied in their job functions, or task-perceptions (Fullan, 2009), and “reinforced by extending departmental problem-working capacities” (Knight, 2002, p.238). In other words, systematically adding devices with differentiated structured support and training based on more than simply self-esteem will assist staff in learning how to integrate and use technology in the classroom. (Clarke & Hollingworth, 2002; Knight, 2002).

#### Implications for Professional Development and Support

Planning for targeted systems of support related to the self-perceptions and professional identity of other tension areas could have implications for how professional development is planned and delivered to staff. Training and support for teachers implementing technology in the classroom in isolation without the context of how the tool or resource relates to the value of their practice, does not provide enough support or understanding to create a shift in classroom practice using technology (Knight, 2002, Scherer et al., 2015). This shift in practice using technology in the classroom is related to the self-image of teacher professional identity, that includes how teachers identify

themselves with the subject knowledge, their practical application, and pedagogical beliefs (Anspal et al., 2018; Gee, 2000).

However, as previously discussed, most training and support for the adoption of technology in the classroom has been based on models such as SAMR and TPACK, which primarily support teachers in the *process* of integrating technology in the classroom (Li et.al., 2016). These models describe the possible paths teachers take as they begin to integrate technology and are focused more on skill and competence beliefs on using technology, which is related primarily to only the construct of self-esteem in this study (Scherer et al., 2015). However, this does not work because teachers must also see how technology fits into their self-image as a teacher.

Other models of support beyond TPACK and SAMR must be explored and developed to adopt the shift in practice needed to use technology effectively in the classroom. Educational leaders “must employ a model of teacher growth that does not constrain teacher learning by characterizing it in a prescriptive linear fashion, but anticipates the possibility of multiple change sequences and a variety of possible teacher growth networks” (Knight, 2002, p. 965). In other words, leaders planning training and professional development need to consistently assess and evaluate areas of needs beyond just self-esteem. As reflected in this study, there was a higher correlation when examining the construct of self-image in relation to the other two variables of self-esteem and task-perception.

It is recommended that teachers are given an opportunity to receive relevant support and professional development based on their self-perceptions of self-image related to the tasks of using technology in the classroom (Charbonneau-Gowdy, 2015;

Drent & Meelissen, 2008; Fullan 2013, 2016, 2018, 2020; Magana, 2016; Uerz et al., 2018). “It is necessary to assess one’s strengths and weaknesses *in relation to* the requirements of the task at hand” (Tschannen-Moran & Woolfolk Hoy, 2001, p. 18, emphasis original). This implies that professional development and support for integrating technology in the classroom, has to enable educators to connect to their self-image of their practice and take new learning to how they see themselves using technology in application in the classroom (Knight 2002, Scherer et al., 2019).

This study points to the need for the skills training to support the self-esteem of a teacher, while also recognizing the importance of self-image and how teachers see themselves using technology as part of their professional identity in the classroom. For example, there was a 50% correlation between the construct variable of task-perception, which was the frequency of teachers using technology, to the construct variable of self-image. In other words, as pointed out in this study, how teachers related to their self-image as an educator using technology significantly related to the frequency that they used technology to communicate and collaborate. This highlights the necessity for researchers, educational leaders, and political leaders to provide resources for technology in the classroom and examine further how professional development may need to be established or modified to support technology implementation in the classroom.

## **Recommendations and Future Research**

### Recommendations for Leaders Integrating Technology

As leaders are preparing budgets and deciding how to spend money, time, and resources on technology integration in the classroom, it will be important for them to be aware of all possible internal and external barriers. Leaders will have to be able to look

at the big picture to prioritize resources that will support a complex and adaptive system (Shaked & Schechter, 2020). Educational dollars are scarce and should be budgeted with fiscal responsibility and accountability to the members of the learning community. This implies that educational and political leaders may have to slow down immediate spending to assess, adjust, or add resources to create implementation plans that will meaningfully impact use of effective technology in the classroom.

This assessment of current practices and expenditures should include structures that enable managers to cope with the increasing complexity that is entailed in changing practice using technology in education (Scherer et al., 2019; Shaked & Schechter, 2020). There should also be an explicit aim to address teacher perceptions and identity on the subject to support significant change in practice at a system level.

