Into the Cloud: How Professional Development and Leadership Relate to Technology Implementation

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TECHNOLOGY IMPLEMENTATION

Submitted in partial fulfillment
of the requirements of
Doctor of Education
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Educational Leadership Doctoral Program
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ABSTRACT

The skills necessary for 21st century society and the information age require that schools reevaluate their mission, vision, and goals to reflect how they will prepare students for the demands of a world in which immediate access to droves of information has led to increased value placed on what Tony Wagner (2008) has defined as the “seven survival skills”: critical thinking and problem-solving; collaboration and leading by influence; agility and adaptability; initiative and entrepreneurship; effective communication; accessing and analyzing information; and curiosity and imagination. For many districts and schools, the response has been adding technology to the menu of initiatives. Though on the surface adopting technology presents itself as a technical issue, the real challenge of technology implementation is alignment with learning goals and targets as a way to impact teaching and learning. It is this aspect of technology implementation that still remains a mystery as efforts fall short due to a lack of purpose, inadequate goal-setting, insufficient professional development (PD) and personalized supports, and a failure to evaluate progress. This program evaluation follows Modern Mind CUSD through its efforts in a districtwide 1:1 technology initiative and evaluates the relationship between professional development, leadership, and technology implementation. Through the analysis of multiple data types and sources, strategies in the arenas of context, conditions, culture, and competencies (Wagner et al., 2006) were identified alongside a policy recommendation to rebuild the evaluation process and tools in order to provide targeted feedback and support for teachers and administrators. By doing so, Modern Mind CUSD will have the capacity to sustain the use of technology as a way to support personalized learning goals not only for students but for all stakeholders involved.
Due to a rocky relationship with schooling and learning in my early years, I was not someone who aspired to be a teacher when I grew up. In fact, the education field was far from one of my career selections. Yet since graduating from high school, I have earned multiple degrees in education, serving as a long-term leave substitute, music educator, and district office administrator for over 15 years. I have had the opportunity to work with students, parents, veteran and novice teachers, and administrators as they travel through their journeys in education, helping to not only positively influence student achievement, but to create lifelong learners of all stakeholders. Having experienced both a one-size-fits-all style of learning that was a never-ending struggle to find ways to grow academically and socially, and a student-centered approach that was personalized to my unique needs, I was able to find my purpose as a change agent and thought leader in education while being focused on creating a community of learners in whatever capacity I am employed.

In an effort to continue to personalize learning experiences and prepare students and adults for the demands of the 21st century, this program evaluation was presented as a resource for utilizing technology as a way to improve student performance, teaching, and learning while providing the supports necessary to sustain a technology implementation initiative. It is easy to get tangled in the web of the newest apps and programs and to rely on indicators such as the quantity of devices and usage reports as technological success. Though an important starting point for technology integration, a long list of available apps, programs, extensions, and devices will not alone support curricular goals, the administrators identifying the goals, the teachers engaging students in the challenge of reaching those goals, or the students themselves who need to take responsibility for their learning. It is very easy to consider technology integration as just
another checkbox in a long to-do list for a school or district, and a technology initiative as a one-and-done situation. But as I have learned from my research for this program evaluation, my involvement with national technology associations, and from routine observation of technology initiatives around the nation, success is identified when usage is routine, transparent, and connected to a strong vision and definition of the desired outcomes.

Throughout this process, mainly the data collection and my time spent with the study participants, I was able to identify common themes around the four arenas of change identified by Tony Wagner et al. (2006): context, conditions, competencies, and, most importantly, culture. Strategies such as transparency, individualized professional development for all stakeholders, shared leadership, and growth mindset all emerged as necessary parts of creating a positive school culture around technology while maintaining a focus on the ongoing improvement of instruction to meet the demands of rigorous standards, curriculum, and society. Areas of deficit identified by the analysis of data collected would greatly benefit from evaluation policy and procedure updates and adjustments to incorporate innovative practice, while time to connect and share will need to be prioritized. Synthesizing personalized supports with the list of devices and apps available will be what creates the individualized, engaging learning opportunities that will expand the capacity and potential of not only the students, but the teachers and administrators as well.

In discovering these strategies and through the development of the proposed policy changes, I was able to glean substantial leadership lessons in terms of the levels of innovation, creativity, and dedication necessary to plan and sustain systemic change, but also to support continuous growth on the part of all involved. What is required of leadership according to Heifetz, Grashow, & Linsky (2009) is to be flexible and adaptive as:
You have to help people navigate through a period of disturbance as they sift through what is essential and what is expendable, and as they experiment with solutions to the adaptive challenges at hand. This disequilibrium can catalyze everything from conflict, frustration, and panic to confusion, disorientation, and fear of losing something dear. (p. 28)

Evaluating a process such as technology implementation which requires a complete paradigm shift as to the purpose and structure of education, was, for the purpose of my research and for all future research will continue to be, a daunting task. Though highly aware of the importance of shared leadership, personalized learning for adults as well as students, a constant focus on the district or school’s vision, and a modernized evaluation system, I was able to forge connections among all of these lessons to reveal the necessity for strong collaborative cultures especially in terms of instructional practices and large-scale goals. If a school has a collaborative culture, there is a sense of shared responsibility for student growth which is an environment in which any change can occur with great results. All leaders, educators, students, parents, and community members must come together to promote student growth and achievement and foster the skills that students will need to survive the 21st century and create lifelong learners. It is my hope that this program evaluation offers a glimpse of the true potential of technology implementation in Modern Mind CUSD and similar districts embarking upon this type of systemic change.
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SECTION ONE: INTRODUCTION

Technology is one of the biggest buzzwords of the 21st century, infiltrating lives through daily routines involving GPS in cars, mobile phones, artificial intelligence, virtual reality, and hearing aids to experience the world. It provides entertainment, instant gratification, convenience, and even medical miracles. Yet as it becomes increasingly more important, the definition of technology itself becomes more blurred. It can be defined as an object, a process, a body of knowledge, and an applied science (Barthakar, 2019). For the purpose of this dissertation, technology will be defined using the description from the 2017 National Education Technology Plan (NETP) Update by the U.S. Department of Education as:

A powerful tool for transforming learning. It can help affirm and advance relationships between educators and students, reinvent our approaches to learning and collaboration, shrink long-standing equity and accessibility gaps, and adapt learning experiences to meet the needs of all learners. (p. 3)

The introduction of the modern library and the pencil in the early 1600s marked the beginning of technology, with the slide rule as the precursor to graphing calculators and the magic lantern acting as the first projector (Parson, 2017). Through the 1700s and 1800s, the Jacquard Loom served as the beginning of coding and computer programming, with blackboards as whiteboards, calculating engines as processors, and the typewriter as digital communication (Parson, 2017). Fast forward to the late 1970s with the very first computer, the Apple II, intended for businesses only with the utilization of floppy disks. This advancement led into the 1980s, which gave us the first personal computers by International Business Machines (IBM) and CD-ROM drives (Parson, 2017).
It was not until the 1990s, when the internet was made publicly available, that the idea that technology could add value to learning was conceived (Moorhead, 2014). Now, in the 21st century, there are so many devices and programs available to education that it has become an integral part of the responsibility of schools to integrate technology as a way to differentiate learning while preparing students for society. Technology usage has become the norm in education, and because of that, the role of the educator has dramatically changed. Instructional practices require new approaches that integrate technology as a vehicle for reaching educational goals in order to meet the needs of 21st century students as they prepare for the ever-changing workforce (Moorhead, 2014).

It is because of the upswing of technological importance and the shift in education from the industrial model of mass production to the post-industrial focus on mass personalization that, beginning in 2016, Modern Mind Community Unit School District (CUSD) embarked on the journey to successful technology integration through implementing a 1:1 District Technology Initiative with a mission of cultivating innovative uses of 21st century technologies for teaching and learning, and a vision of inspiring minds in the pursuit of excellence. Modern Mind CUSD is a district of five schools with a total of just under 3,000 students grades pre-kindergarten through 12. In addition to the district office, there is one early childhood center (ECC), two elementary schools (Innovate and Integrate Elementary), one middle school (Interact Middle), and one high school (Modern Mind High School). These schools serve the residents of Mente, a near west suburb of a large Midwestern city with a population of approximately 24,000. Mente has a large Italian population and has recently seen an influx of Polish, Ukrainian, and Mexican immigrants. Mainly residential, it is known for its welcoming family feel, but also its high taxes.
As the Illinois Report Card (2018) will disclose upon searching Modern Mind CUSD, the entire district employs 215 full-time equivalent (FTE) teachers with an average of 12.8 years of teaching experience. Very similar to the state statistics, the majority of the district’s teachers are white females in addition to the 28% male and the 5% Hispanic teachers. However, 72% of the teachers have Master’s degrees or higher which is well above the state average of 60%. The teacher retention rate is slightly higher than the state at 89.4% with attendance well above the state at 93.2%. The education levels and dedication to the district and community conveyed by the data act as a strong determinant of a successful ideological shift to prepare today’s students for tomorrow’s world.

With the successful integration of technology, it will be the students who benefit from an increase in the National Education Association’s (NEA, n. d.) “Four Cs”: critical thinking, communication, collaboration, and creativity, as well as an alignment with Tony Wagner’s “Seven Survival Skills” (2008). Modern Mind CUSD is a primarily white (42.7%) and Hispanic (51.2%) district with low African-American, Asian, and Native American percentages. The Hispanic population far surpasses the state average, as does the limited English proficient population at 18%, which includes the portion of the white population that is Polish, Ukrainian, Russian, and of other Eastern European nationalities. Almost half of the district is considered low income (46%) and on average, 16% of the students have disabilities which is a number that constantly fluctuates due to the center-based classroom programs at Innovate Elementary School and the CORE and transition programs at the middle and high schools.

In terms of financial indicators, the per-pupil instructional spending is $8,834 while the operational spending is $14,347, both of which are about $1,000 higher than the state. As a district, the revenue percentages are very similar to the state averages over the past five years. In
addition to the regular schedule, the schools offer gifted programs, social-emotional learning (SEL) curriculums, career development courses and programs, Title I programs, Supplemental Educational Services (SES), tutoring, bilingual courses and support, athletics, before and after school care, community programs and partnerships, concerts and performances, and many after school clubs and activities (Illinois Report Card, 2018).

In conjunction with all of the data is the district’s vision to “inspire minds in the pursuit of excellence” supported by the collaborative mission to cultivate “individualized social-emotional learning processes, rigorous academics fostering inquisitive minds prepared for critical thinking, active, engaged partnerships with the community and parents, and innovative uses of 21st century technologies for teaching and learning” (omitted for confidentiality, 2019, para. 2). Staying aligned with this vision and mission means focusing on overarching goals for technology implementation as a way to improve student achievement and academic growth, enhance the curriculum, and create an environment that supports differentiated and personalized learning.

Up until the conception of the 1:1 District Technology Initiative in 2015, technology was not a large part of the culture of Modern Mind CUSD. The extent of technology available to students in each of the five buildings was limited to a few computer labs, a library lab, and a few laptops per classroom at the primary grade levels. As the Board of Education goals approached time of revision, the importance of technology integration in the schools came to the surface as one of the major areas of focus for the long-range plan and goals for 2016-2020. Approved by the Board of Education in May 2016, the 1:1 District Technology Initiative began with a purpose of preparing Modern Mind students to be 21st century learners capable of thriving in a technology-dependent society. It was with this initiative that my job as the District Instructional
Technology Coordinator and now the Director for Instructional Technology was created. I was also charged with the development of a District Technology Committee and tasked with surveying needs of staff and students, guiding professional development topics and schedules, piloting tools and programs for the district, selecting devices, developing necessary policies and procedures associated with the migration to 1:1, and designing events aimed at keeping the community involved with the initiative as participants and decision-makers.

**Purpose**

The purpose of this program evaluation was to inspect technology implementation in Modern Mind CUSD and evaluate its relationship to districtwide professional development efforts and leadership characteristics, resulting in recommendations for future improvements. The 21st century has brought about different learners, ones who are not engaged by simply watching videos or viewing images in class, playing internet learning games, or writing on SMART Boards. These learners demand quick access to knowledge, are born as multitaskers, and are capable of engaging in learning at a whole new level which demands for re-envisioning of the role of technology. Because of this, the educator’s role shifts from the focal point of the classroom to the learning catalyst. “It is difficult for faculty to imagine what possibilities of implementing technology exist when they are constrained by old paradigms of teaching” (Archambault, Wetzel, Foulger, & Williams, 2010, p. 4). With this paradigm shift comes the need to examine relationships between supports provided, in this case professional development and leadership, and implementation to ensure success. Though not an easy task, “no device or innovation alone can change the culture of a school or district; real change comes with hard work over time” (Ormiston et al., 2018, p. 33).
Beginning with professional development, there needs to be a strategic focus to meet the educational needs of the students and to “help teachers fully understand and appreciate the powerful role technology plays in unlocking student potential” (Whitehead, Jensen, & Boschee, 2013, p. 66). Past practice has been to focus technology professional development on competencies with hardware and software. However, teaching 21st century skills starts with a mindset, not a toolset, which precipitates the necessity for technology professional development that focuses on expanding teacher knowledge in the context of improving teaching and learning rather than on technology tools. Though approved in May of 2016, Modern Mind CUSD officially began implementation of the 1:1 District Technology Initiative in July of 2016 after studying approaches used by other districts. This led to beginning the process with a full year of technology professional development before devices even entered the school buildings, with the belief that “learning about technology is different than learning what to do with it instructionally” (Archambault et al., 2010, p. 5). Having been involved in the grassroots, ground-up building of this initiative as well as a staff member in the district for over a decade, I have developed strong relationships with the staff members and administrators in the district and because of that, I receive honest and consistent feedback as this initiative progresses. With the increasing role of technology in the classroom, one of the major concerns from administration and staff is the difficulty of ensuring that the myriad and variety of professional development provided thus far is having a true impact on technology implementation to support the district mission and vision. It is important to ensure that the professional development is continuous, job-embedded, and focused on best practices for instruction that are enhanced by technology. The types of professional development received thus far include:
1. **Professional Development Series:** Led by the Director for Instructional Technology, these are half- or full-day sessions focused on instructional strategies for technology integration as well as basic knowledge of hardware, devices, legal policies, and programs, tools, and applications. In the 2016-2017 school year, eight half-day sessions were offered. For the 2017-2018 and 2018-2019 school years, two full-day sessions were scheduled. Re-evaluation of needs through staff and administrative feedback and BrightBytes survey data will determine the number of sessions offered in future school years.

2. **Teacher Coaching:** Scheduled through a districtwide help desk ticket system, teachers can request personalized coaching time from the Director for Instructional Technology during which classroom observations, lesson studies or other best practices can be discussed and applied. In an average school year, over 300 coaching sessions occur throughout the district, with the majority of requests emanating from the elementary, middle, and high school buildings.

3. **Online Self-Guided Instruction:** A well-maintained and frequently visited Instructional Technology website including additional resources to support teaching and learning is available to all staff members and can be used to reinforce skills and lessons taught, or to further advance skills obtained through other forms of professional development. This includes a self-paced, personalized technology badging system which provides digital recognition for accomplishing technology-related tasks centered around student learning.

4. **Site Visits:** Staff are encouraged to submit proposals for site visits to schools in which technology implementation is occurring in their content area or field allowing for
engagement in meaningful discussions and observation of learning practices that are valued in other districts.

5. **Conferences, Seminars, Certification and Degree Programs:** Staff have the ability to submit proposals to attend conferences, seminars, or enroll in certification and degree programs to further support technology implementation.

This program evaluation also focuses on the efficacy and fidelity to professional development received in the context of impactful teaching guided by the Substitution, Augmentation, Modification, and Redefinition (SAMR) Model to engage students and the International Society for Technology in Education (ISTE) Standards. As the Director for Instructional Technology and throughout this study, I intend to keep district mission and vision, educational goals, and student learning as the focus of all technology implementation in the district as the initiative expands through the collection and analysis of qualitative perception data as well as quantifiable data from external surveys and observations.

In addition to professional development is the importance of leadership in technology implementation and the ability to create the climate of trust and collaboration in which risk-taking is promoted on behalf of student achievement. “Leadership practices are one of the best predictors of success during a technology rollout” (Ormiston et al., 2018, p. 35). Because of a tumultuous relationship with a revolving door of district office and building level administration in the past, each of the five school buildings is tasked with working relentlessly to improve school culture by building trust through transparency and openness in regards to the mission and vision of the district. The 2017 and 2019 5Essentials survey data revealed low scores in crucial areas such as teacher-principal trust, teacher-teacher trust, collaborative practices, collective responsibility, and school commitment, which is a likely side effect of the transient nature of the
past administration. With current administration, multiple year contracts, an affinity to risk-taking, and innovative practices have set the stage for positive change, beginning with the 1:1 District Technology Initiative. This program evaluation focuses on the role of leadership in technology implementation, the staff’s perception of the level of support, and how this affects overall technology implementation.

Technology is a part of today’s society and our job as educators entails preparing students for the future. This means integrating technology into schools as a valuable learning tool for individualized student growth, but also as a skill necessary for students and their future careers. Access to the internet has had a transformational effect on how students learn, how educators educate, and how leaders lead. It has provided immediate information with room for creation in ways unlike any past industrial revolution style teaching method. It supplies students with a variety of tools to match whatever the task at hand may be and allows for a deeper understanding of content, all while connecting with multiple learning styles and teaching 21st century skills. As educators and leaders, it is our knowledge and efforts that will ensure that technology is being implemented to its fullest potential.

Rationale

A simple Google search will bring up research and articles regarding the barriers to technology implementation, many of which focus on financial resources and time. However, there is very little to guide the specifics of implementation in terms of professional development and leadership, and even less on how to sustain the change. Through my experiences, the process begins with well-designed professional development supported by coaches, mentors, professional learning communities (PLCs), strong leadership, and positive school culture and climate. As one of the key players in supporting both instructional and cultural change, I hope to
substantiate the relationship between high-quality professional development, leadership support, and its effects on technology implementation. During my years in education, I have participated in, designed, and conducted a multitude of professional development sessions that have led me to the conclusion that without strategic planning, strong leadership, and a supportive school culture, educational reform can lead to a waste of precious resources.

I came to this conclusion early on in my educational experiences, beginning with my kindergarten through eighth grade schooling at a Catholic school void of art and music, but overflowing with dittos, worksheets, and restrictions. I struggled, spending much of my time in a corner or an administrative office, completely removed from the educational environment. The type of learning that worked for everyone else, did not reach me. Differentiation at the time was the choice between a number two pencil or a black ballpoint pen, neither of which challenged or engaged me as a learner. Technology was playing Oregon Trail on highly outdated Apple IIe computers. I remained on the honor roll with little to no effort but was lacking in the social skills necessary to function in a classroom due to the amount of time I spent away from other students. The expectation was that I adjust to the instruction, not that it adjust to me.

At the same time, I was enrolled in piano lessons at a local university and it was there that I learned the true definition of support. I was challenged, encouraged, and given choices. My turbulent relationship with school became a constructive partnership and my love for learning began. Because of my draw to the arts, I was sent to the local public high school where my days were full of a multitude of activities ranging from theatre to debate team, from calculus to literature. Teachers had a true passion for teaching, which fueled my enthusiasm for learning. I was held accountable for my learning through assessments and performances, and because of
the transferable skills I learned in the variety of courses and activities in which I participated, I felt confident in my abilities.

The journey through two different approaches to teaching and learning became the reason for my venture into the field of education. After gaining my license in music education K-12, I spent many years substitute teaching and music directing. In 2007, I was hired as the music educator at Innovate Elementary School, a school without a full-time music program prior to my position. In collaboration with content area teachers and with very few supplies, I had to establish and maintain curriculum for six grade levels, create common assessments for the district, forge community connections, budget supplies, write grants, monitor and track data, run all aspects of large school-wide musical events, help with recruitment and transition of students from elementary to middle to high school, and constantly fight for the retention of the programs in the district using surveys, feedback, data, and interviews. Throughout this process, I became very connected with staff, community members, parents, and students. The concerts were well-attended and staffed with countless parent and community volunteers and the music program grew from non-existent to an integral part of the community. The pride I witnessed in the eyes of the students, parents, and staff and the unending support and dedication to students brought me to the realization that I wanted to make a difference in education on a larger scale which led me to begin an Education Specialist program in order to obtain my principal endorsement.

Concurrent with my position at Innovate Elementary School, I began teaching continuing education programs at the same local university from which I took piano lessons, focusing on the integration of the arts with Common Core State Standards. My life became a whirlwind of educating, so to continue my own professional learning, I took a course in using cloud-based programs in education. Successful completion of this course resulted in my ability to create new
course offerings surrounding technology integration and sparked my journey into the land of Google where I became a certified educator Level 1 and Level 2 as well as a Google Certified Trainer. In addition to my experiences working with educators, this newfound perspective on the power of technology in education further fueled my desire to be in administration.

Though my intention was to become a building principal, I was offered a unique opportunity to stay in my district and become involved with a districtwide technology initiative as the Director for Instructional Technology with the goal of implementing, evaluating, and sustaining a K-12 plan for the integration of educational technology into the curriculum. This role has supported my belief that powerful professional development and school leadership can change teaching and learning. A major part of my position is to plan and deliver technology-based professional development for teachers, staff, and administration while assisting classroom teachers in designing and implementing effective formative activities that utilize multiple forms of technologies, educational tools, and resources. A large quantity of the district’s resources have been budgeted and spent on implementing and sustaining the 1:1 District Technology Initiative, and I intend to ensure that the professional development provided and the quality of leadership involved have a relationship that not only leads to successful technology implementation, but also the ability to sustain the initiative as intended in the district mission and vision.

Sustaining such a large initiative based upon systemic change and in support of a district mission and vision is a challenge, with technology adding its own set of difficulties. Technology can transform the entire learning experience for students of all ages, backgrounds, and ability levels. “It [technology] can help affirm and advance relationships between educators and students, reinvent our approaches to learning and collaboration, shrink long-standing equity and
accessibility gaps, and adapt learning experiences to meet the needs of all learners” (U.S. Department of Education, 2017, p. 3). But good teaching is good teaching and without higher-level uses of technology, it becomes just another dusty book on a shelf. “Few schools have adopted approaches for using technology to support informal learning experiences aligned with formal learning goals” (U.S. Department of Education, 2017, p. 8). If the starting point is not the redefinition of goals of what we want learners to be capable of doing, technology is being added to an outdated paradigm of education. Modern Mind CUSD believes in the power of technology to transform education, but more progress is needed to fuel student achievement through the effective use of technology to support learning and teaching (Ormiston et al., 2018).

**Goals**

The goal of this study is to evaluate the relationship between professional development, leadership, and technology implementation by measuring evidence of:

1. Increased educator capacity. This will include a definition of successful technology implementation based upon the SAMR Model and the ISTE Standards, as well as a dissection of the quantity, quality, and current types of professional development strategies that support the use of technology as a vehicle for engagement.

2. Increased leadership capacity. This will include determining the role of leadership in technology implementation and what is needed to become agents of change, including shifts in instructional paradigms, as well as changes in culture.

I plan to use my findings as evidence to support any recommended changes to professional development and leadership in order to strengthen technology implementation as a way to impact teaching and learning.
Though devices, tools, and procedures are likely to change and evolve with future technological advancements, priorities around student needs will not. Therefore, it is important to focus on technology in classrooms as a means for reaching learning and instructional goals for both staff and students. “We can no longer consider technology as a tool of educational practice. The reality is that technology has become the means through which we interact, engage, and create in our world” (Whitehead et al., 2013, p. 105). Successful technology integration is a collective responsibility and promotes the use of technology as a way to address a diverse population of students in order to create lifelong learners.

Research Questions

Developing a progressive technology-infused school district is not completely about money and time; it is also about placing learning first through the use of technology. “The internet will have as transformative an effect on how future generations learn, work, and play as the introduction of electricity had on daily life in the 19th century” (Brown, 2000, p. 13). This leads to the primary research question that will be answered in this program evaluation: To what extent do professional development and leadership relate to technology implementation and how can those lessons learned apply more broadly to my district and to others? This question will serve as the driving force for my research and data which will include, but not be limited to, publicly available data, survey data from staff and administrators in Modern Mind CUSD, observational data, global data available from technology and education partnerships such as ISTE, and other research-based technology and education frameworks and studies.

This study will also include related questions and research areas such as:
• The effects of different types and structures of professional development on teaching and learning, including technology-related pedagogical behaviors in the classroom and how to support teachers in seamless integration of technology into the educational process

• How leadership and the adoption a learner-centered pedagogy as part of the school culture affect the integration of technology in the classroom

With these research areas, I hope to guide technology implementation as a way to respond to the direction of 21st century learning. Ultimately, “it will be the teachers who determine the success or failure of a technology plan. They are the people who connect technology with curricular practice in a way that will enhance student achievement” (Whitehead et al., 2013, p. 81). Therefore, we must remain faithful to providing the professional development and leadership support necessary, while dedicating time for continuous evaluation of its effect on educational goals and student achievement.

Conclusion

Though technology has been in existence since the early 1600s, its role in education is just beginning to come to the forefront. With the shift in desired skills for 21st century society and due to the expensive nature of hardware, software, and infrastructure needs, it is important to ensure that technology is utilized in a way that is worth the cost, as an investment in teaching and learning, rather than workstations and $300 pencils (U.S. Department of Education, 2017). As technology in schools becomes an “urgent national priority” (U.S. Department of Education, 2017, p. 8), it is imperative that we are “redirecting educational technology away from its use as a mere tool toward its role in addressing the academic needs for a different generation of learners” (Whitehead et al., 2013, p. 4). This study intends to connect professional development and leadership to technology implementation in hopes of increasing learning, engagement, and
ultimately, student achievement as schools attempt to “ensure learners of all ages have opportunities for personal growth and prosperity and remain competitive in a global economy” (U.S. Department of Education, 2017, p. 8).
SECTION TWO: LITERATURE REVIEW

The role of education has transformed and what worked in the past is no longer adequate in terms of what students need for 21st century society. Changes in how teachers approach learning, best practices, technological advances and expectations, school curriculum, testing norms, increased diversity, and even access to education in general have shifted educational outcomes as we move away from a focus on a checklist of basic skills to a bank of transferable skills that promote and foster lifelong learning. Despite an influx of technology in classrooms, there is still a tendency to shy away from it as a way to facilitate learning, not only wasting precious resources, but also opportunities and potential (Ormiston et al., 2018). When considering changes to the paradigm of teaching through the lens of technology implementation, research often centers on barriers, many of which are non-instructional. Access to devices, types of devices, the infrastructure, budgeting, and programs or software play an important role in technology implementation, but have little to no effect on teaching practices and even less on student learning. Most educators and parents now consider technology to be an integral part of providing a high-quality education to their students which begs the need for deeper research in the area of technology implementation from the perspective of best practices, rather than lacking resources (Ertmer, 2005).

Personalized learning is also becoming increasingly recognized as a strategy to close achievement gaps and create lifelong learners, and technology can be an important part of customizing instructional design for individual students (Ormiston et al., 2018). As Brown (2000) highlighted:

With the web, we suddenly have a medium that honors multiple forms of intelligence - abstract, textual, visual, musical, social, and kinesthetic. As educators, we now have a
chance to construct a medium that enables all young people to become engaged in their ideal way of learning. The web affords the match we need between a medium and how a particular person learns. (p. 13)

Though integrating technology into curriculum as a way to provide personalized learning experiences for students is an area of concentration for many educators, there are still numerous obstacles to successful and effective implementation. The focus of this program evaluation is not on surpassing hurdles in the area of material resources, but rather on the support systems necessary for impactful technology implementation, with a focus placed on the relationship with professional development and leadership. As researchers continue to study technology it is often from a historical perspective, following the evolution of invention and usage from past to present. This review of relevant literature will follow a similar chronological pathway, examining the relationship between technology implementation, professional development, and leadership in hopes of identifying the gaps in literature that support the need for my research.

Technology Implementation in the Classroom

With the evolution of technology, the capacity to utilize it in an educational setting is expanding and changing on a daily basis. "Web 2.0 - as it is often called to differentiate web use today from early internet use, which was primarily a source of information - provides an extraordinary number of opportunities to exercise one's passion to play and create” (Wagner, 2008, p. 181). However, American education still remains modeled on practices that are hundreds of years old. While in office, the U.S. Department of Education Secretary, Rod Paige (2002), wrote:

Schools remain unchanged for the most part despite numerous reforms and increased investments in computers and networks. The way we organize schools and provide
instruction is essentially the same as it was when our Founding Fathers went to school. Put another way, we still educate our students based on an agricultural timetable, in an industrial setting, but tell students they live in a digital age. (p. 4)

There have been many attempts to change the system. Apple was one of the first frontrunners in the classroom with the invention of the Apple II which offered learning opportunities in the form of games such as The Oregon Trail and Where in the World is Carmen Sandiego? This led to the Apple Classrooms of Tomorrow (ACOT) decade of research that began in the mid-80s. The central point of this exploration was to identify “effective models for teaching and learning with technology, developing the professional lives of teachers, and diffusing innovation” (Apple, 2008, p. 3). Through the analysis of data collected from surveys, phone interviews, and case studies, a conclusion was drawn that the implementation of technology has a positive impact on students, increasing collaboration, engagement, and motivation.

To provide further support of technology’s impact on education, Dr. Jan Hawkins (1997) wrote her essay for The George Lucas Educational Foundation entitled, “The World at Your Fingertips: Education Technology Opens Doors” which forecasted all of the possibilities of a strong relationship between education and technology when the focus was to provide meaningful content (pp. 50-57). It was in this essay where she emphasized that technology was just a tool like a pencil or a book. Her insistence was on unleashing the power of this tool to bring about educational change which sparked conversations about its role in addressing complex educational challenges with a focus on instructional practices and educational philosophies.

Taking this one step further, Mark Prensky (2001a, 2001b) coined the terms “digital natives” and “digital immigrants” to describe the ever-widening gap between students born into a
world full of technology and adults who need to devote time to learning about and using current
technologies. The biggest distinction between the two groups was the way they learn, adapt, and
retain technology information. Comparing it to learning a language, Prensky describes a “digital
immigrant accent” (2001a, p. 2). Digital immigrants do such things as “turning to the Internet
for information second rather than first, or in reading the manual for a program rather than
assuming that the program itself will teach us to use it” (Prensky, 2001a, p. 2). This causes a
larger problem as the digital immigrant instructors try to speak to a generation that is completely
fluent in the language of technology.

This growing gap and the determination for change in the current teaching and learning
environment has brought about not only the need for better visions for technology
implementation, but the demand for them in order to provide skills necessary for 21st century
society. This demand precipitated the creation of organizations such as the International Society
for Technology in Education (ISTE) (2007) and the Partnership for 21st Century Skills (2012),
narrowing the focus even more to seamless technology integration as opposed to a separate
content area as a way to address 21st century themes such as: global awareness; financial,
economic, business, and entrepreneurship literacy; civic literacy; health and environmental
literacy; information, media, and technology skills; life and career skills including flexibility and
adaptability, initiative and self-direction, social and cross-cultural skills, productivity and
accountability; and leadership and responsibility (Battelle for Kids, 2012).

ISTE continues to revamp their standards as technology changes, ensuring that the
standards for students, educators, education leaders, coaches, and computer science educators
continue to “act as a roadmap for bold, innovative educators and education leaders to re-engineer
their schools and classrooms for digital age learning no matter where they fall on the journey to
meaningful, effective ed tech integration” (ISTE, 2018, para. 3). Focused on empowering student voice and student-driven learning, the standards in all of these areas concentrate on skills necessary for flourishing in a dynamic society, making education a two-way street and requiring everyone involved to take an active role in their own education. Of particular importance to this program evaluation are the standards for students, educators, education leaders, and coaches.

Originally launched in 1998 and focused on the technical aspect of how to use computers, the ISTE Standards for Students have gone through two updated releases, one in 2007 and one in 2016, adjusting the focus to using technology to learn, and currently, on desired 21st century skills and learning targets (ISTE, 2018). In order to prepare students to “thrive in a constantly evolving technological landscape” (ISTE, 2018, para. 1), the emphasis has moved away from technology operations and towards students as:

- Empowered Learners
- Digital Citizens
- Knowledge Constructors
- Innovative Designers
- Computational Thinkers
- Creative Communicators
- Global Collaborators

These Standards for Students are meant to “provide a pathway for student voice, choice, and empowerment to achieve their educational goals, accompanied and enhanced by technology” (ISTE, 2018, para 8).

With the focus for student learning shifting, so does the role of the educator and, consequently, so did the Standards for Teachers, now renamed the Standards for Educators.
Originated in 2000 and revamped in 2008 and 2017, the current standards center on the roles that an educator must fulfill in order to “prepare students to drive their own learning” (ISTE, 2018, para 1): learner, leader, citizen, collaborator, designer, facilitator, analyst. As Smith surmises in his 2017 article regarding the release of the new Standards for Educators:

They reflect the transition from using technology to deliver content to using technology to empower learners. That empowerment also speaks to educators as valued professionals within their organizations and communities who are enabling student-centered learning and are entrusted to carry out their practice at the highest level. (para 6)

Initially titled Standards for Administrators in 2002, the ISTE Standards for Education Leaders were created to promote the effective integration of technology into curriculum. The newest release in 2018 has become more targeted through identifying the “knowledge and behaviors required for leaders to empower teachers and make student learning possible” (ISTE, 2018, para 1). They highlight national areas of struggle and leadership skills necessary in education today, spotlighting how leaders can demonstrate technology usage to support digital age learning as a(n): equity and citizenship advocate, visionary planner, empowering leader, systems designer, and connected learner (ISTE, 2018).