For example, there should be systems and structures in place for collecting data on internal barriers, such as areas of self-image in teacher professional identity that may hinder plans for training, as well as external barriers, such as devices or infrastructure. Resources for implementation and training should then be evaluated and allocated based on a structured plan of support for adoption based on the needs of the infrastructure and people in the learning community. Educational leaders can start to make small adjustments in developing systems that will assess the internal barriers that may be hindering the technology implantation in their school communities.

This preliminary study used pre-existing data that was collected in the routine processes of a district developing support and training for their teachers using technology in the classroom. There is a need for more detailed research and models for the adoption of technology in classrooms (Scherer et al., 2019; Shaked & Schechter, 2020), and

educational leaders should develop their own targeted questionnaires and tools to examine possible internal barriers in their own technology integration systems.

### A Need to Look Deeper

The data in the study reflected that self-esteem was related to only 35% of task-perception, or frequency of use of technology in the classroom. However, this study was just a brief look at possible relationships in teacher professional identity that may hinder using technology in the classroom. Further studies are needed to explore more elements of professional identity, professional development plans, and specific systems of components needed to impact change of teacher practice.

Although this study found a significant relationship between the areas of self-esteem, self-image, and task-perception using technology in the classroom for communication and collaboration, this study is just the beginning of examining this complex issue. Future qualitative and quantitative studies are needed to further evaluate how each area of this study is related to the effective implementation of technology in the classroom, not only related to communication and collaboration, but also related to other instructional practices. For example, how does the technology adoption of technology in the classroom impact instructional practices of intervention or assessment?

There needs to be further studies to take a deeper look at stronger predictive relationships related to self-image, self-esteem, and task-perception of teacher professional identity. Specifically, how these variables of tension areas are dependent on each other in relation to teacher identity when it comes specifically to using technology in the classroom. Mixed methods research based on the theoretical areas of this study could

also lead to further work examining how these areas of professional identity can be utilized to structure systems for support.

Learning more about the needs of teachers related to the adoption of technology in the classroom can help develop more detailed studies related to systems thinking applied to technology integration, as well as plans for professional development and training. Studies that examine and evaluate more theories-in-action implementing elements of systems thinking may help in creating structures or frameworks that will help educational institutions with more effective implementations at a larger scale. Additional research is also needed to measure and evaluate different types of support and training related to the areas of teacher professional identity and technology integration to create more discussion around the instructional practice of classroom teachers.

For example, the Florida Center for Instructional Technology released the third edition of the Technology Implementation Matrix (TIM) for educational leaders and teachers in December 2019. According to the Florida Center for Instructional Technology site (2019), TIM is a framework for educators and leaders targeting the use of technology based on five levels of technology integration: entry, adoption, adaptation, infusion, and transformation. This framework has been developed and aligned to the SAMR and TPACK models, as well as the educational standards for technology use in the classroom from the International Society for Technology in Education (ISTE) (Winkelman, 2020).

Resources like the TIM are found in practitioner journals that are designed to develop educational practice and application. Despite the research from more academic peer reviewed journals to develop technology adoption models and systems based on

areas of professional identity, such as the areas examined in this study, TIM, like SAMR and TPACK, is still focused solely on the process of skill development (Scherer et al., 2019; Shaked & Schechter, 2020, Winkelman, 2020).

If more in-depth and empirical research is completed based on this preliminary examination of the role of professional identity on technology integration in the classroom, there could also be a shift in more resources available for educators to use in their practice using technology in the classroom. This relates to the original intent of this study, which was to explore the relationship between the variables of self-image, self-esteem, and task perception in the professional identity of a teacher that may hinder training and support plans for teachers using technology. Based on the review of literature and the data from this study, there *is* a relationship between these variables that may hinder training and support plans for teachers using technology. However, this study is only the first step in recognizing and making educational and political leaders aware of these possible issues with technology integration in the classroom. To better understand how and to what degree these variables of teacher professional identity impact technology integration in classrooms will require further extensive studies.