Serving as a hybrid of administrators and teachers, coaches also have standards that align to the demands of their roles in a school system. Since the first release in 2011, coaches (specifically those that specialize in educational technology) have become more commonplace in schools, serving as supports for their colleagues as they leverage the power of technology as a way to engage students through relevancy and choice. The 2019 redesign of the Standards for Coaches included what roles a coach needs to play as they support educators through the process
of learning to use technology for assessment, differentiation, and creating engaging, personalized learning experiences for students:

- Change Agent
- Connected Learner
- Collaborator
- Learning Designer
- Professional Learning Facilitator
- Data-Driven Decision-Maker
- Digital Citizen Advocate

In addition to the ISTE standards, the most recent collection of research for the 2017 NETP also continues to evaluate the utilization of technology in schools and the roles stakeholders play, attempting to “set a national vision and plan for learning enabled by technology through building on the work of leading education researchers; district, school, and higher education leaders; classroom teachers; developers; entrepreneurs; and non-profit organizations” (U.S Department of Education, 2017, p. 3). Through the study of schools, districts, and companies around the nation, the plan identifies five ways that technology can impact teaching and learning:

1. By enabling personalized learning or experiences that are more engaging and relevant
2. By organizing learning around real-world challenges and project-based learning
3. By taking advantage of learning opportunities beyond the classroom alone: through museums, libraries, and other outside of school settings
4. By allowing for the pursuit of passions and interests
5. By closing the digital divide and making transformative learning opportunities available to all students (U.S. Department of Education, 2017)
It then provides recommendations for states, districts, and post-secondary institutions that incorporate all the developments in educational technology with a planned expansion in the 2020 NETP update (U.S. Department of Education, 2017).

Yet despite the restructuring of standards to remain current, the large-scale efforts to create strategies and plans, and the in-depth research studies, the challenge of using technology to facilitate instructional change is still far from over as the methods of implementation continue to trail behind the access to technology. Dr. Ludwig van Broekhuizen (2016) completed a three-year research study using over 140,000 classroom observations in K-12 schools across 39 states and 11 countries and the findings were less than satisfactory, with 52.7% of the observations showing no evidence of technology being used to gather and/or use information, 63.3% reporting no evidence of solving problems or creating original work, and 64.6% showing no signs of collaboration. These results further support how technology implementation, when not supported and tied to learning goals and the vision of the schools, does little to change learning on a daily basis.

Currently leading the charge on enhancing teaching with technology is Dr. Meg Ormiston author of the *NOW! Classrooms* book series that focuses on leveraging the use of technology to advance learning in K-12 classrooms. Together with instructional technology experts from schools across Illinois, Ormiston collects data from observations and interviews in order to lay out a living framework for “leading a change-focused school” (Ormiston et al., 2018, p. xvii) from kindergarten through high school where “the focus is not on the tools, but on the student-driven learning” (Ormiston et al., 2018, p. 1). Too many schools have centered on the race to the device, neglecting to spend the time needed to strategically plan technology implementation, leaving strong support systems for sustainability completely to chance. The author concludes
early on in her research and analysis that there is no common approach to technology implementation, but there are key characteristics that must play a role in instructional innovation:

1. Creating and communicating a vision of change
2. Planning the launch
3. Defining and deploying essential resources
4. Providing professional development
5. Remembering that change is constant

All of the research above points to the importance of ensuring support throughout technology implementation as schools create lifelong learning environments for adults as well as for students. Although the journey for each district may be unique, the goal remains the same - to “encourage growth mindsets in everyone in order to prepare our students for an ever-changing world in which they can thrive” (Ormiston et al., 2018, p. 8) and to focus on “what matters most - which is what happens between students and teachers in real classrooms everyday” (Wagner, 2008, p. 255). No matter the resources, the district, the location, or the people involved, this goal hastens the need for strategic professional development and strong leadership.

**Professional Development**

With the ultimate goal of education to increase the capacity of students, it is critical that we first increase the capacity of the people with the most direct effect on students - the teachers. This requires dedication to meaningful professional development that will “increase adults’ internal capacities, build teacher leadership, enhance PLCs, decrease isolation, and improve instruction” (Drago-Severson, Blum-DeStefano, & Asghar, 2013, p. 6). Defining meaningful professional development as such and dedicating resources (human, time, and fiscal) to the area requires scrutinizing how the unsatisfied demand for professional development can best be
addressed. The overarching goal should be to not only facilitate change in the area of knowledge, but also in beliefs. This proves to be especially true with technology. Using her research in conjunction with the United Federation of Teachers (UFT), Nancy Manzella (2011) concluded that:

Because of the rapid rate of technological change, instructional technology professional development should focus on helping teachers develop skills that enable them to continually explore new and unfamiliar tools instead of concentrating only on specific hardware and software. It must be focused not only on the equipment, but also on the strategies that support student learning - strategies that enable teachers to teach differently and support inquiry and collaboration. (p. 49)

With that being said, it is important that attention is paid to professional development format, design, and outcomes in connection with pedagogy and content areas in order to support student learning and instructional improvement. This focus will not only develop teachers’ individual skills and expertise by aiding with identifying areas of need and necessary supports, but will also help meaningful technology integration become commonplace (Cookson, Darling-Hammond, Rothman, & Shields, 2018, p.6).

*Format, Design, and Outcomes*

Format and design of delivery is still one of the areas of technology professional development that has not improved despite the multitude of research throughout the decades. Though many forms of professional development exist, stand-alone workshops still remain the standard mode of delivery. This *one-size-fits-all* approach usually comes in the form of a lecture or all-day workshop with the major concern being the number of hours attended. *Education*
Week addressed this delivery mode in their 2011 article about professional development by author Anthony Rebora:

Historically, administrators have favored the workshop approach in which a district or school brings in an outside consultant or curriculum expert on a staff-development day to give teachers a one-time training seminar on a garden-variety pedagogic or subject area topic. (p. 1)

Time and again, study after study, this method has proved ineffective as the goal for professional development is not to raise awareness, but rather to change practice and build capacity in order to connect adult and student learning (Desimone, 2009; Kopcha, 2012; Lawless & Pellegrino, 2007; Penuel, Fishman, Yamaguchi, & Gallagher, 2007). Using case studies, Joyce and Showers (2002) came to the conclusion that stand-alone formats of professional development have less than a 5% chance of impacting instruction, begging the need for diversified formats for personalized learning.

An empirical study of the Global Learning and Observation to Benefit the Environment (GLOBE) Program by Penuel et al. (2007) analyzed the design of professional development activities in relation to increased levels of program implementation, teacher knowledge, and changes to teaching practices. Using the inferences that resulted from the statistical analyses of surveys, including many statistical references and a large data set, the authors concluded that the “most effective professional development strategy was to focus on promoting student inquiry” (pp. 949-950) but also that additional studies were necessary as curricular and school contexts could have implications for the results. They recommended that professional development be:

- Focused on disciplinary core ideas and practices
- Of extended duration
In an environment with Professional Learning Communities (PLCs)

In alignment with standards, curriculum, assessments, and school goals

Supported by school leaders

In that same year and with the availability of technology in an educational setting advancing rapidly, Lawless and Pellegrino (2007) began to inspect professional development through the lens of technology integration in schools. As the era of the No Child Left Behind Act brought about federal legislation and funding initiatives, programs such as the Preparing Tomorrow’s Teachers to Use Technology were targeted for not producing results. Their argument was that though the number of professional development opportunities that existed had dramatically increased, the ability to define quality professional development had remained unchanged, having little to no effect on teacher learning or student outcomes. This was compounded further by the addition of technology as a value add for teaching and learning, which requires increasing capacity of all involved - students, parents, teachers, and leaders. The research study identified the three major challenges with professional development to support technology integration as: 1) defining quality professional development regardless of the content area, 2) identifying the multiple roles technology can play when being “woven into the instructional environment by a teacher to assist the teaching and learning process” (Lawless & Pellegrino, 2007, p. 578), and 3) the limited amount and strength of research in the area. To reach the conclusions regarding evaluating technology professional development, research was divided into three categories of supporting research: types of professional development, units of analysis, and designs and methods. After reviewing for content, 21 articles or conference papers were chosen for use in their research, employing a mix of qualitative and quantitative methods such as case studies, surveys, artifact analyses, self-reporting rubrics, focus groups, field notes,
classroom observations, and interviews. The main conclusion drawn was the need for a systematic strategy for technology professional development in order to address the outcome gap starting with the focus on the types and quality of professional development opportunities, moving forward to focusing on teacher outcomes, and ending with the focus on teacher change over time and the effects on student achievement (Lawless & Pellegrino, 2007). The biggest unknown in their study was whether or not students will “have access to teachers who know how to use technology well to support 21st century learning and teaching” (p. 578).

To further endorse Lawless and Pellegrino’s research and to address the fear of teacher ability, Borthwick and Pierson (2008) wrote their book *Transforming Classroom Practice: Professional Development Strategies in Educational Technology* to provide examples of professional development programs that had been successful in expanding teacher capacity and confidence using technology tools in teaching environments. In their literature review, they referenced early theoretical supports for effective educational technology professional development that focused on improving teaching rather than tools alone. The authors highlighted successful professional development models that allowed for simultaneous learning of the individual in relation to the larger organization through relationship building and sustainable change (Donaldson, 2006; Fullan, 2004). Their results emphasized the need for the core of the training to be focused on “progressive concepts” (Borthwick & Pierson, 2008, p. 10) by shifting the role of the teacher from the authority figure to the facilitator and the responsibility of learning from the teacher to the students. This also requires that the person conducting the professional development be a change agent defined by Everett Rogers in 2003 as the person who “eventually leads to working oneself out of a job as others become more proficient” (p. 14).
The success of that change agent in the larger scope of educational reform relies on the ability to design professional development that is not isolated and changes teacher understandings and practices. Focusing on educational reform and the role of professional development, Desimone (2009) published her report driving home the concept that “what makes professional development effective is crucial to understanding the success or failure of many education reforms” (p. 181). The questions she addressed regarding what counts as professional development, the purpose of a core conceptual framework for studying professional development, and the implications for modes of inquiry in studies of teacher learning, led to a theory of action for professional development that follows these steps:

1. “Teachers experience effective professional development.

2. The professional development increases teacher knowledge and skills and/or changes their attitudes and beliefs.

3. Teachers use their new knowledge and skills, attitudes, and beliefs to improve content of instruction or approach to pedagogy, or both.

4. The instructional changes foster increased student learning” (Desimone, 2009, p. 184).

These steps were based on her conclusions of the five characteristics necessary for professional development as an avenue to increasing teacher capacity identified through her literature reviews and research: content focus, active learning, coherence, duration, and collective participation. These five characteristics are still components of 21st century research studies on professional development as evident in the reference pages of studies from the last decade.

**Connection to Pedagogy and Content Areas**

Equal in importance to format, design, and outcomes is the connection of professional development to pedagogy and content areas which ties technology into a larger framework of
goals. Archambault, Wetzel, and Foulger (2010) concentrated on how people learn through experiences and reflecting on those experiences through a process-driven model. The participants were faced with something new (technology) that has the capability to shift beliefs grounded in past ideas and experiences (pedagogy). The study clarified that the participants were not blank slates, with experiences ranging from tenure to non-tenure, elementary to graduate studies, in a wide array of content areas. When building professional development, the goal is to provide transformative experiences that result in teachers embracing technology as a support for their work. Because this study attempted to link pedagogy, content, and technology, the study used the Technical Pedagogical Content Knowledge (TPACK) framework by Koehler and Mishra (2006) while also taking into consideration relationships between students, teachers, and teaching practices. Technology in education was designed with connection and collaboration in mind and the TPACK framework helps to leverage the power of technology to transform technical, pedagogical, and content knowledge to impact teaching, and consequently, learning. It is very easy when designing professional development for technology to focus solely on the technical mastery of tools. Although that is essential, the focus should be learning with technology, not about it. TPACK shifts the focus from general acquisition of skills to changing practices, with teachers “selecting technology that supports learning goals rather than building a curriculum around technology itself” (Peterson, 2016, p. 2).

All of the participants engaged in a professional development plan that focused on 21st century skills and the integration of technology through the creation of a course-embedded unit that involved collaboration, communication, and problem solving. The main findings stated that all but 5% of the participants saw their practice change as a result of the professional development. Forty-two percent now saw themselves as facilitators of learning, allowing the
students to take charge of their learning. Thirty-three percent felt as if their roles were expanded to include more integration, as they became more student-like through acquiring new skills and planning new lessons. This study highlighted the positive outcomes of quality professional development when:

1. It focuses on improving teaching practices.
2. It is ongoing, content focused, and site based.
3. It involves teachers as active learners.

Specifically related to technology, the professional development should also:

1. Include the chance to explore the integration of technology into curriculum
2. Provide time to learn the tools and apply to teaching followed by time for reflection of the process (Archambault et al., 2010)

Martin, Strother, Belgau, Bates, Reitzes, and Culp (2010) presented research that continued to tout the importance of high-quality professional development for any type of educational improvement, but centralized on how we measure the impact on teaching and learning - an area in which we lack sufficient data in terms of technology integration. “For professional development to have an impact on students, it must first have an impact on teachers” (Martin et al., 2010, p. 71). With the aim that instructional technology professional development should be closely aligned to core conceptual foundations as a way to produce positive outcomes, this study produced a systematic progression to student outcomes with professional development increasing teacher knowledge and skills, leading to improved instruction, and ending with enhanced student achievement. Beginning with the Lawless & Pellegrino (2007) three-phase approach to designing evaluation for implementation of instructional technology, this study used this framework to organize the findings:
1. Examine professional development design for a systematic understanding of characteristics

2. Look at the relationship between characteristics and teacher outcomes

3. Look at teacher change and how this affects students

To ensure that the program in question, Missouri’s Instructional Networked Teaching Strategies (eMINTS) professional development program, aligned with existing research on effective professional development, the program also incorporated four of the five main features of professional development defined by Laura Desimone in her 2009 report *Improving Impact Studies of Teachers’ Professional Development: Toward Better Conceptualizations and Measures*:

1. Utilizing active learning

2. Having coherence between the professional development and the teachers’ knowledge and beliefs

3. Having adequate duration

4. Using collective participation among teachers

The detailed, statistical data used in this study confirmed the relationship between professional development fidelity and teacher and student outcomes. High-fidelity implementation of professional development leads to better teacher and student outcomes through a better understanding of program concepts. In this study, that was evidenced through evaluation of lesson plans with the protocols created as a way to affect student learning. Associated with this high-fidelity professional development was a directed focus on lesson planning, reflective practice, and problem solving versus technical assistance and modeling instruction.
Reform-oriented practices are complex in nature and often forget to consider teacher knowledge and beliefs. Theodore Kopcha (2012) recognized this area of neglect and took a different approach to studying ideology. Instead of relying on the self-reports of teachers at the conclusion of a professional development session, he examined teacher changes in attitude and practices over time, transitioning from full-time mentoring to teacher-led communities of practice over a two-year period. The study was supported with the research-based principles for effective professional development initially identified by Desimone (2009) and later positioned in the context of technology by Mouza and Wong (2009) as:

1. Focus on teacher knowledge
2. Reform-type activities
3. Situate activities in teacher needs
4. Opportunities for active learning
5. Extensive duration
6. Collective participation

“The data were analyzed across teachers rather than with each teacher as an individual case. This analysis provided insights into the effects of the program of professional development across the entire bounded context” (Kopcha, 2012, p. 1114). The main conclusion drawn was that a variety of situated learning activities around the principles of effective professional development may be the key to providing teachers with knowledge and support to integrate technology into instruction, resulting in an “interplay among content, pedagogy, and technology” (Whitehead et al., 2013, p. vii).

This meshing of content, pedagogy, and technology requires a focus on a vision of how technology can help transform teaching and learning at all levels and the need for a growth
mindset in order to rethink curriculum to meet the demands of 21st century society. As a student told Mark Prensky (2013) in an interview, “you think of technology as a tool, we think of it as a foundation; it underlies everything we do” (p. 23). Using a national education technology plan entitled “Transforming American Education: Learning Powered by Technology 2010” designed by the Office of Educational Technology in the U.S. Federal Department of Education, Whitehead et al. (2013) devised a strategic design for professional development as a means to improve teaching and learning. The comprehensive plan included completing a needs assessment based upon learning, assessment, teaching, infrastructure, and productivity goals in order to structure professional development in a way that builds a vision of how teachers will “connect with technology and how they can use that to empower learning in the 21st century” (Whitehead et al., 2013, p. 65). From the research, another very relevant conclusion was drawn that ties together literature on professional development and leadership in a way that reenergizes teachers rather than alienating them. Technology professional development should never be planned based upon the premise that the teachers are deficient in technology skills related to education as this sends a message of perceived inadequacy of the staff, creating a negative foundation on which the professional development plan begins. The key to planning effective professional development is linking quality professional development with the needs identified by those participating in the professional development while reflecting the shared mission, vision, and goals of the school or district (Whitehead et al., 2013).

To make educators better educators, professional development must link subject matter content and student learning with increases in teacher skills and improvement of practice. The research continues to emphasize the relationship between professional development closely aligned to core conceptual foundations and positive teacher and student outcomes (Archambault
et al., 2010; Kopcha, 2012; Martin et al., 2010; Whitehead et al., 2013). Promoting transformation of pedagogy involves not only direct instruction in the use of technology, but also how it can support instructional goals and allow students to take ownership of their own learning.

**Identifying Needs and Supports**

Though the need for more research in the area of format and design and connection with pedagogy and content is evident, the other part of the planning of effective professional development includes self-reporting and self-identification of needs. For many years, professional development has been an exercise in compliance, with little to no teacher agency in terms of participation in the direction of their own professional growth (Desimone, 2009; Lawless & Pellegrino, 2007; Ormiston et al., 2018). In 2016, Corwin, in partnership with LearningForward and the National Education Association (NEA) conducted a study of the national state of teacher professional learning through a 60-item survey completed by more than 6,300 teachers from across the United States. The study defined effective professional learning as being “engage(d) in a cycle of continuous improvement in which they are active partners in determining the focus of their learning, including how their learning occurs and how they evaluate its effectiveness” (NEA, LearningForward, & Corwin, 2016, p. 4). Using the Standards for Professional Learning developed by LearningForward in 2011, the survey was created to measure teacher perceptions as to what extent the professional development they experienced aligned with the Standards. The key findings of the study reported by the teachers included:

1. Schools use achievement data to plan professional development, but do little to assess effectiveness.

2. There is a lack of involvement in decisions about their own professional learning.

3. There is not adequate time during the school day to apply new skills.
One of the main determinations was that professional development can be designed to increase staff capacity, but the design alone does not guarantee that staff experience it in a way that meets the goal (NEA et al., 2016). Three main recommendations were made based upon the findings and conclusions. Professional development has to: 1) be continuous and job-embedded (i.e. instructional coaching, mentoring, and PLCs), 2) use a variety of sources of data not only for planning purposes, but also for assessment of the learning experience, and 3) include teachers in decision-making regarding individual professional learning.

Another often neglected part of designing professional development is allowing teachers to be a part of “planning or creating professional development opportunities so that such offerings address their learning needs” (Hanover Research, 2017, p. 18). Using the Allegan Area and Clinton County Regional Educational Service Agencies (ESAs) processes as examples, Hanover Research (2017) was able to demonstrate how the combination of learning standards, relevant data and stakeholder input throughout the process can lead to ensuring that the professional development offered will become an actualization in teaching practices and classrooms. This approach also fosters a shared responsibility and commitment to the plan and to continuous improvement (Hanover Research, 2017).

The desired professional development characteristics as outlined by the findings of the NEA and Hanover Research, were also supported in the chapter of the NOW! Classrooms Leaders Guide (Ormiston et al., 2018) regarding professional development. Through their case studies and observations, the data revealed that professional development needs to be embedded into the school day in order to understand the integration of innovation as opposed to separate trainings that do not promote risk-taking or application of learning and do not connect to growth towards goals. The authors also emphasized the importance of the role of leadership in
supporting professional development efforts which leads to the next area of my literature review.

Leadership

Woven throughout the research regarding technology implementation and professional development is the topic of leadership and its role through the managerial duties necessary for technology implementation, the strategic design of professional development, and creating the culture conducive to adult learning as well as student achievement. The last decade has brought about many changes to the definition of school leadership including a broadening of the scope of what should be known about technology in a school setting. The challenge has moved away from simply acquiring devices, infrastructure, and a basic level of operational skill to aligning implementation to school goals, increasing staff capacity, and shaping a supportive culture. This shift has shone a light on the lack of informed leadership (Flanagan and Jacobsen, 2003; Ritchie 1996) and the need for leadership to accept the challenge of creating the conditions in which teachers are empowered to experiment and take risks with technology.

New Responsibilities

Along with the changes to the teaching and learning environment, the definition of a leader has transformed. The traditional industrial model with a concentration on resources has morphed into a global leader, strong in strategy, community connection, and instruction, in addition to the utilitarian responsibilities of the past. It is crucial now, more than ever, that “education leaders [have] personal experience with learning technologies, an understanding of how to deploy these resources effectively, and a community-wide vision for how technology can improve learning” (U.S. Department of Education, 2017, p. 42).

The importance of leadership in technology implementation came to the forefront in the
early nineties as lack of administrative support was discovered to be one of the most detrimental factors in seamless technology integration (Bozeman & Spuck, 1991; Ritchie, 1996). A common consensus on what constituted leadership in general was still undetermined and even though administration in schools involved some level of basic computer skills for management applications, the application of technology as part of a school vision for teaching and learning was near nonexistent. In 1991, a survey was given to administrators in 152 school districts nationwide with an enrollment of more than 10,000 students. Consisting of questions regarding the perceptions of leadership in technology implementation, the protocol contained 22 questions in the areas of computer applications, technology-related issues, and administrative preparation. 177 responses were gathered and it was concluded that in order to be an instructional leader, one must also have a knowledge of instructional technology, something not taught in university preparation programs and of which little professional development existed at the time, leaving many schools shamefully unprepared to utilize technology to its fullest extent (Bozeman & Spuck, 1991).

Ritchie (1996) continued this research further and identified eight variables to technology implementation: a lack of administrative support, inadequate staff development, low access to technologies in the classroom, nonexistent strategic planning for implementation, failure to hire support staff, an absence of funding for maintaining equipment, a deficit of continual assessment of implementation efforts, and an overall struggle with culture. He then went on to declare administrative support as the most critical area, noting the absence of commitment from leadership and knowledge of their exact role in implementation as most damaging to the remaining variables. It was also concluded that the influx of technology in the classrooms also begged the need for administrators to reexamine the entire purpose of school and evaluation of
its success (Ritchie, 1996).

In 2003, Flanagan and Jacobsen created a contextual framework for building principals in regards to these new responsibilities in the area of technology leadership focusing on technology not as a separate course, but rather as a cross-curricular strategy. “A major challenge for technology leaders is to support teachers as they explore and experiment with diverse ways to integrate technology in meaningful, challenging, and authentic ways across the curriculum” (Flanagan & Jacobsen, 2003, p. 126) which includes providing professional development opportunities that focus on integration rather than on application instruction alone. Using a document created by the Calgary Board of Education (2000) entitled Leadership Development Program, role responsibilities for school leadership were outlined as: a leader of learning, a leader of student entitlement, a leader of capacity building, a leader of community, and a leader of resource management. With these responsibilities in mind, the Board of Education then developed five role responsibilities as they relate to technology integration: student engagement, shared vision, equity of access, effective professional development, and ubiquitous network. Flanagan and Jacobsen applied this model to elementary schools in their district to identify the strengths and limitations of the model, reporting the data as a composite of collective observations from the schools. The outcome of the research was that more professional development was needed for leadership in order for principals to influence staff in the area of technology and that more research was desired in the area of competencies and dispositions towards technology as well as supports necessary for the evolving role (Flanagan & Jacobsen, 2003).

Emphasizing further the serious threat to the teaching and learning process caused by a lack of leadership or a presence of insufficient leadership was the empirical study by Anderson
and Dexter (2005) which inspected the relationship of technology leadership attributes and success in various technology-related programs. Using survey results from a national probability sample, Anderson and Dexter treated technology leadership as a school characteristic and related it to the National Educational Technology Standards for Administrators (NETS-A) created by ISTE. The sample of schools was selected from a national database of 109,000 schools and included 898 public, private, and parochial schools to which questionnaires were mailed. From these schools, 488 (75%) of the principals and 467 (71%) of the technology coordinators completed the questionnaire. Using open-coding, eight indicators were selected to define technology leadership in relation to technology outcomes: technology committee, principal days, principal email, staff development policy, school technology budget, district support, grants, and intellectual property policy. In alignment with my research, the study reported that “technology leadership has greater leverage on desired outcomes than does technology infrastructure and expenditures” (Anderson and Dexter, 2005, p. 73). The abundance of quantitative data collected and analyzed with regression analyses confirmed that technology leadership played the most important role in integration, followed by access to devices. Technology leadership had a positive correlation with each of the independent variables derived from the open-coding.

Further inspecting leadership roles including the areas in need of professional development and using Anderson and Dexter’s 2005 study as part of the literature review, Leonard and Leonard (2006) used the North Louisiana schools for data collection and analysis. Two hundred fifty-one schools in 12 districts had survey packets mailed to building principals in addition to 155 assistant principal surveys that were sent to schools with at least one designated assistant principal. The survey of 24 questions was designed to elicit responses about aspects of planning for technology and perceived technological knowledge and skills while collecting
demographic information. The results revealed that 44% of the administrators “had serious concerns about their own capacity to supervise technology use in their schools” (Leonard & Leonard, 2006, p. 220). Only 56% felt they were qualified to provide the necessary leadership for technology implementation, with only 57% reporting that they felt they had adequate enough knowledge to integrate technology into the curriculum. However, 87% cited the need for professional development and continued education in the area of technology. These results served as an admission of a serious deficiency in professional development for administrators as well as an area of need in administrative preparation programs. “Only when they can skillfully assess the nature and extent of applications in the school and classroom setting, can they be expected to be truly effective technology advocates and competent technology supervisors” (Leonard & Leonard, 2006, p. 222). It is this level of competency that will equip leaders with the ability to model and promote technology adoption through listening to staff in order to support technology implementation and minimize barriers while maintaining the focus on quality teaching, not technology alone (Borthwick & Pierson, 2008).

Just as Whitehead et al. (2013) clarified the key to planning effective professional development as defining its role and linking quality professional developments with the needs, they also defined leadership values necessary for 21st century education, stating that:

> Average leadership will merely maintain the status quo. At its worst, mediocre direction from school leaders and coordinators will likely nullify the positive contributions that technology can make to education, frustrate teachers and their students, and cost taxpayers a good deal in ill-directed expenditures. (p. 21)

Education, technology in particular, is dynamic and constantly evolving which requires leaders to do the same. This also requires leadership to anticipate changes and be able to adapt to the
needs of the staff and students. Using research from the National Council of Professors of Educational Administration, the 2011 ISTE Standards, and the 2001 Technology Standards for School Administration, Whitehead et al. (2013) identified characteristics and strategies used by effective leadership as integrity, distributive leadership, engagement of stakeholders, understanding financial management, and continuous evaluation. All of these characteristics and strategies have a resounding effect on school culture, mandating that leaders shift from a purely managerial approach to technology implementation, to an instructional leadership approach that involves constantly playing the role of the learner while continuing to meet the needs of all involved.

*Vision*

While trying to define the new responsibilities of educational leadership, the results of all the previously mentioned studies include or refer to a vision in some aspect of their data collections or analysis. One of the more comprehensive studies completed on technology leadership and vision was done in Miami-Dade County with a sample of 103 elementary school principals who completed the Educational Technology for Principals survey as a way to identify the current status of proficiencies in regards to technology leadership and identify areas of need (Grey-Bowen, 2010). Developed by Dr. James Gregory Allen in 2003, the survey consisted of 31 questions that used a 5-point Likert scale to gather principals’ perceptions of their technology leadership competency, breaking further into six subcategories: leadership and vision; learning and teaching; productivity and professional practice; support, management, and operations; assessment and evaluation; and social, legal, and ethical issues. The survey also measured the actual proficiency on the same 31 questions with the difference between perception and actual proficiency serving as the needs for professional development. The data revealed the biggest gap
in technology implementation as leadership and vision which was also the area ranked as the most important in terms of technology implementation. The analysis of the quantitative data exposed the ill-preparedness of leaders and stated that “although principals are well aware of the importance of vision, technology planning, and the need for technology integration in the classrooms, they are not well-trained to the level of proficient planning in implementing and modeling the standards” (Greg-Bowen, 2010, p. 116-117).

Expanding on her research from 2005 and shifting her focus from attributes and roles to vision, Dexter (2011) conducted another study regarding school technology leadership in which she completed a cross-case analysis of five case studies in middle schools with laptop programs that had distributive leadership systems in place for technology integration. The research question in this study addressed leadership practices used by principals to develop and support successful technology implementation including defining the purpose of technology. Her research and analysis expressed the importance of creating a vision for technology implementation, with four of five schools reporting the purpose of technology as “instant access anywhere at any time” (Dexter, 2011, p. 170) and only one relating technology to instructional goals. This particular school had a director of information systems and a director of technology integration who worked closely with the building administration on all aspects of technology implementation planning and execution, allowing for expertise in every necessary area of technology implementation from infrastructure to devices to integration to culture. This also allowed for professional development in all facets of technology implementation from in-house presenters, providing more learning opportunities on site. The success of the school with the strong technology team led to the conclusion that “technology leadership should be considered a school characteristic, one shared by a team of people whose results are school resources in the
area of support” (Dexter, 2011, p. 175) and that without strong instructional focus and a vision modeled by leadership as a team, technology implementation will be reduced to struggles with access and technical support.

**Culture and Change**

As the definition of leadership becomes clearer and the presence of a vision becomes stronger, the literature shifts to understanding the change process and creating the school culture that is supportive of change. Technology implementation is not about the number of devices or innovations, but rather on how strategies for effective learning interconnect, identifying strong leadership as the agent of change transforming the culture of the organization. If the countless attempts at educational reform have taught us anything, it is that “policy change without cultural change is an exercise in futility and frustration” (Reeves, 2009, p. 37).

Berrett, Murphy, and Sullivan (2012) studied the relationship between leadership perceptions of responsibility, school culture, distributive leadership, and the success of integration of technology into schools. As they continuously emphasized throughout the study, “introducing a new technology into a school community can create tension within the existing culture of the school as the educational practices are reformed” (p. 202). Their research was based on the ideology that as availability of technological tools and the importance of technology as a way to impact student achievement increases, so does the demand for administrators to support teachers through integration of technology as a way to improve teaching and learning. The study intended to address the administrators’ perceived role in technology integration and how the school culture relates to the process by studying the Grove Unified School District and the Enhancing Education Through Technology (EETT) grant received. The research of this article is conceptually grounded in a coding rubric developed by the researchers that was based
on common ideas throughout technology literature that organized the data into six specific themes: identity, relationships, tensions, transformation, needs, and motivation. Each interview and observation was documented and read through with the intent of finding the themes outlined in the rubric. The data analysis led to two major findings:

1. There was no sense of community among the principals in the district surrounding the EETT project. They did not share their successes or struggles with each other because they did not see value in that and had difficulties communicating in general as it was not a part of the culture of the district.

2. All administrators were pleased with the increased student engagement in writing. Each principal expressed that this increase justified any problem-solving necessary to keep technology in their schools. This would involve dissecting the role of the mentors in each building and ensuring that the right people were in those positions in order to support the collaborative effort necessary to implement the technology effectively, both structurally and instructionally.

The pronouncement of this study was that the culture of the school, led by the building and district leaders, was a major component, if not the main determinant, of the success of technology integration. Leadership at building and district level must support and promote learning, regardless of the tool or avenue, in order to impact teaching and learning. This includes keeping open lines of communication, discontinuing the practice of isolation, and creating a comprehensive hiring process in order to ensure that the supporting roles in place have the skills necessary to sustain the implementation and change (Berrett et al., 2012).