## REFERENCES

- Aldunte, R. & Nussbaum, M. (2013). Teacher adoption of technology: *Computers in Human Behavior*, 29, 519-524
- Al-Zaidiyeen, N. J., Mei, L. L., & Fook, F. S. (2010). Teachers' attitudes and levels of technology use in classrooms: the case of Jordan Schools. *International Education Studies*, 3(2), 211–218
- Anspal, T., Leijen, A. & Löfström, E. (2018). Tensions and the teacher's role in student teacher identity development in primary and subject teacher curricula. *Scandinavian Journal of Educational Research*. DOI: 10.1080/00313831.2017.1420688
- Barr, V., & Stephenson, C. (2011). Bringing computational thinking to K-12: What is involved and what is the role of the computer science education community? *ACM Inroads*, 2(1) 48-54
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84, 191–215. doi:10.1037/0033-295X.84.2.191
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York, NY: W. H. Freeman.
- Bandura, A. (1979). Self-referent mechanisms in social learning theory. *American Psychologist*, 34(5), 439–441.
- Bandura, A. (1986) The explanatory and predictive scope of self-efficacy theory. *Journal of Social and Clinical Psychology*. 4(3), 359-373.
- Beauchamp, C. & Thomas, L. (2009). Understanding teacher identity: An overview of issues in the literature and implications for teacher education. *Cambridge Journal of Education*, 29(20), 175-189.

- Beijaard, D., Meijer, P., & Verloop, N. (2004). Reconsidering research on teachers' professional identity. *Teaching and Teacher Education*, 20(2), 107-128.
- Beller, M. (2013). Technologies in large-scale assessments: New directions, challenges, and opportunities. In M. v. Davier, E. Gonzalez, I. Kirsch, & K. Yamamoto (Eds.). *The role of international large-scale assessments: Perspectives from technology, economy, and educational research* (pp. 25–45). Dordrecht: Springer Science Business Media. [https://doi.org/10.1007/978-94-007-4629-9\\_3](https://doi.org/10.1007/978-94-007-4629-9_3).
- Bishop, M. J., & Spector, J. M. (2014). Technology integration. In J. M. Spector, D. Merrill, J. Elen, & M. J. Bishop (Eds.). *Handbook of research on educational communications and technology* (pp. 817–818). (4 ed.). New York, NY: Springer Science Business Media.
- Bruner, J. (1997). *A Narrative Model of Self-Construction*. *Annals of the New York Academy*. Vol 818.
- Bruner, J. (1991) Self-Making and World-making. *Journal of Aesthetic Education*, Vol. 25, No. 1
- Charbonneau-Gowdy, P. (2015). It Takes a Community to Develop a Teacher: Testing a New Teacher Education Model for Promoting ICT in Classroom Teaching Practices in Chile. *Electronic Journal of E-Learning*, 13(4), 237-249
- Clarke, D., & Hollingsworth, H. (2002). Elaborating a model of teacher professional growth. *Teaching and Teacher Education*: 18, 947–967.
- Darling-Hammond, L., Hyster, M. E., Gardner, M. (2017). *Effective Teacher Professional Development*. Palo Alto, CA: Learning Policy Institute. Retrieved from <https://learningpolicyinstitute.org/product/teacher-prof-dev>
- Darling-Hammond, L., Chung Wei, R., Andree, A., Richardson, N & Orphanos, S. (2009). *Professional Learning in the Learning Profession: A Status Report on Teacher Development in the United States and Abroad*. Retrieved on November 2019 <https://edpolicy.stanford.edu/sites/default/files/publications/professional-learning-learning-profession-status-report-teacher-development-us-and-abroad.pdf>

- Day, C., Kingston, A., Stobart, G., & Sammons, P. (2006). The personal and professional selves of teachers: stable and unstable identities. *British Educational Research Journal*. 32 (4), 601-616.
- Day, C. (2002). School reform and the transitions in teacher professionalism and identity. *International Journal of Educational Research*. 37 (8), 677 – 692.
- De Bruyckere, P. Kirschner, P. A. & Hulshof, C. D. (2016). *Technology in education. What teachers should know*. American educator. Retrieved from <http://www.aft.org/ae/spring2016/debruyckere-kirschner-and-hulshof>
- Dede, Christopher. (2015). *E21 Consortium*. Retrieved from <https://e21consortium.com/>
- Diallo, A. (2019). School districts are going into debt to keep up with technology In Silicon Valley, cash-strapped schools are selling bonds to buy student laptops. *The Hechinger Report*. Retrieved October 22, 2019. <https://hechingerreport.org/school-districts-are-going-into-debt-to-keep-up-with-technology/>
- Drent, M., & Meelissen, M. (2008). Which factors obstruct or stimulate teacher educators to use ICT innovatively? *Computers & Education*, 51(1), 187-199.
- DuFour, R. & Fullan, M. (2013). *Cultures built to last. Systematic PLCs at work*. Bloomington, IN: Solution Tree Press
- Ertmer, P. A. & Ottenbreit-Leftwich, A. T. (2010). Teacher technology change: How knowledge, confidence, beliefs, and culture intersect. *JRTE* | Vol. 42, No. 3, pp. 255–284
- Field, A. (2016). *Discovering Statistics Using IBM SPSS Statistics*. Thousand Oaks, Ca; Sage Publications
- Flórez, F. B., Casallas, R., Hernández, M., Reyes, A., Restrepo, S., & Danies, G. (2017). Changing a generation's way of thinking: Teaching computational thinking through programming. *Review of Educational Research*, 87(4), 834–860.
- Florida Center for Instructional Technology. (2019). The technology integration matrix. Retrieved from <https://fcit.usf.edu/matrix/matrix/>

- Fraillon, J., Ainley, J., Schulz, W., Friedman, T., & Gebhardt, E. (2014). *Preparing for life in a digital age - the IEA international computer and information literacy study international report* Heidelberg, New York, Dordrecht, London: Springer International Publishing
- Fullan, M. (2009). Leadership development: the larger context. *Educational leadership*, 67(2), p 45-49.
- Fullan, M. (2013). *Stratosphere. Integrating technology, pedagogy, and change knowledge*. Toronto, Ontario: Pearson Canada, Inc
- Fullan, M. (2020) *Leading a Culture of Change, Second Edition*. Thousand Oaks, CA Sage Publishing.
- Fullan, M., Quinn, J. (2016). Coherence. *The Right Drivers in Action for Schools, District, and Systems*. Thousand Oaks, CA Sage Publishing
- Fullan, M., Quinn, J., & McEachen, J. (2018). *Deep Learning Engage the World Change the World*. Thousand Oaks, CA Sage Publishing.
- Gee, J. P. (2000). Identity as an analytical lens for research in education. *Review of Research in Education*, 25, 99–125.
- Goldin, C. D., & Katz, L. F. (2008). *The race between education and technology*. Cambridge, Mass: Belknap Press of Harvard University Press.
- Grunwald Associates. (2010). *Schools and the Internet*. Retrieved from <http://grunwald.com/surveys/si/index.php>
- Haddock, G., & Maio, G. R. (2007). Attitudes. *Encyclopedia of social psychology* (Vol. 1, pp. 67–69). Thousand Oaks, CA: Sage Publications Inc
- Hattie, J. (2012). *Visible learning for teachers: maximizing impact on learning*. London: Routledge.
- Hattie, J., & Zierer, K. (2018). *Ten mindframes for visible learning: teaching for success*. Abingdon, Oxon: Routledge.
- Heath, M. K. (2017). Teacher-Initiated One-to-One Technology Initiatives: How Teacher Self-Efficacy and Beliefs Help Overcome Barrier Thresholds to Implementation. *Computers in the Schools Interdisciplinary Journal of Practice, Theory, and Applied Research*, 34(1-2), 88-106.

- Hendrikx, W. (2019): What we should do vs what we do: Teachers' professional identity in a context of managerial reform. *Educational Studies*.  
<https://doi.org/10.1080/03055698.2019.1620694>
- Holland, D., Lachicotte, W., Skinner, D., & Caine, C. (1998). *Identity and agency in cultural worlds*. Cambridge, MA: Harvard University Press
- Holon IQ (2020). *\$87bn+ of Global EdTech Funding predicted through 2030. \$32bn last decade*. Retrieved January 31, 2020. <https://www.holoniq.com/notes/87bn-of-global-edtech-funding-predicted-to-2030/>
- Jimoyiannis, A., & Komis, V. (2006). Exploring secondary education teachers' attitudes and beliefs towards ICT adoption in education. *Themes in Education*, 7(2), 181-204
- Kelchtermans, G. (1993). Getting the story, understanding the lives: from career teachers' professional development, *Teaching and Teacher Education*, 9(5/6), 443-456
- Kelchtermans, G. (1996) Teacher vulnerability: understanding its moral and political roots, *Cambridge Journal of Education*, 26(3), 307-324
- Kelchtermans, G. (2009). Who I am in how I teach is the message: self- understanding, vulnerability and reflection, *Teachers and Teaching*, 15:2, 257-272
- Knight, P. (2002). A systemic approach to professional development: learning as practice. *Teaching and Teacher Education*. 18 (2002) 229–241
- Koehler, M. J., Mishra, P., Kereluik, K., Shin, T. S., & Graham, C. R. (2014). The technological pedagogical content knowledge framework. In M. J. Spector, D. M. Li, L., Worch, E., Zhou, Y.C., & Aguiton, R. (2015) How and why digital generation teachers use technology in the classroom: An explanatory sequential mixed methods study. *International Journal for the Scholarship of Teaching and Learning*: 9(2), Article 9.
- Lim, C. P., Zhao, Y., Tondeur, J., Chai, C. S., & Tsai, C. C. (2013). Bridging the gap: Technology trends and use of technology in schools. *Educational Technology & Society*, 16(2), 59–68
- Lim, C. P., & Chai, C. S. (2008). Teachers' pedagogical beliefs and their planning and conduct of computer mediated classroom lesson. *British Journal of Educational Technology*: 39(5), 807–828