To continue to quantify the relationship between leadership, culture, and effective technology implementation, Fisher and Waller (2013), used data collected from 328 principals...
and 303,950 teachers to determine correlations between leadership proficiencies and technology implementation. The authors cited studies such as those done more than a decade ago by Bozeman & Spuck (1991) and Ritchie (1996) to bring to light the continuing underrepresentation of research on technology leadership and the need to strengthen administrator preparation programs to address the skills and school cultures necessary for successful technology implementation with hopes of providing direction in the area of increasing administrative capacity. Of the six survey questions, the area relating to principal’s abilities to ensure effective technology integration into teaching and learning was ranked the lowest in strength even though the importance of that area was ranked highest by both administrators and teachers. There were positive correlations between principal technology leadership and teachers’ technology-related teaching practices, with the strongest correlation between proficiencies related to leadership and vision and teachers’ teaching and learning scores (Fisher & Waller, 2013). This correlation was further supported by O’Dwyer, Russell, & Bebell (2004) as they stated that:

Ultimately the responsibility to increase teachers’ use and integration of technology does not reside solely on the shoulders of teachers. Instead, through strategic decisions regarding the focus and range of professional development and . . . the outward expression of the importance of technology use by principals, superintendents, and other school leaders, these analyses suggest that technology use by teachers will increase. (p. 24)

*Technology Leadership at the Global Level*

It is clear that the technology leadership gap is not only a problem in schools in North America, but rather everywhere in the world. Delving more into the challenges school principals face with technology implementation, Sincar (2013) used the NETS-A framework to analyze the
educational usage of technology in Turkey. Referring to both the Flanagan and Jacobsen and Anderson and Dexter studies, Sincar (2013) defined the role of leadership in technology as leader of learning, leader of student entitlement, leader of capacity building, leader of community, and leader of resource management. With that definition driving the study, the desired result was to gather data from participants to aid with identifying the “internal and external factors that potentially influence the effectiveness of educational technology leadership” (Sincar, 2013, p. 1274). The participants in this study were six principals from a large city in southeast Turkey. The group was intended to be larger, but throughout the process, participants refused or did not complete steps which led to their disqualification. It began with 15 principals with an equal representation of socioeconomic level (low, medium, and high). After learning about the process for data collection, five declined to participate and one was unavailable for the interview dates. Of the nine remaining, three refused to allow the interview to be audio recorded and did not give in-depth answers/refused to answer certain questions so they were excluded as well. The remaining six completed the entire data collection process.

The data were collected in the form of semi-structured interviews created with the combination of a literature review and the opinions of veteran faculty members. The results were then investigated through peer debriefing, member checks, and interrater reliability processes in order to narrow to five themes represented in the main findings:

1. Bureaucracy - All participants explicitly stated that many of their attempts to integrate technology were either delayed or completely prevented by the bureaucracy. These attempts included updating technology in the school buildings, securing donations, providing training to the staff, and the lengthy evaluation process for general technological demands.
2. Lack of Resources - Schools were not given any budget for technology expenditures nor were there personnel to support the schools in case of problems or when repair was needed.

3. Resistance to Innovation - Teachers resisted attempts by principals in terms of technology integration. Even technologically competent teachers did not make an effort to use the technology for student engagement and achievement.

4. Lack of In-Service Training - Training was not provided and staff was left to search it out on their own in their spare time. Most did not have time outside the school day to allocate to training nor was there a budget to support outside training.

5. Poverty - Two of the six principals had schools in low-income areas and emphasized that “poor families did not have facilities including computer, internet, etc., which prevented students from using technology outside school” (Sincar, 2013, p. 1282). The technology in the school buildings was also inadequate, causing these students to fall even further behind.

Despite being conducted in a different country with “diverse conditions and needs” (Sincar, 2013, p. 1275) and an educational system in which principals face different issues dependent upon their cultural society, the challenges with technology leadership presented in this international study are identical to some of the struggles we face in the United States. Through the process, they were able to identify five specific challenges leaders encounter with technology leadership when working in their educational system. School leaders must be able to work in an environment in which technology is constantly changing and true reform will come from leaders who have a vision of instruction that includes digital literacy. With everyone in different stages of technology integration, one can assume challenges will be defined differently in each
situation, but many of the defined challenges in this study were echoes of ones earlier in the
decade proving once again that we have not progressed towards technology implementation as a
way to enhance teaching and learning and are still stuck solving basic technological issues and
learning about the tools themselves.

The increasing demand for accountability in technology implementation highlights the
need for technology-oriented leadership. The NETP synthesized the most recent available
research on future ready leadership and identified “four key focus areas of effective leadership:
collaborative leadership, personalized student learning, robust infrastructure, and personalized
professional learning” (U.S. Department of Education, 2017, p. 43). School leaders without
these characteristics, a basic knowledge of technology, an understanding of the power it has to
transform learning, and the ability to articulate a vision for how technology can support learning
goals will ultimately become yet another barrier to successful technology integration. “There is
no school for leaders that will teach them exactly how to make their district into one that will
leave no child behind” (Wagner et al., 2006, p. 11) but through my research, I hope to be able to
provide recommendations for what can be done to further strengthen leadership to support
technology implementation and ensure sustainability.

Conclusion

Technology impacts almost every aspect of daily life and will forever be changing the
way students learn. “The 21st century challenge in education will be to assess curricular and
technology credibility in a systematic and sustained way” (Whitehead et al., 2013, p. 27). A
platform or piece of software that was crucial to innovation in one year, may be obsolete the
next. Knowledge that teachers and leaders possessed in the past, is now readily available to
students online, forcing the shift from the familiar into the unknown. With professional
development and strong leadership that recognize the importance and complexity of adult learning, technology implementation can be impactful as long as “the central part of the vision remain(s): teaching and learning first, technology in their service” (Ormiston et al., 2018, p. 45).
SECTION THREE: METHODOLOGY

Research Design Overview

The field of educational technology lends itself to both quantitative and qualitative research as both methods have the potential to create new, actionable insights for improving technology usage for student learning (Patton, 2008). There is no one way to best conduct this study and no one-size-fits-all set of recommendations as the supports put in place by Modern Mind CUSD and the resources available are situational and greatly differ from one district to the next. The most efficient way will be “the way that will be meaningful, credible, and useful to the specific intended users involved” (Patton, 2008, p. 200). With that in mind and of primary importance to the choice of methods is determining the purpose or intended use of the evaluation which requires identifying the intended users - the people who have a stake or vested interest in the evaluation findings (Patton, 2008). The values and interests of these intended users will frame the evaluation, so their involvement in the process is crucial to the success of the research.

Though the recommendations from this study will indirectly affect students and educators, the intended users include the Modern Mind CUSD School Board, Superintendent, Director for Curriculum and Instruction, Director for Instructional Technology, and building level administration as they are the persons responsible for choices made regarding technology implementation, professional development, and leadership responsibilities. After much discussion was had with the intended users, the decision was made to ensure a comprehensive evaluation by balancing the limitations of one data type with the strengths of another which would involve using both qualitative and quantitative methods. This choice is further supported by Michael Bamberger’s (2012) research on mixed methods in which he states:
The purpose is to strengthen the reliability of data, validity of the findings and recommendations, and to broaden and deepen our understanding of the processes through which program outcomes and impacts are achieved, and how these are affected by the context within which the program is implemented. (p. 1)

The data collected centered around two areas of research in relation to technology implementation: professional development and leadership. For the professional development research, a Google Form survey was used at the conclusion of the professional development offerings for the 2018-2019 school year (Appendix A). The purpose of this survey was to collect educator perceptions on the effectiveness of the multiple formats of professional development offered throughout the year and their perceived impact on technology implementation while gathering ideas or suggestions for additional formats. Also included were questions regarding leadership support in order to tie into the research area surrounding leadership.

Two main frameworks were used in the creation of the survey questions that centered on the design of the professional development formats while two others were used for the questions regarding perceived effectiveness for implementation. The design of the professional development was modeled after a core set of features for professional development defined by Desimone (2009), Garet et al., (2010), and Penuel, Gallagher, & Moorthy (2011) which include:

1. Content focused: Activities are focused on subject matter content and how students learn said content.

2. Active learning: The opposite of passive, lecture style delivery, this may include learning activities such as discussion, observation, feedback, and analyzation of student work.

3. Coherence: Goals are consistent with the district curriculum.

4. Sustained duration: Professional development is ongoing throughout the school year.
5. Collective participation: Groups of teachers from the same grade, building, or content area participate together to build an interactive learning community.

In addition to the core features defined above, the questions also reflected the Standards for Professional Learning framework created by LearningForward (2011): learning communities, leadership, resources, data, learning designs, implementation, and outcomes. For perceived effectiveness in terms of implementation, teachers were asked to rate their ability to design and implement technology infused practices structured with the SAMR Model and the ISTE Standards for Educators.

In conjunction with the professional development survey, staff interviews (Appendix B) were used to gather additional data which aided in compiling quantitative and qualitative data regarding the perceived role of technology in education and the level of success of implementation in Modern Mind CUSD. The semi-structured interviews not only generated rich data, but they allowed for face-to-face contact and immediate follow up on vague answers, permitting the researcher to have flexibility to conduct the interview according to the needs of the individual interviewee (Patton, 2008).

To measure the area of leadership, data from the 2018 and 2019 BrightBytes surveys and public data from the 2017 and 2019 5Essentials survey were used in addition to administrative interviews (Appendix C). The purpose of this was to gather administrative perceptions of their influence as the District Technology Initiative moves forward, what they do as leaders to support technology implementation, and what role culture plays in educational reform. Questions were structured using the newly revamped 2018 ISTE Standards for Education Leaders (formerly known as the ISTE Standards for Administrators).
Concurrent with the survey and interviews, classroom observations (Appendix D) took place to cross-reference perceptions with practice in both the areas of professional development and leadership. Using the observation data collected, correlation analyses were run to determine the relationships between total score, years of experience, and participation in professional development formats in order to examine how one or more of these variables change in relation to the others. Along with the correlations, cluster analyses were utilized to identify groups with participants similar to each other based upon the variable data collected. The purpose of these analyses was to use the quantitative statistical data and examine the relationship between technology and different aspects of professional development and leadership characteristics, further investigating their influence on technology implementation and aiding in prioritizing recommendations to provide targeted supports (Patton, 2008).

Participants

Of the 215 certified educators in Modern Mind CUSD during the 2018-2019 school year, 16 taught at the ECC, 56 at Innovate Elementary, 47 at Integrate Elementary, 33 at Interact Middle, and 63 at Modern Mind High School. Sixty-three staff members participated in some element of the overall study. Attention was paid to ensuring a representative sample for each source of data collection which included accounting for the number of staff in each of the five buildings as well as identifying gender, race, and the number of years in the district. Participation can be disaggregated further into elements in which the educators engaged. The professional development survey, utilized for trend data, elicited 54 total responses with completion from an average of 20% of the staff from each of the five buildings. Staff interviews involved 22 educators, which represents approximately 10% of the educators in the district. Of those 22 participants, there was a 20% representation from each of the five buildings based on
total staff in each building (two from the ECC, six from Innovate, five from Integrate, three from Interact, and six from Modern Mind HS). The educators participated on a completely voluntary basis and were recruited through emails that provided the purpose of the research, time commitment required, protection of identity, and access to research results. Parallel to the surveys and interviews, 22 observations occurred involving participants using the same 20% representation of overall staff from each of the five buildings. These participants also completed the professional development survey following their observations in order to provide the data needed for correlation and cluster analyses.

Not including myself, there were 19 administrators in the district for the 2018-2019 school year, a number encompassing both district office and building level administration. Six administrators, one from each of the five buildings and one from district office, participated in the research study which consisted of an in-person interview. Again, participation was voluntary and recruitment occurred via an email similar to the one sent to educators. Other data were collected in the form of the 2018 and 2019 BrightBytes surveys and the publically available 2017 and 2019 5Essentials surveys. Educators and administrators were given time during the school day to complete all surveys allowing for high participation rates across all schools in the district.

Data Gathering Techniques

*Professional Development - Surveys*

Educator perceptions of the types of professional development offered and their relationship to technology implementation were gathered with an in-house survey using a Google Form. The reasoning behind this format choice was twofold: first, it allowed for anonymity and collection of informed consent through a simple checkbox question with an *I agree* answer; and second, the results immediately populated a Google Sheet from which detailed graphic
organizers could be derived. The data collected were considered a mixed methods source as the responses to questions involved Likert scales or multiple choice as well as open-ended questions in which participants were asked to identify needs they had in terms of technology integration professional development, suggest additional formats they would like to see in the district, and infer future steps for leadership.

For all Likert scale questions, a four-point scale was used to eliminate neutral answers as they are not important to the study. A five- or seven-point scale does not confer any absolute recommendation favoring one approach over the other which would have made proposing recommendations for this study exceedingly difficult. Four points are very concise whereas five or seven points may cloud clarity as each point added becomes one more point to be interpreted increasing chances for inconsistency (Krosnick & Presser, 2009). The survey included four sections of inquiry in addition to the first question regarding informed consent: basic information, professional development format and perceived increase in technical pedagogical and content knowledge (TPACK), professional development and the use of the SAMR Model and ISTE Standards, and leadership.

Balanced with the in-house survey were the results from the 2018 and 2019 BrightBytes surveys. BrightBytes is a company that provides data collection for technology integration by using research-based data analysis to better understand the impact that technology is having on student learning in schools (BrightBytes, 2019). Modern Mind CUSD uses the Teaching and Learning module which focuses on the Council for Advancement and Support of Education (CASE) framework of classroom, access, skills, and environment to make data-driven decisions (CASE, 2019). Surveys were taken by the entire district during the spring institute days. Twenty-five minutes were set aside to ensure the highest amount of participation, with district
office administration and technology staff available to assist with any issues. For the purpose of professional development, the focus was on the area of the survey that dealt with the classroom and use of the 4C’s (communication, collaboration, critical thinking, and creativity) developed by the Partnership for 21st Century Skills (P21) (Battelle for Kids, 2012).

**Professional Development - Interviews**

In addition to the data collected from surveys, quantitative and qualitative information was gathered through staff interviews. The staff interviews were semi-structured in nature, to provide a framework for focused, conversational communication and a balance between questions prepared ahead of time and freely expressed views on the part of the interviewee. Non-inclusive of the basic identifiers, there were ten questions prepared ahead of time for the interviews with the interviews lasting an average of 45 minutes each. Divided into four sections, the interviews began with basic identifying information such as position held and years in the district, progressed to self-perception of technological ability and the role of technology in education, and ended with a section regarding philosophical and evaluative responses to technology implementation.

**Leadership - Public Access Data, External Survey Data, and Interviews**

Leadership practices are unparalleled predictors of success during any educational reform or initiative and that is no different when it comes to a technology rollout. The use of technology in education has brought about a new challenge for educational leaders, “adequately supporting teachers who are implementing technology to enhance and improve the teaching and learning process” (Berrett et al., 2012, p. 201) all while knowing that an educational reform of this size can create tension within the existing culture of the school in which they lead. Triangulation of
data was used again, this time comprised of quantitative data from the BrightBytes 2018 and 2019 surveys, the 5Essentials surveys from 2017 and 2019, and qualitative and quantitative data collected from interviews with administrators.

The area from the BrightBytes survey in which focus was placed in terms of leadership was the environment indicator with particular attention paid to the supervisory report. This data was cross-referenced with data collected from the 5Essentials surveys in the area of effective leaders, with the spotlight on teacher-principal trust and instructional leadership. To balance the quantitative information were the administrative interviews. Semi-structured in nature and similar to the staff interviews, there were ten questions, not including the identifiers, that were prepared ahead of time with interviews lasting an average of 45 minutes each. The questions were divided into four sections, beginning with basic information, advancing to self-perceptions and leadership, and finishing with questions regarding school culture.

Observations

As a further support to the public access data, surveys, and interviews, quantifiable observational data was collected. The observations occurred throughout all the schools in the district and consisted of a ten to twenty-minute observation of technology implementation in instruction using a highly structured checklist of indicators modeled after the SAMR Model, the ISTE Standards for Students, and the ISTE Standards for Educators with a rating scale of zero to three. There was also space to document notes or missed opportunities for higher scoring in order to provide the staff members with constructive feedback. Data were collected through a Google Form for the ease of analyzing the results to create graphic organizers. The importance of the observation as part of the analysis of data is that it was independent of participant perceptions and instead offered contextual information that aided in framing the
recommendations. The total scores collected from these observations were also used in the correlation and cluster analyses.

**Ethical Considerations**

Throughout my research and data collection, I paid particular attention to ethical considerations and protocols to ensure that no harm was done to the participants, with harm being defined as “injury or damage to individuals in research through the misuse of research subjects” (James, Milenkiewicz, & Bucknam, 2008, p. 26). My responsibility to the participants involved informing them of the purpose of the study prior to collecting any data while making them aware of their right to withdraw from the study at any time. Attention was paid to respecting autonomy through ensuring that participation was voluntary and offering reciprocity by making all data results and the final report accessible to participants. A strict focus was placed on protecting privacy by changing the name of the district, schools, and city as well as keeping all reported data anonymous by removing names and collecting informed consent through a box to check on surveys, and a form to sign for interviews and observations. Due to the relatively small size of Modern Mind CUSD and to prevent any internal confidentiality threats such as accidental anonymity breaches through role characteristics or inadvertent wording, results were reported in the aggregate with all possible identification information such as name, title, and building removed. In addition to the district aggregate data, staff and administrative data was also inspected as two separate groups to examine differences in view.