- Marchant, M. R. (2012). The importance of technology in education. (Masters Thesis, Northwestern University). Retrieved from <http://archives.northwestu.edu/handle/nu/25704>
- Marcinek, A. (2014). Tech integration and school culture. *Edutopia*. Retrieved November 15, 2017, from <https://www.edutopia.org/blog/tech-integration-and-school-culture-andrew-marcinek>
- Martin, E. M. P. (2011). *Digital natives and digital immigrants: Teaching with technology* (Doctoral dissertation, Northeastern University Boston).
- Marzano, R. J. & Magnana, S. (2014). *Enhancing the art & science of teaching with technology*. Bloomington, IN: Marzano Research Laboratory.
- Marzano, R. J., Warrick, P., Simms, J. A., Wills, J., Livingston, D., Livingston, P., .Grift, G. (2015). *A handbook for high reliability schools*. Cheltenham Vic, Vic.: Hawker Brownlow Education.
- Magana, A. J., III. (2016). Enhancing the art and science of teaching with technology: A model for improving instructional quality for all students. (Doctoral dissertation, Seattle University, 2016) (pp. 1-147). Ann Arbor, MI: ProQuest.
- McKnight, K., O'Malley, K., Ruzic, R., Horsley, M.K., Franey, J.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, DOI: 10.1080/15391523.2016.1175856
- Mourshed, M., Chijioke, C. & Barber, M. (2010). *How the world's most improved school systems keep getting better*. London, UK: McKinsey & Company
- Office of Performance Evaluations Idaho Legislature. (2017). Distribution of state funds for K–12 public education. Retrieved from <https://legislature.idaho.gov/wp-content/uploads/OPE/Reports/r1607.pdf>
- Puentedura, R. R. (2014). SAMR: A contextualized introduction. <http://hippasus.com/rrpweblog/archives/014/01/15/SAMRABriefContextualizedIntroduction.pdf>.

- Rodgers, C., & Scott, K. (2008). The development of the personal self and professional identity in learning to teach. In M. Cochran-Smith, S. Feiman-Nemser, D. J. McIntyre, & K. E. Demers (Eds.), *Handbook of research on teacher education: Enduring questions and changing contexts* (pp. 732–755). New York, NY: Routledge.
- Romeo, G., Lloyd, M., & Downes, T. (2013). Teaching teachers for the future: How, what, why, and what next? *Australian Educational Computing*, 27(3), 3–12.
- Ross, J. A., Cousins, J. B., & Gadalla, T. (1996). Within-teacher predictors of teacher efficacy. *Teaching and Teacher Education*, 12, 385–400
- Ryan, T., & Bagley, G. (2015). Nurturing the integration of technology in education. *Journal of Theory and Practice in Education*, 11(1), 33-50. Retrieved December 27, 2017, from <http://dergipark.gov.tr/download/article-file/63461>
- Scherer, R., Siddiq, F., & Teo, T. (2015). Becoming more specific: Measuring and modeling teachers' perceived usefulness of ICT in the context of teaching and learning. *Computers & Education*, 88, 202–214.  
<https://doi.org/10.1016/j.compedu.2015.05.005>
- Scherer, R., Siddiq, F., & Tondeur, J. (2019) The technology acceptance model (TAM): A meta-analytic structural equation modeling approach to explaining teachers' adoption of digital technology in education. *Computers in Education*, 128, 13-35
- Scherer, R., & Teo, T. (2019). Unpacking teachers' intentions to integrate technology: A meta-analysis. *Educational Research Review*, 27, 90-109.
- Shaked, H. & Schecther C. (2020) Systems thinking leadership: New explorations for school improvement. *Management in Education*. 32(2) 1-8
- Siddiq, F., Hatlevik, O. E., Olsen, R. V., Throndsen, I., & Scherer, R. (2016). Taking a future perspective by learning from the past – a systematic review of assessment instruments that aim to measure primary and secondary school students' ICT literacy. *Educational Research Review*, 19, 58–84.  
<https://doi.org/10.1016/j.edurev.2016.05.002>.
- Slack, M. (2013, June 6). What is ConnectED? The White House Blog. Retrieved from <http://www.whitehouse.gov/blog/2013/06/06/what-connected>

- Tamim, R. M., Bernard, R. M., Borokhovski, E., Abrami, P. C., & Schmid, R. F. (2011). What forty years of research says about the impact of technology on learning a second-order meta-analysis and validation study. *Review of Educational Research*, 81(1), 4–28
- Tondeur, J., Braak, J. V., Ertmer, P. A., & Ottenbreit-Leftwich, A. (2016). Erratum to: Understanding the relationship between teachers' pedagogical beliefs and technology use in education: a systematic review of qualitative evidence. *Educational Technology Research and Development*, 65(3), 577-577. doi:10.1007/s11423-016-9492-z
- Tondeur, J., Hermans, R., van Braak, J., & Valcke, M. (2008). Exploring the link between teachers' educational belief profiles and different types of computer use in the classroom. *Computers in Human Behavior*, 24, 2541–2553
- Tschannen-Moran, M., Woolfolk Hoy, A., & Hoy, W. K. (1998). Teacher efficacy: Its meaning and measure. *Review of Educational Research*, 68, 202–248.
- Tschannen-Moran, M. & Woolfolk Hoy, A., (2001). Teacher efficacy: capturing an elusive construct. *Teaching and Teacher Education*, 17:7, 783 - 805
- Uerz, D., Volman, M. & Kral, M. (2018). Teacher educators' competences in fostering student teachers' proficiency in teaching and learning with technology: An overview of relevant research literature. *Teaching and Teacher Education*. 70. 12-23. 10.1016/j.tate.2017.11.005.
- United States Department of Education. (2019). Budget Department. Retrieved January 13, 2019, <https://www2.ed.gov/about/overview/budget/index.html>
- van Broekhuizen, L. (2015). The Paradox of Classroom Technology: Despite Proliferation and Access, Students Not Using Technology for Learning. *Advance Ed Org*.
- Volkman, M. J., & Anderson, M. A. (1998). Creating professional identity: Dilemmas and metaphors of a first-year chemistry teacher. *Science Education*, 82(3), 293–310.
- Vokatis, B., & Zhang, J. (2016). The professional identity of three innovative teachers engaging in sustained knowledge building using technology. *Frontline Learning Research*, 4(1), 58-77.

- Voogt, J., & Pareja Roblin, N. (2010). 21st-century skills. Discussion paper. Enschede, Netherlands: University of Twente.
- Voogt, J. M., Fisser, P., Good, J., Mishra, P., & Yadav, A. (2015). Computational thinking in compulsory education: Towards an agenda for research and practice. *Education and Information Technologies*, 20(4), 715-728.
- Wang, Hui-Hui, Moore, Tamara J., Roehrig, Gillian H., and Park, Mi Sun (2011) "STEM Integration: Teacher Perceptions and Practice," *Journal of Pre-College Engineering Education Research (J-PEER)*: Vol. 1: Iss. 2, Article 2.
- Wing, J. M. (2008). Computational Thinking and thinking about computing. *Philosophical Transactions of the Royal Society*, 366.
- Winkelman, R. (2020). ISTE standards and the technology integration matrix. *Teaching and Learning with Technology*. Retrieved from <https://fcit.usf.edu/matrix/iste-standards/>
- World Economic Forum (2017) The global competitiveness report. Retrieved from <https://www.weforum.org/reports/the-global-competitiveness-report-2017-2018>
- Zee, M., Koomen, M.Y. (2016) Teacher self-efficacy and its effects on the classroom processed, student academic adjustment, and teacher well-being: A synthesis of 40 years of research. *Review of Educational Research*, Vol. 86, No. 4. Pp. 981-1015.
- Zhao, Y., & Bryant, F. (2005). Can teacher technology integration training alone lead to high levels of technology integration? A qualitative look at teachers' technology integration after state mandated technology training. *Electronic Journal for the Integration for Technology in Education*, 5, 53-62.

APPENDIX A

**Microsoft Form Questionnaire**



## Self-Assessment - Walk Phase District Platform / Microsoft Tools

Please respond to this self-reflection survey regarding utilizing the Office 365 tools in our district system.