My responsibility to the users of this study was to ensure that the results were reliable, credible, and valid which involved applying different data collection methods and sources in order to verify uniformity in the findings. Public access data was cross-referenced with qualitative data collected from surveys, interviews, and observations. Open-ended queries were
balanced with Likert scale questions. The counterweighing of data sources also served as a method for validity-checking, comparing data from various settings to reduce the chances of false conclusions (James et al., 2008). The intent was to establish recommendations that were transferrable to other school districts implementing similar reform in teaching and learning through technology implementation.

Data Analysis Techniques

In addition to descriptive statistics and open-coding, this program evaluation employed correlation and cluster analyses for quantitative data to determine the relationship between variables. For the correlation, the dependent variable was technology implementation and the independent variables were professional development and leadership. Cluster analysis focused on data points collected from the observations. The goal in this mixed model design was to find general trends in the population but also to provide greater detail to further support the findings.

Professional Development

The in-house professional development survey collected both quantitative and qualitative data as the format of the questions were Likert scale and open-ended. The survey was administered to 54 educators across Modern Mind CUSD, with a grand total of 63 participants when including the 22 educators who also participated in the observation protocol. Data from the Likert scale questions were collected to report levels of perceived effectiveness of types of current professional development, quality and quantity of professional development offered, familiarity and comfortability with the SAMR Model and the ISTE Standards for Students and Educators, and perceived support of leadership using a 1-4 rating scale rated from 1 (negative scoring) to 4 (positive scoring) with the intentional omitting of a neutral position. From the
descriptive statistics, tables were derived to assess the influence of the varying types of professional development offered in the district. Mean results of a 3.1 or higher indicated a high level of effectiveness; results from 2.1-3.0 indicated average effectiveness; and results below 2.0 were deemed as low to not effective. The open-ended questions were asked to produce supporting evidence for the results of the Likert scale questions and to allow the participants to expand on their responses. The Likert scale questions from the BrightBytes surveys were already coded to organize data into categories predetermined by the company. The combination of the various data sources provided “a sound basis on which to make decisions and build educational programs” (James et al., 2008, p. 100) which ultimately led to my recommendations in this area.

The staff interviews involved a mix of quantitative and qualitative information as it is important to recognize that in education and learning, “people experience the same set of circumstances differently” (James et al., 2008, p. 65). Questions were piloted prior to the commencement of the interviews and interviews were recorded to capture the exact wording of the participants. The first section of questions regarding collecting basic information was converted into tables to visualize the representation of the participants. The remaining data regarding self-perceptions, the role of technology in education, and technology implementation were coded using open-coding as themes emerged, with quotations used to balance the more scientific reporting (James et al., 2008). Data from the three sources (the in-house professional development survey, BrightBytes, and the interviews) were then triangulated and compared to the observational data collected to create recommendations in the area of professional development. The triangulations also identified points of convergence and divergence. Interview results were compared to both sets of survey data to identify trends. This was taken
one step further when the observation results were then compared with the surveys and interviews to confirm teacher perceptions and inform the discussion of the results (Patton, 2008).

**Leadership**

Similar to the professional development data, the leadership data contained both quantitative data collected from the 2018 and 2019 BrightBytes surveys and the 2017 and 2019 5Essentials as well as quantitative and qualitative data from administrative interviews. Focus for the BrightBytes surveys was placed on the area of environment, in particular, the supervisory report, while focus from the 5Essentials surveys was on the area of effective leaders, with the spotlight on teacher-principal trust and instructional leadership. Both surveys used Likert scale questions which were already coded to organize data into categories predetermined by the survey administrators. Administrative interviews, similar to the staff interviews, incorporated both quantitative and qualitative information, using piloting techniques prior to interviews with recordings throughout. The first section of questions regarding collecting basic information were converted into tables to visualize the representation of the participants. The remaining data regarding self-perceptions, leadership, and culture were coded congruent with the staff interviews, employing open-coding. Data from the three sources, the 5 Essentials, BrightBytes, and the interviews, were then triangulated and compared to the observational data collected to create recommendations in the area of leadership.

**Observations**

Observations served as the final form of quantitative information with a Likert scale void of the neutral position (similar to the professional development survey). The intent was to maintain a balance with the perception data collected in the areas of professional development
and leadership. Indicators were reviewed by the director for curriculum and instruction and the superintendent to ensure alignment with the study goal and cross-checked for implicit bias in the wording of the indicators. The checklist indicators were designed using the ISTE Standards framework and the SAMR Model with the most positive result coded with a three and the absence of the indicator coded with a zero. Descriptive statistics were derived with means calculated for each standard as well as an overall mean. Results of a 2.5 or higher indicated a high level of implementation; results from 2-2.4 indicated average implementation; and results below 1.9 were deemed as low implementation. Results from the data analysis in the areas of professional development and leadership resulted in recommendations for each of the areas as well as overall recommendations in the area of technology implementation as a way to impact teaching and learning.

Conclusion

As with any study, there are limitations:

1. All survey data used were from the 2017-2019 academic school years as the most current data available at the time of this study. The District Technology Initiative began in the 2016-2017 school year and will continue to progress as part of the long-range plan of the district but no data were collected in the first year of implementation and future data cannot be predicted. This study is a snapshot of the relationship between professional development, leadership, and technology implementation in the 2017-2019 academic school years knowing that it could change in subsequent years.

2. The BrightBytes survey responses, as well as the 5Essentials professional development survey, and the staff and administrative interviews all relied upon self-reporting on
knowledge, skills, and strengths leaving room for conservative or exaggerated perceived ability versus actual ability.

3. All observations were made solely by this researcher who has a vested interest in the outcome of this study. All precautions were taken to remove bias and to view negative results as a way to strengthen allegiance to the initiative as well as to the district and its students.

4. Access to devices varied per building during this study. Modern Mind High School was 1:1 with devices being taken home at the start of the 2018-2019 school year, Interact Middle was 1:1 with devices being taken home beginning in January 2019, the elementary schools were 2:1 saturation within the buildings, and the ECC was 3:1 saturation.

5. The number of new administrators changed significantly from the 2017-2018 school year to the 2018-2019 school year. The number of administrators increased from 15 to 19 (not including myself), with six brand new hires and three title changes.

In addition to the limitations, the researcher made the following assumptions:

1. It is assumed that all participants responded honestly to self-perception ratings in the surveys and interviews.

2. The data were accepted as valid for use by academic researchers.

In spite of the limitations and assumptions, this study is intended to further explore the relationship between professional development, leadership, and technology implementation through triangulation of multiple sources of collected data in the areas of professional development and leadership, with the goal of increasing both the capacity of educators and their leaders. "Today's effective teachers aren't called upon to be dispensers of knowledge but Jedi
masters at facilitating learning” (Gardner & Powell, 2013, p. 53). Despite the deluge of technology available for educational purposes, the paradigm for instruction has not changed. The integration of technology still lags behind the access to devices. Through this program evaluation, I hope to provide recommendations in policy and practice to eliminate the suspension to truly impact teaching and learning.
SECTION FOUR: RESULTS

Use of digital tools and technologies to support learning continues to be sporadic despite the heavy investment made by many schools and districts. Even as more sophisticated tools become commonplace in classrooms, little is being done to transform learning on a daily basis (Ertmer, 2005; Ormiston et al., 2018). The primary goal of this program evaluation was to determine the relationship between technology implementation, professional development, and leadership in hopes of unleashing the power of technology in education. Along with this principal purpose, this researcher also examined the effects of different types and structures of professional development on teaching and learning to support teachers in seamless integration of technology into the educational process. The influence of leadership and the adoption of a learner-centered pedagogy as part of the school culture was another secondary focus. As Patton (2008) emphasized, “there is no best way to conduct an evaluation” (p. 199) but my intent throughout this evaluation was to present the information in a “way that will be meaningful, credible, and useful to the specific intended users involved” (p. 200) which in this case is all the stakeholders of Modern Mind CUSD.

To explore these relationships, both quantitative and qualitative data were collected. First, an electronic professional development survey was released to all certified staff members currently employed by Modern Mind CUSD. Fifty-four of the 215 teachers in the district (25%) responded to the survey which, upon further analysis, represented at least 20% of the total number of teachers from each of the five buildings. This was followed by semi-structured staff interviews to gather qualitative information regarding the role of technology in education and necessary supports for technology implementation. Twenty-two certified educators participated in the interview, maintaining a 20% representation of the total staff from each building.
Observations were the final step of data collection with 22 staff members volunteering to be observed, followed by the completion of the professional development survey. The observations allowed for the removal of “the self-report bias, allowing a clear look into what is actually occurring” (Desimone, 2009, p. 188). Along with the data collected from certified staff members were qualitative data from administrative interviews. These interviews, also semi-structured in nature, addressed the role of leadership in technology implementation and school culture. Six of nineteen administrators (32%) participated, with one representative from each building as well as district office. All data collected by this researcher were triangulated with two external data collection sources - the BrightBytes and 5Essentials surveys from school years 2016-2017, 2017-2018 and 2018-2019.

This section will address the findings and interpretations resulting from a thorough analysis of the collected data. To determine the outcome of the primary research question and to organize the data for transformational change, the findings are structured using Tony Wagner’s (2006) Arenas of Change (or 4C’s) - context, culture, conditions, and competencies. This framework continues to keep the goals of increasing teacher and leadership capacity at the center of this study and will further define the work that needs to be completed as a change agent. The findings relate to the As-Is state of Modern Mind CUSD (Appendix E) as evidenced by the data collected (Wagner et al., 2006).

Findings

With a focus on preparing students for 21st century society and ensuring that students develop the “skill demands” required to prosper in an information age and “to succeed as providers, learners, and citizens” (Wagner et al., 2006, p. 103), Wagner (2008) proffered his own “seven survival skills” for the 21st century: critical thinking and problem solving; collaboration
across networks and leading by influence; agility and adaptability; initiative and entrepreneurship; effective oral and written communication; accessing and analyzing information; and curiosity and imagination. With this set of skills, it is easy to see the role of technology as a value-added concept to teaching and learning, acting as another valuable learning tool for individualized student growth when it is integrated thoughtfully by teachers with strong support from school administrators. Technology implementation and its role are in the spotlight in many districts “because of the nature of the skills needed in today’s knowledge economy” (Wagner et al., 2006, p. 3). With this paradigm shift which Wagner (2006) refers to as an “obsolete system” (p. 9), comes the need to examine relationships between supports provided, in this case professional development and leadership, and technology implementation in order to ensure success.

Context

The context of Modern Mind CUSD as defined by Wagner would be the larger organizational systems, the reality of the community, and its history that create the current state of Modern Mind CUSD (Wagner et al., 2006). Modern Mind CUSD is a PreK-12 district comprised of five schools, 19 administrators, and 215 staff members. The Illinois Report Card (2017-2018) revealed that at the time of this study, 70% of the staff have a Master’s degree or higher, 71% have fewer than ten absences, and 100% have a proficient or excellent rating. In the last five years, the retention rate for teachers has remained at 90% which is supported by the data collected by this researcher. The longevity of the staff is in stark contrast with the high turnover rate for administrators, especially in recent years. As a staff member in the district for nine years and an administrator for four, this divergence in longevity contributes to making stability a challenge facing leadership and staff at all levels. The historical recount of administrative...
turnover has led to a lack of grounded relationships, causing a trust gap. Similar to an achievement gap, it takes time and strategy to eradicate as it is a complex force that is essential and invisible. Summarized best during a staff interview, “I continue to throw myself 100% into all of the changes in this district, but it gets exhausting as the leaders of the change keep leaving, taking with them my trust that this hard work will ever get done” (Personal Communication, 2018).

Prior to the promotion of the high school assistant principal to assistant superintendent in 2016, the vision of the district was vague and almost non-existent. In the 20 years prior, there were only three significant initiatives: a math lab for the elementary schools, a new science wing at the high school, and a reading initiative involving the book *Three Cups of Tea* that lacked purpose and direction. Also, in those 20 years, there were five superintendents, with three in the last decade. This contributed to a belief in the community and among staff that any project or initiative that would start would not be followed-through or properly funded to be a part of a larger picture. To better serve the students of Modern Mind CUSD and address the needs of the community, areas of growth were identified and superintendent goals in the categories of technology services and tools, curriculum articulation and opportunities, student support services, maintenance and improvement of facilities, district operations, and community outreach were updated.

With these areas of growth and goals, and with the assistant superintendent (who was promoted to superintendent in the 2017-2018 school year) at the helm came a strong, consistent vision for the district. A large component of that vision included the District Technology Initiative. Started in the 2016-2017 school year, 81% of the teachers and 50% of administrators participating in this study had been involved since its inception. In tandem with this initiative,
came a plethora of job-embedded, continuous forms of professional development provided for all certified staff members during the school day in the hopes of maintaining the skills necessary to sustain the initiative as technology continues to transform. This was done in hopes of moving the needle for learning, avoiding the common pitfall of continuing to teach in the same manner as before hoping that technology alone will magically make it more meaningful and effective.

Relationship between Technology Implementation and Professional Development

Technology implementation does not happen by placing computers in every classroom or even in every child’s hands. The goal is not the amount of technology or even the hours of usage. The goal is transforming the practice of teachers to better serve the needs of 21st century students. Professional development is the fundamental nexus between devices and impactful integration. Increasing the sheer amount and types of technology without impactful professional development is akin to winning a car for free, but not being given the keys.

Over 63 staff members (29%) participated in some portion of the professional development data collection (survey, interview, or observation), with 93% participating in both the 5Essentials and BrightBytes surveys for the 2016-2017, 2017-2018, and 2018-2019 school years. The initial step in each method of data collection involved collection of basic information from the participants. Table 1 displays the demographics of the participants. The highest percentage of participants were white females, which is also the majority representation of the staff as a whole (84.5% white and 75.8% female) as reported by the Illinois Report Card (2018).
Table 1

Participant Demographics

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preferred Pronoun</td>
<td></td>
<td></td>
</tr>
<tr>
<td>He</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>She</td>
<td>56</td>
<td>89</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>59</td>
<td>94</td>
</tr>
<tr>
<td>Minority</td>
<td>4</td>
<td>6</td>
</tr>
</tbody>
</table>

Note: Sample size (N) = 63

Table 2 summarizes the data about the participants’ experience in education and their involvement with the District Technology Initiative. The average years worked in the field of education was 16.2 with the average number of years worked in Modern Mind CUSD as 13.2. The percentage of staff who have participated in the District Technology Initiative since its inception in 2016 was 81% which is similar to the percentage from the district as a whole (85%) as reported by the BrightBytes survey in 2018.
Table 2

Experience in Education

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Role</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Core content area/grade level teacher</td>
<td>36</td>
<td>57</td>
</tr>
<tr>
<td>Special education teacher</td>
<td>9</td>
<td>14</td>
</tr>
<tr>
<td>EL/Bilingual teacher</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Specials area teacher</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td>Specialist</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total Years in Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-4 years</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5-9 years</td>
<td>12</td>
<td>19</td>
</tr>
<tr>
<td>10-14 years</td>
<td>17</td>
<td>27</td>
</tr>
<tr>
<td>15-19 years</td>
<td>11</td>
<td>17</td>
</tr>
<tr>
<td>20-24 years</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td>25-29 years</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>30-35 years</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td><strong>Total Years in District</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-4 years</td>
<td>11</td>
<td>17</td>
</tr>
<tr>
<td>5-9 years</td>
<td>11</td>
<td>17</td>
</tr>
<tr>
<td>10-14 years</td>
<td>17</td>
<td>27</td>
</tr>
<tr>
<td>15-19 years</td>
<td>13</td>
<td>21</td>
</tr>
<tr>
<td>20-24 years</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>25-29 years</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>30-35 years</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total Years in District Technology Initiative</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 years</td>
<td>52</td>
<td>83</td>
</tr>
<tr>
<td>2 years</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td>1 year</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: Sample size (N) = 63

Conditions

Knowing the staff and the school or district context is imperative when implementing large-scale transformation and in order to create the right conditions or the “external architecture surrounding student learning, the tangible arrangements of time, space, and resources” (Wagner
et al., 2006, p. 101) is critical for each initiative to be successful and sustainable. It is crucial that the district provides the supports necessary to continue to alter pedagogy, preparing students to be active, creative, knowledgeable, and ethical participants in our global society (U.S. Department of Education, 2017). "The myriad of computer-based learning applications developed for K-12 education can help release teachers from the primary burden of responsibility for knowledge transfer", facilitating the shift from the sage-on-the-stage to the co-learner (Poole, Sky-McIlvain, Evans, Jackson, & Singer, 2009, p. 315).