\* Required

1. Building: \*

Enter your answer

2. Role: \*

Enter your answer

3. On a scale of 1-5, how confident are you creating a distribution list to send an email to several people at once in Outlook? \*

I have no knowledge    1    2    3    4    5    I feel very confident

4. How important do you think it is to be able to create a distribution list to send an email to several people at once in Outlook? \* 

- Extremely important
- Very important
- Somewhat important
- Not so important
- Not at all important

5. How often do you use digital tools, other than email or text, to work with Students? \* 

- Daily
- Weekly
- Monthly
- Quarterly
- Never

6. How important do you think it is to use (digital tools) technology, other than email or text, to work with Students? \*

- Extremely important
- Very important
- Somewhat important
- Not so important
- Not at all important

7. On a scale of 1-5, how confident are you saving files to your OneDrive? \*

- I have no knowledge    1    2    3    4    5    I feel very confident
- 

8. On a scale of 1-5, how confident are you retrieving files from your OneDrive? \*

- I have no knowledge    1    2    3    4    5    I feel very confident
- 

9. How important is it to have access to your files on OneDrive or in the cloud? \*

- Extremely important
- Very important
- Somewhat important
- Not so important
- Not at all important

10. On a scale of 1-5, how confident are you with understanding the difference between working on a PERSONAL document in the browser (cloud) or the desktop (client)? \*

I have no knowledge  1  2  3  4  5 I feel very confident

11. On a scale of 1-5, how confident are you with syncing your OneDrive with your PC? \*

I have no knowledge  1  2  3  4  5 I feel very confident

12. How important is it to be able to sync your files from OneDrive with your PC? \* 

- Extremely important
- Very important
- Somewhat important
- Not so important
- Not at all important

13. On a scale of 1-5, how confident are you with creating a new document in your OneDrive? \*

I have no knowledge  1  2  3  4  5 I feel very confident

14. On a scale of 1-5, how confident are you with naming a new document that you are editing in the browser? \*

I have no knowledge  1  2  3  4  5 I feel very confident

15. On a scale of 1-5, how confident are you with creating a new folder in OneDrive? \* 

I have no knowledge  1  2  3  4  5 I feel very confident

16. On a scale of 1-5, how confident are you with sharing a document saved in OneDrive? \*

I have no knowledge  1  2  3  4  5 I feel very confident

17. How important do you think it is to be able to share a document saved in OneDrive? \*

- Extremely important
- Very important
- Somewhat important
- Not so important
- Not at all important

18. On a scale of 1-5, how confident are you with adjusting permissions for documents you share from OneDrive? \*

I have no knowledge  1  2  3  4  5 I feel very confident

19. On a scale of 1-5, how confident are you with understanding the differences using files in OneDrive vs. files saved in SharePoint? \*

I have no knowledge  1  2  3  4  5 I feel very confident

20. On a scale of 1-5, how confident are you with creating a link for a document saved in OneDrive? \*

I have no knowledge  1  2  3  4  5 I feel very confident

21. On a scale of 1-5, how confident are you with locating files that others have shared with you in the cloud? \*

I have no knowledge  1  2  3  4  5 I feel very confident

22. On a scale of 1-5, how confident are you with adding or removing members to a group? \*

I have no knowledge  1  2  3  4  5 I feel very confident

23. On a scale of 1-5, how confident are you with locating your group files in Office 365? \*

I have no knowledge  1  2  3  4  5 I feel very confident

24. On a scale of 1-5, how confident are you with syncing group files with your PC? \*

I have no knowledge  1  2  3  4  5 I feel very confident

25. On a scale of 1-5, how confident are you with copying files to your Group files? \*

I have no knowledge  1  2  3  4  5 I feel very confident

26. On a scale of 1-5, how confident are you with uploading files to your Group files? \*

I have no knowledge  1  2  3  4  5 I feel very confident

27. How often do you use digital tools, other than email or text, to collaborate with colleagues? \*

- Daily
- Weekly
- Monthly
- Quarterly
- Never

28. How important do you think it is to use digital tools, other than email or text, to collaborate with colleagues? \*

- Extremely important
- Very important
- Somewhat important
- Not so important
- Not at all important

29. On a scale of 1-5, how confident are you with locating your teams/groups in Microsoft Teams? \*

I have no knowledge  1  2  3  4  5 I feel very confident

30. How important do you think it is to use a learning management system with students as instructional support? \*

- Extremely important
- Very important
- Somewhat important
- Not so important
- Not at all important

31. On a scale of 1-5, how confident are you with creating a survey or a quiz on Microsoft Forms? \*

- I have no knowledge    1    2    3    4    5    I feel very confident
- 

32. Over the last year, about how many training sessions at your building, at district-office, online, or at a conference have you taken on utilizing Microsoft tools? \*

- 1-2
- 3-5
- 6-8
- More than 8
- I haven't had a chance to take any sessions on this topic yet this year.

33. On a scale of 1-5, how would you rate your skills using Microsoft tools this year compared to last year? \*

- No change at all    1    2    3    4    5    I am now a Microsoft Rock Star!
- 

Submit

APPENDIX B

**Skills Criterion**

## Success Criterion - Walk, Jump, Leap

### Self-Assessment Checklist for tools available in Microsoft Applications



#### OneDrive

- I can save and upload files to my district OneDrive account.
- I can retrieve files from my district OneDrive at school and at home.
- I can identify the difference between working on a PERSONAL document in the browser (cloud) or the desktop (client).
- I can create and edit a document in my district OneDrive (Cloud-first).
- I can name/rename a document I am editing in the browser.
- I can create a new folder in my district OneDrive.
- I can share a document/folder saved in district OneDrive.
- I can get a link to a document/folder saved in my district OneDrive.
- I can adjust permissions when sharing documents/folders saved in my district OneDrive.
- I can remove sharing rights for people I have shared documents/folders with.
- I can explain the difference between using files in OneDrive and SharePoint.
- I can locate files that others have shared with me.

#### SharePoint

- I can save and upload files to different SharePoint accounts.
- I can retrieve files from different SharePoint sites at school and at home.
- I can identify the difference between working on a PERSONAL document in the browser (cloud) or the desktop (client).
- I can create and edit a document in any SharePoint team/group I am a member of (Cloud-first).
- I can name/rename a document I am editing in the browser.
- I can create a new folder in my district OneDrive.
- I can share a document/folder saved in district OneDrive.
- I can get a link to a document/folder saved in my district OneDrive.
- I can adjust permissions when sharing documents/folders saved in my district OneDrive.
- I can remove sharing rights for people I have shared documents/folders with.
- I can explain the difference between using files in OneDrive and SharePoint.
- I can locate files that others have shared with me.

### **Teams and SharePoint**

- I can locate my Teams.
- I can identify the difference between using the desktop and online version of Teams.
- I can hide Teams that I do not need to access frequently.
- I can locate the Teams I am a part of that are "hidden."
- I can reorder my Teams.
- I can join a Team.
- I can create a Team.
- As a Team owner, I can adjust settings for my Teams.
- I can make a Team public or private.
- I can identify the purpose for each of the 4 types of Teams.
- I can create a channel.
- I can follow a channel.
- I can add files saved in my SharePoint files as tabs in a channel.
- I can add a link (document or website) as a tab.
- I can set my notification preferences.
- I can set my Teams program settings.
- I can participate in conversations with individuals or Team members.
- I can attach a file in a conversation.
- I can join an online meeting in Teams.
- I can present my screen while in an online meeting.
- I can schedule an immediate online meeting in Teams (Meet Now).
- I can schedule a planned online meeting event in Teams (future date).
- I can find activity notifications from Teams I am a member of.
- I can add or remove members or guests to a Team.
- I can locate my team files saved in SharePoint.
- I can copy/upload files from my OneDrive or other SharePoint locations into my Team files.
- I can edit files in my team SharePoint files in Teams or in the browser.
- I can start a chat while collaborating on a document in Teams.
- I can find my OneDrive files in Teams.
- I can add other personal cloud storage accounts to my files in Teams.
- I can leave a Team.
- I can delete or archive a Team.
- I can create a link to a Team.
- I can adjust email settings to a channel or Team.
- I can add OneNote Notebooks to my Team files.
- I can create a Class Team to use with students or staff.
- I can create assignments to distribute to students or staff.
- I can review assignments.
- I can provide feedback on assignments.
- I can grade assignments as needed.
- I can create a rubric to use with assignments.
- I can format a Class Notebook within the Team.
- I can distribute content within my Class Notebook within the Team.
- I can distribute assignments in the Class Notebook within the Team.

APPENDIX C

**District Progression of Skills**

## District Skill Progression