The data for this study were collected in the 2018-2019 school year. At that time, the high school sailed into 1:1 take-home at the start of the school year in August 2018, with the middle school transferring six months later in January 2019. The elementary schools remained saturated 1:1 in grades five and six (devices were kept in the school building) with grades kindergarten through fourth at 2:1. The kindergarten through fourth grade teachers continued to push for additional devices in order to also be saturated 1:1, a possibility that became an outcome in the 2019-2020 school year for grades three and four and is in the 2020-2021 plan for the remaining grade levels. At the time these data were accumulated, there were still struggles with access to devices in the lower elementary school grade levels which resulted in a significant number of teachers citing access to devices as the number one factor that prevented them from integrating more technology into their lessons. Access continues to fall further down the list as the school years pass and funding is used to purchase more devices.

Another important condition that affected this study was the forms and amounts of professional development offered to staff, including the provision of substitutes for half- or full-day sessions. Table 3 shows the formats of professional development offered in the district...
during the 2018-2019 school year and the participation rates. These results were derived from the responses of the 54 staff members who completed the professional development survey.

Table 3

**Professional Development Formats**

<table>
<thead>
<tr>
<th>Format</th>
<th>Frequency</th>
<th>Participation Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-6 hour professional development sessions during the school day</td>
<td>54</td>
<td>100</td>
</tr>
<tr>
<td>Help desk ticket</td>
<td>47</td>
<td>87</td>
</tr>
<tr>
<td>Lesson planning, coaching, or classroom observation</td>
<td>31</td>
<td>57.4</td>
</tr>
<tr>
<td>PD badging system</td>
<td>34</td>
<td>63</td>
</tr>
<tr>
<td>Instructional Technology website resources</td>
<td>44</td>
<td>81.5</td>
</tr>
<tr>
<td>Discussions with work colleagues</td>
<td>53</td>
<td>98.1</td>
</tr>
<tr>
<td>Observation visits to other schools</td>
<td>8</td>
<td>15</td>
</tr>
<tr>
<td>Conferences/Seminars</td>
<td>14</td>
<td>26</td>
</tr>
<tr>
<td>Qualification programs</td>
<td>11</td>
<td>20.4</td>
</tr>
<tr>
<td>Individual research or outside workshops</td>
<td>20</td>
<td>38.9</td>
</tr>
</tbody>
</table>

*Note: Sample size (N) = 54*

From these data, it is evident that the most significant participation in a professional development format was in the three to six-hour professional development sessions that occur during the school day. However, these data could have been predicted as these sessions are not opt-in, rather they are mandated by the district to ensure that every staff and administrator has equal exposure to tools approved by the district as well as specific applications for their content and grade level. The remaining formats are optional and serve to differentiate supports for staff.

After the three to six-hour professional development sessions that occur during the school day, the most popular formats were discussions with work colleagues (98.1%), help desk ticket (87%), and instructional technology website resources (81.5%). To clarify what each of these entails:

- Discussion with work colleagues: Participation in this format occurs during common planning time and is built in to each professional development session that occurs during the school day as requested by staff members. It is typically unstructured and may or
may not have an administrator present to guide the discussion.

- Help desk ticket: The help desk ticket is a Google Form through which all staff can request answers to emailed questions regarding basic tool operations and usage; in-person visits for lesson planning, SAMR Model planning, or coaching; and formal or informal observations of teaching. A live link to the Google Form help desk ticket is in the email signature of the director for instructional technology as well as on both the district and instructional technology websites.

- Instructional technology website resources: This website is maintained by the Director for Instructional Technology and includes copies of all syllabi from professional development sessions starting in the 2016-2017 school year, documentation of the staff badging system and the current scores and totals, photographic documentation of technology in the classrooms, links to outside resources and certification programs (such as the Google Certified Educator program), as well as legal documentation and policies.

The question of how well teachers’ developmental needs are being met by Modern Mind CUSD is considered by means of two indicators: Figure 1 displays perceived effectiveness of each format and Figure 2 reports teachers’ reflections on current professional development opportunities and the direction for the future.
A four-point Likert scale was used to rate the effectiveness of the current professional development formats with one standing for *not effective* and four standing for *very effective*. Staff members who completed the survey were asked about various formats ranging from completely structured such as the professional development sessions during the school day to more informal, self-directed learning. Overall, there were very few formats offered by the district that the staff rated as *not effective* or *slightly effective*. The data also indicated that the staff find value in the in-person group professional development sessions as well as those that provide more individualized support such as the help desk ticket; lesson planning, coaching, or classroom observation; the professional development badging system; and the instructional technology website. In response to the interview question of *how effective is the professional development offered by the district in terms of technology implementation*, one staff member responded, “It really allows me to think of how I am going to apply this to my classroom which means all the types of PD are applicable. And then it causes me to be reflective of my practices and the supports I need which is beneficial to changing my practice because this is new learning.
for myself and the students.” Technology implementation is not about simply convincing teachers to use technology or even showing them how as if that were the case, implementation would be a technical challenge with a prescribed set of steps to completion, thus making this program evaluation unnecessary. Rather, technology implementation is about transforming the practice of teachers and creating that intrinsic desire for them to do so themselves, requiring changes in “priorities, beliefs, habits, and loyalties” (Heifetz, 2009, p. 19) as the above staff member has begun to discover through her reflections.

Figure 2. Reflection of Current Professional Development Formats and Future Opportunities (N=54).

Similar to Figure 1, Figure 2 employs a four-point Likert scale that was used to rate reflections on professional development’s current status with one standing for completely disagree and four standing for completely agree. Again, very few staff members completely or slightly disagreed with the reflection statements. However, there was still a small level of unsatisfied demand for more professional development opportunities (11.1%) which was
supported by statements from the open-ended section of the survey such as “I would like to
observe other teachers who have implemented technology into their lessons” and “I would really
like to continue to have formal technology professional development on a more regular basis. I
find this continuing education to be extremely helpful and directly related to improving
classroom instruction and student engagement and performance.”

**Competencies**

The context and the conditions of Modern Mind CUSD are definitely of utmost
importance. But for any change to truly thrive, the foundation for transformation lies within the
competencies of those with the most impact on the students, namely the teachers. For the
purpose of this program evaluation, competencies are defined as “the repertoire of skills and
knowledge that influences skills and learning” (Wagner et al., 2006, p. 98). Because of the
frontloading of professional development prior to the distribution of devices to students and due
to the continuance of ongoing, job-embedded professional development after distribution,
educators in Modern Mind CUSD have strong fundamental technological skills that are lacking
in many school districts that have had 1:1 implementation for longer. In April 2018, almost two
years into the District Technology Initiative, Modern Mind CUSD participated in the
BrightBytes survey, a national survey that uses the CASE framework to measure the impact of
technology implementation in the areas of the classroom, access, skills, and the environments.
Figure 3 shows the results of the 2018 and 2019 surveys with “All Technology & Learning”
benchmark scores as average national scores against which to compare the district scoring. The
CASE framework was used to create a five-color maturity scale: beginning, emerging, proficient,
advanced, and exemplary. The maturity scale highlights technology readiness and use in each of
the framework’s domains, indicators, and variables (Brightbytes, 2019). The areas in blue are exemplary scores, green are advanced scores, orange are proficient, and pink are emerging.

<table>
<thead>
<tr>
<th>BENCHMARKS</th>
<th>DATE</th>
<th>OVERALL</th>
<th>CLASSROOM</th>
<th>ACCESS</th>
<th>SKILLS</th>
<th>ENVIRONMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Technology &amp; Learning</td>
<td>As of May 16, 2018</td>
<td>1068</td>
<td>985</td>
<td>1185</td>
<td>1132</td>
<td>1086</td>
</tr>
<tr>
<td>Modern Mind CUSD</td>
<td>As of May 16, 2018</td>
<td>1083</td>
<td>1008</td>
<td>1174</td>
<td>1140</td>
<td>1105</td>
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</tbody>
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<table>
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<th>CLASSROOM</th>
<th>ACCESS</th>
<th>SKILLS</th>
<th>ENVIRONMENT</th>
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</thead>
<tbody>
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<td>1191</td>
<td>1117</td>
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<tr>
<td>Modern Mind CUSD</td>
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<td>1051</td>
<td>1211</td>
<td>1140</td>
<td>1100</td>
</tr>
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</table>

**Figure 3.** BrightBytes Survey Results 2018 and 2019 (Brightbytes, 2019)

Modern Mind CUSD’s overall 2018 CASE score of 1083 (proficient) was only 17 points shy of an advanced score (1100) with scores higher than the national averages in the areas of overall score, classroom, skills, and environment. Access, the actual availability of devices at both school and home, lagged slightly behind that of the national average as this survey was taken as devices were just beginning to enter each building. A meaningful increase can be seen in this area in the April 2019 results due to the shift to 1:1 take home devices at the middle and high school buildings and the expansion of saturation at the early childhood and elementary buildings in the 2018-2019 school year. Areas of strength included teacher foundational skills and beliefs with areas of growth targeting teacher usage of the 4C’s (communication, collaboration, critical thinking, and creativity) developed by the P21 (Battelle for Kids, 2012)
and assessment, two areas that are identified as nationwide deficits and where schools need to
grow as a whole in education, not just in Modern Mind CUSD.

Modern Mind CUSD showed an increase in the overall 2019 CASE score with a total of
1104 (advanced) and scores higher than the national averages in all areas. As predicted after the
2018 data, the increased access to devices due to the transition to 1:1 at both the middle and high
schools, and saturation at the elementary and early childhood buildings played a large role in the
improved score. While 2019 brought about strengthened scores in the area of classroom
integration, skills plateaued and there was a five-point decrease in the environment. A closer
examination of other initiatives occurring in the 2018-2019 school year provided some
explanation for these scores. Due to the influx of new curricular programs in the 2018-2019
school year, 85% of which were e-text versions, and because of the targeted professional
development in the area of technology’s role in formative assessment, the scores in the area of
assessment reflected enhanced usage of digital or online assessment and tool use.

However, it is possible that the influx of new curricular programs contributed slightly to
the lower scoring in environment. With new curricular programs came the need to implement
them with complete fidelity to discover the programs’ effectiveness. This dedication to
evaluating new resources detracted from taking risks, creativity, and experimentation, all areas
that factor into the scoring for skill level. In the area of environment, there was a decrease in
overall score by five points. Comprised of the three Ps (policies, procedures, and practices),
support, professional learning, and beliefs, the overall score in this area were still a source of
pride as there was a major increase in perceptions about support. The decreases were likely a
side effect of the infusion of new curricular programs which precipitated the need for
professional development in that area, causing many teachers to feel overwhelmed. As one of the staff interviewed stated:

I enjoyed the graduated flow into the technology initiative. With some of the other initiatives coming down the pipeline, I feel less supported and on my own so I often choose professional development in those areas over technology knowing that I have the help desk ticket and instructional tech department to help. (Personal Communication, 2018)

Another area included in the environment score was related to policies and procedures for technology implementation. The shift to 1:1 take home of devices for the middle and high school did expose flaws in existing policies and procedures. Modern Mind CUSD is one of the few suburban K-12 districts, leaving only large city schools and those far down south as comparison districts. Developed by studying other districts that had already made the 1:1 transition, policies and procedures were modeled after districts that were similar in size, but not in grade level composition which left room for error. All policies and procedures were adjusted for the 2019-2020 school year to reflect necessary changes.

Despite the few decreases in scoring in the BrightBytes 2019 data, Modern Mind CUSD still remains above national averages in all areas related to competencies. Further support of these strong staff competencies was seen in the observational data. Collected and scored by this researcher, these data were gathered to measure skills using the SAMR Model, the ISTE Standards for Students, and the ISTE Standards for Educators as structure for the indicators, focusing on lesson design, empowering students, and collaboration.
Table 4

*Observational Data*

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Beginning</th>
<th>Emerging</th>
<th>Proficient</th>
<th>Advanced</th>
<th>Average Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Selection (ISTE Standard 5 for Educators: Designer)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. The use of technology tools is intentional</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>20</td>
<td>2.91</td>
</tr>
<tr>
<td>2. Technology tools are developmentally appropriate</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>21</td>
<td>2.95</td>
</tr>
<tr>
<td><strong>Use (ISTE Standard 6 for Educators: Facilitator and ISTE Standard 4 for Educators: Collaborator)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Technology offers opportunities for joint engagement, collaboration, information sharing, and conversation with peers and teachers</td>
<td>2</td>
<td>8</td>
<td>5</td>
<td>7</td>
<td>1.77</td>
</tr>
<tr>
<td>4. Technology skills are built through classroom instruction</td>
<td>0</td>
<td>7</td>
<td>5</td>
<td>10</td>
<td>2.14</td>
</tr>
<tr>
<td><strong>Student Centered Learning (ISTE Standard 1 for Students: Empowered Learner)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Students leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals</td>
<td>1</td>
<td>11</td>
<td>6</td>
<td>4</td>
<td>1.59</td>
</tr>
<tr>
<td><strong>SAMR Model</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Technology allows creation of a new task, previously inconceivable (This is an ‘R’ or redefinition task).</td>
<td>0</td>
<td>11</td>
<td>8</td>
<td>3</td>
<td>1.64</td>
</tr>
</tbody>
</table>

*Note: Sample size (N) = 22*

Table 4 exhibits the data collected from the 22 observations throughout Modern Mind CUSD. With an average total score of 15.4 points out of 21, areas of strength included ISTE Standard 5 for Educators addressing selection of tools based upon supporting the goals, learning standards, or curricular area of focus as well as features that meet the developmental needs of the students. There was also potential in the area of building technology skills through classroom instruction. With further documentation of the support needed in the area of classroom instruction as evidenced by the BrightBytes 2018 and 2019 surveys, educators still struggle with actual implementation of the 4C’s (communication, collaboration, critical thinking, and creativity) developed by the P21 (Battelle for Kids, 2012) and technology. Students are not
being provided with opportunities to develop a sense of agency in their learning as teachers still struggle with collaboration, student choice, and climbing up the SAMR ladder to the more involved Modification and Redefinition levels of integration.

To provide a more comprehensive view of the data and to balance participants’ voices with objectivity (Patton, 2008), this researcher also utilized quantitative methods, analyzing the data to find correlations and cluster groupings among data points collected with a focus on the total observation score, years in the field of education, number of different professional development formats attended, perceived skill level, and familiarity with the SAMR Model and ISTE Standards. Table 5 shows the descriptive statistics of each of the variables.

Table 5

<table>
<thead>
<tr>
<th>Descriptive Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
</tr>
<tr>
<td>Observation Score</td>
</tr>
<tr>
<td>Years in the Field of  Education</td>
</tr>
<tr>
<td>Number of Formats of PD</td>
</tr>
</tbody>
</table>

*Note: Sample size (N) = 22*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Level</th>
<th>Count Of</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rank Your Skill Level</td>
<td>Expert</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Advanced</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Intermediate</td>
<td>9</td>
</tr>
</tbody>
</table>

*Note: Sample size (N) = 22*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Not Familiar</th>
<th>Slightly Familiar</th>
<th>Moderately Familiar</th>
<th>Very Familiar</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAMR Model</td>
<td>1</td>
<td>4</td>
<td>13</td>
<td>4</td>
</tr>
<tr>
<td>ISTE Standards</td>
<td>4</td>
<td>10</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

*Note: Sample size (N) = 22*

One result that could have been predicted was that the number of years in the field had a larger standard deviation compared to the observation score and the number of formats of PD as
Modern Mind CUSD has teachers with a variety of experience in education from five years to 32. Years in the field also yielded a very low correlation with the total observation score (12.4%). One could come to this conclusion as technology usage as an educational practice and a vital function of the education system is new and as the role of a teacher is being redefined, and as students “need teachers less and less as imparters of knowledge and more and more as imparters of wisdom”, any and every teacher, regardless of years in the field, is finding themselves having to adopt new practices (Poole et al., 2009, p. 316). Old models of instruction were predicated on information scarcity and now education finds itself in information overload. This requires redefining the fundamental job of a teacher as they are freed from the responsibility of being the sole information provider to the facilitator and co-learner.

The strongest correlation of data points was between the total observation scores and the number of different professional development formats that staff attended with a correlation of $r = 0.94$. Outside of the few required professional development sessions, staff had choice in the types and the frequency of professional development. The data shows that the more professional development formats a participant experienced, the higher their observation score. A high level of anxiety surrounds technology implementation which can “detract from the ability to learn skills, and even create a resistance to learning” (Borthwick & Pierson, 2008, p. 18). This strong correlation between score and number of formats of professional development leads to the idea that the more exposure to technology with choice in the type of exposure, the bigger the impact on transforming teaching. As one of the staff proudly said during her interview, “the fact that I can choose the kind of PD I need makes me feel empowered and gives me a sense of ownership of my learning,” a characteristic identified as a principle of adult learning and talent development (Murphy, 2016).
After observing the strongest and weakest correlations, cluster analyses were run to identify structures and find similar groups of subjects within the data with high intra-class and low inter-class similarity. To begin with, an ANOVA test was completed (Table 6) that showed statistical significance for all of the variables, with the $F$ statistic showing the relative weight given to each variable in order to determine to which cluster the participants were allocated. Though close in value, the larger the $F$ value, the greater the contribution to the separation between clusters (Patton, 2008). According to the data, the participants’ perceived ranking of their skill level had the greatest contribution to separating the clusters, followed by the total observation score, familiarity with the ISTE Standards, the number of professional development formats, and the familiarity with the SAMR Model.

Table 6

ANOVA from Cluster Analysis

<table>
<thead>
<tr>
<th>Cluster</th>
<th>Mean Square</th>
<th>df</th>
<th>Error Mean Square</th>
<th>F</th>
<th>Df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observation Total Score</td>
<td>7.025</td>
<td>2</td>
<td>0.366</td>
<td>19</td>
<td>19.205</td>
<td>0.000</td>
</tr>
<tr>
<td>Formats</td>
<td>6.447</td>
<td>2</td>
<td>0.427</td>
<td>19</td>
<td>15.112</td>
<td>0.000</td>
</tr>
<tr>
<td>Rank</td>
<td>7.626</td>
<td>2</td>
<td>0.302</td>
<td>19</td>
<td>25.212</td>
<td>0.000</td>
</tr>
<tr>
<td>SAMR</td>
<td>5.589</td>
<td>2</td>
<td>0.517</td>
<td>19</td>
<td>10.813</td>
<td>0.001</td>
</tr>
<tr>
<td>ISTE</td>
<td>6.994</td>
<td>2</td>
<td>0.369</td>
<td>19</td>
<td>18.951</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Note: Sample size (N) = 22

Using IBM’s SPSS software and K-Means Cluster Analysis, three clusters were identified, achieving convergence after only two iterations. There were eleven participants in
cluster one, six in cluster two, and five in cluster three. Results of the cluster analysis can be seen in Figure 4.

![Final Cluster Centers Chart](image)

*Figure 4. Final Cluster Centers Chart*

Cluster 1 is comprised of 11 participants with observation scores between 11 and 15 with a mean score of 13.45. On average, participants in this cluster engaged in five professional development formats. When self-rating skill level with the choices of basic, intermediate, advanced, and expert, nine chose intermediate and two chose advanced for an average rating of 2.2. In similar fashion, the mean score for rating familiarity with the SAMR Model was 2.45 and 2.1 for the ISTE Standards. These participants need more support in the areas of the SAMR Model and the ISTE Standards which could include being involved in additional formats of professional development in order to increase actual application to teaching and learning (represented as the observation score). As a summary of these participants, they have a lower knowledge base and moderate application of technology implementation, requiring the most attention and support of the participants as a whole. Using the same rating scale as the BrightBytes survey, these would be the *emerging* staff – those showing potential and desire to improve.
Cluster 2 consists of 6 participants with observation scores between 15 and 18 with a mean score of 16.7. Participants in this cluster engaged in an average of 7.5 professional development formats. Self-rating skill levels resulted in all advanced scoring with all six participants rating familiarity with the SAMR Model as a 3. The only outlier was the 1.6 mean for the ISTE Standards. Three participants ranked their familiarity with the ISTE Standards as a 1 (not familiar), two as a 2 (slightly familiar), and one as a 3 (moderately familiar) resulting in the low mean score. This cluster is on the right path and clearly needs support in the area of the ISTE Standards which may improve with practice, time, and additional targeted support. Cluster 2 could be summarized as having mixed knowledge with a moderate and higher application of technology implementation which would be the proficient group using the BrightBytes survey scale.

In alignment with the BrightBytes scale, cluster 3 consists of the advanced group, five participants with observation scores between 15 and 20 with a mean score of 18. On average, participants in this cluster engaged in an average of 8.2 professional development formats. Three participants self-rated their skill levels as expert and the remaining two chose advanced. Familiarity with both the SAMR Model and the ISTE Standards had a mean score of 3.8. This group, categorized as high knowledge and high application educators, could serve as leaders for their respective buildings aiding in increasing the capacity of the staff in general.

The cluster analysis revealed clear, natural partitions and the calculations yielded very small distances from the classification cluster center with the smallest distance as 0.72, the largest as 2.4, and a mean distance of 1.25. As the observation score increased, so did the other variables, with the familiarity with the ISTE Standards being the only outlier for Cluster 2. Those with higher observation scores participated in more professional development formats,
self-rated themselves as advanced or expert, and had higher familiarity with the SAMR Model and ISTE Standards, with lower observation scores yielding the exact opposite.

Beyond numbers alone, the cluster analysis helped capture and better understand behaviors and contributing factors to a higher observation score. Based on the results, participants in this study were classified into three different cluster groups: emerging, proficient, and advanced, with similar characteristics in number of professional development formats, perceived ranking of skill level, and familiarity with the SAMR model and ISTE Standards. The majority of participants fell into the emerging cluster, with their lower self-ranking, participation in fewer PD formats, and lesser familiarity with SAMR and ISTE resulting in a mean observation score of 13.45. At the other end of the spectrum was the advanced group, consisting of only five participants with a mean observation score of 18, a higher self-ranking, participation in more PD formats, and greater familiarity with SAMR and ISTE. One would draw the conclusion that emerging and proficient staff need targeted support in the SAMR Model and ISTE Standards which could be accomplished through more formats of professional development resulting in a higher self-rating and consequently an increased observation score.

In a more general sense and in order to address raising the observation score to a more desired level for staff members overall, strategies in the areas of continued professional development in the deficit areas of the emerging participants, shared leadership that utilizes advanced cluster participants as facilitators, and growth mindset from all involved will be necessary which will be discussed further in section six of this program evaluation. These strategies will be further supported by a revision of both teacher and administrator evaluation policies to fuse ISTE Standards for Educators and Education Leaders with existing evaluation models as discussed in section seven.
Culture

With a better understanding of the competencies of the staff, Modern Mind CUSD can also work on improving the culture. Modern Mind CUSD’s culture is evolving as educators work hard to redefine educational practices to better align with the demands of the 21st century. Staff members are overwhelmed by the number of changes not only in the district, but in education as a whole, as more is added to their plates with little being removed. To create personalized student learning, we need to provide personalized professional learning in a culture that “engages in collaborative inquiry to build the capacity of both the staff and the leadership” (U.S. Department of Education, 2017, p. 45). This includes being aware of the culture as defined by Wagner et al. (2006) as the “shared values, beliefs, assumptions, expectations, and behaviors related to student learning, teachers and learning, instructional leadership, and the quality of relationships within and beyond the school” (p.102). There are four aspects of the current culture that relate to technology implementation and the staff:

- Access to technology is the norm, but usage as an instructional strategy remains inconsistent.
- Staff has strong beliefs in support of the importance of technology in education.
- Staff has a willingness to learn and realize that rapid technology change in the educational field will require a continuous dedication to learning and a growth mindset.
- Teachers do not have teacher-principal trust nor do they feel their leaders have the capacity for instructional leadership in terms of providing useful feedback and support. Tied to this is the feeling of lack of recognition for their attempts at using technology in their classrooms and the fear of failure tied to evaluation.
Reinforcing elements of context, access to technology is the norm, but usage as an instructional strategy remains inconsistent. Many of the teachers are still resting on the Substitution and Augmentation steps of the SAMR Model ladder, focusing more on apps and the consumption of information rather than on learning in authentic contexts with technology incorporated in a meaningful way (France, 2018). The 2018 BrightBytes survey reports 33% of staff at the very early stages of using the SAMR Model, 26% of staff at the Substitution level and 28% at the Augmentation level, with the 2019 results showing 20% of staff at the very early stages of using the SAMR Model, 23% at the Substitution level and 44% at the Augmentation level. This is further supported by data from the professional development survey in which 33.3% of participants reported not using the SAMR Model as a framework to structure lessons and 35.2% of participants saying they rarely use it. During the 22 observations completed for this study, there was not a single record of Substitution. However, 50% of lessons observed were Augmentation level lessons, with the remaining half divided between 36% Modification level lessons, and 14% Redefinition level lessons. All of this evidence points to the fact that educators are still reimagining the role of technology in education and that there is a need to focus on how, when thoughtfully applied, it can “accelerate, amplify, and expand the impact of powerful principles of learning” to close the digital use divide (U.S. Department of Education, 2017, p. 12).

There is no doubt in this researcher’s mind that this district has the capability of closing the digital use divide and moving beyond the sheer utilization of gadgets to seamless technology implementation as a way to transform the classroom. This is due to the strong beliefs and support of the district vision for technology and its role in education maintained by the staff
along with the overall willingness to participate in professional development as a way to increase capacity. As quoted from a veteran staff member with over 25 years of experience in the district:

The 21st century types of jobs that we have started to see or that are popping up in society and throughout the world require these young people to have certain technological skills. And so we need to prepare them for the society that they are going to be embarking on in the near future, regardless of how uncomfortable it may make us feel. (Personal Communication, 2018)

The BrightBytes 2018 and 2019 surveys reported the area of beliefs as one of the strongest areas, with the variables including:

- Teacher beliefs that use of technology in class can enhance student learning.
- Teacher beliefs that the district encourages technology use for teaching and learning.
- Teacher desires to learn more about effective technology use for teaching and learning.
- Teacher beliefs in student engagement when using technology.

These beliefs were substantiated during the staff interviews. Table 7 displays the themes that emerged and their frequencies. The findings formed under four themes: college-career ready, enrich/enhance learning, personalize learning strategies, and student agency. What became clear was that the staff know and understand Modern Mind CUSD’s vision for technology usage in the schools and how that intertwines with the overall mission and vision statements. One of the interviewees painted the picture that:

The district’s vision for technology is to create a personalized learning path for each and every student so that every student can reach their fullest potential over the course of not only the school year, but over the course of their time within the district. (Personal Communication, 2018)
Table 7

**Role of Technology in Education**

<table>
<thead>
<tr>
<th>Theme</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Role in Education Sample Response</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>College-Career Ready</strong></td>
<td>11</td>
<td>50</td>
<td>Technology in education or in the classroom should be implemented in a way that matches the way technology is used in life. The 21st century types of jobs that we have started to see or that are popping up just in society and throughout the world require these young people to have certain technological skills. And so we need to prepare them for the society that they're going to be embarking on in the near future. Because the entire world that we live in is technology driven, I think to ignore the fact that technology has a use in schools is to disregard technology as a whole.</td>
</tr>
<tr>
<td><strong>Enrich/Enhance Learning</strong></td>
<td>9</td>
<td>41</td>
<td>I don't believe that technology can replace education, but I believe it's kind of like a conduit or almost like an assist to be able to deliver the education in a more engaging and more relevant way in today's world. It's giving us the advantage to help kids be ready for what's ahead. We are teaching millennium children where technology is a part of their daily lives. They may know it in a personal sense and we show them how to leverage it to enrich their education. Technology provides them with another way to expand learning. Take Science models for example. They can see them 3D, manipulate them and get a more holistic experience that pictures in an outdated textbook cannot provide.</td>
</tr>
<tr>
<td><strong>Personalize Learning Strategies</strong></td>
<td>8</td>
<td>36</td>
<td>Technology offers an alternative way for students to show what they now because technology alone offers differentiation. It allows for students to choose and for teachers to find those ways to personalize learning for the students to help prepare them for the future or to address a problem at hand. In order for kids to be successful, we have to give them the opportunity to explore and be creativity within their learning.</td>
</tr>
<tr>
<td><strong>Student Agency</strong></td>
<td>8</td>
<td>36</td>
<td>Students don't need direct instruction, they need involvement with the world and choices on how to do that. This is what technology provides that many past educational tools or avenues haven't been able to do. For anyone to truly learn something, you need to connect to your life. Each person is different and comes from a different background, but technology levels the playing field in that it allows students to make choices on what they want to learn and how.</td>
</tr>
</tbody>
</table>
Voice and choice is something I learned in one of our PD sessions. We have a curriculum but we also have to allow students to be authors of their own curriculum at times while still accomplishing standards.

Note: Sample size (N) = 22

The importance of these results and a key aspect to successful integration of technology in a school is a culture that promotes technology use and the adoption of new teaching practices for the benefit of the students, allowing students to believe in their capacity to succeed (Moeller & Reitzes, 2011). The Modern Mind CUSD staff is aware of the vision and direction of the district and fully support building student agency as a part of self-development and adaptation with the changing times in order to create lifelong learners.

The area of strong beliefs is nicely paired with the staff’s willingness to learn and realize that rapid technology change in the educational field will require a continuous dedication to learning and a growth mindset. It is possible that teachers’ beliefs about technology can be more influential than their actual skill level, as 90% of teachers reported wanting to learn more about meaningful usage according to the BrightBytes 2018 survey, and 84% according to the 2019 survey. As another one of the more veteran staff members reminisced in her interview, she admitted that “when we first started this initiative, I was scared to death because I went through my first Master’s degree on a typewriter. Now I am full of this intrinsic desire to implement technology in ways that will rock the students’ learning experiences. That is definitely a shift” (Personal Communication, 2018). When asked in the interviews about ranking themselves in terms of technology skill level, all 22 participants mentioned room for growth and wanting to expand their knowledge base, citing the professional development offered by the district as applicable and geared towards supporting our curriculum and ourselves.

The relationship between professional development and technology implementation could produce the perfect bond, one that could easily be strengthened or broken by the
relationship between the staff and leadership. One of the largest determinants of the success of any form of change is trust. "The level of trust that exists among school staff determines how well they work together, solve complex problems, and resolve conflict and therefore affects their ability to positively impact the academic progress of students" (Smith & Smith, 2015, p. 95). Technology implementation should be routine, seamless, and effective in supporting learning goals. But without a culture in which everyone recognizes that they are a work in progress, that failure is a valuable learning experience, and that pushing oneself forward to disrupt the status quo may be difficult but necessary (Casas, 2017), even the greatest professional development efforts will fail.

From the 5Essentials 2017 and 2019 data, the BrightBytes 2018 and 2019 survey data, and the staff interviews, it is clear that teacher-principal trust is scarce and there is a belief that their leaders lack the capacity for instructional leadership in terms of providing useful feedback and support. As stated in one of the staff interviews:

You see them get flustered themselves with technology and be afraid to not know everything - almost defensive. Very rarely are they learning right besides us and with us to create that trusting environment that we try to create for our students. (Personal Communication, 2018)

Through the use of measure scores in which a summary indicator is given that describes how teachers responded to a specific question, the 5Essentials survey reported the readiness of schools for improvement from least implementation to most implementation (www.5-essentials.org). In the category of effective leaders, the 2017 5Essentials survey findings report three of the five schools as average implementation, one of the five schools as less implementation and one as least implementation. Yet all five of the schools scored less or least
implementation in the subcategories of teacher-principal trust and instructional leadership.

Following the 2016-2017 school year, there was predictable turnover in building administration as one assistant principal resigned, two principals were not offered contracts, three building administrators were reassigned, and two new ones hired.

The 2019 surveys yielded even less desirable results. In the category of effective leaders, the survey findings displayed only two of the five schools as *average implementation* (down from three), two of the five schools as *less implementation*, and one as *least implementation*. Though one of the schools did climb to *average* in teacher-principal trust and another reached *more*, the remaining scores still reflected *less or least implementation* in the subcategories of teacher-principal trust and instructional leadership. The end of the 2018-2019 school year also brought about two more resignations by building administration resulting in a new administrative team from outside the district.

Another unfortunate side effect of the lack of trust manifests in the number of teachers who do not feel recognized for their attempts at using technology in their classrooms. The supervisory report from the BrightBytes 2018 survey revealed that only 40% of teachers felt recognized for using technology in their teaching more than half the time and 48% reported that technology was part of classroom observations or visits more than half the time. The 2019 scores did not improve with a 1% decrease in recognition and a 5% decrease in technology discussions as part of evaluation and observation. In schools that support 21st century learning, leaders regularly engage teachers in discussion about best practices for technology which is an area that will need to improve in order to move forward. To be an education leader as defined by the ISTE Standards, there has to be a system in place that embraces shared leadership, trust, and empowerment in order to support innovative thinking (ISTE, 2018, para. 4). This system is
currently absent in Modern Mind CUSD which is acting as a barrier to transformation of teaching and learning.

In one of the staff interviews, a teacher said passionately:

We need more opportunities to try things and feel that it’s okay for a lesson to flop or fail and not feel like you’re going to be penalized for it or marked down on an evaluation.

We tell our kids that mistakes are proof that you’re trying and that we can’t get better at things unless we try. It should be the same for teachers. (Personal Communication, 2018)

This fear of failure acts as a substantial barrier to technology implementation and experimenting with learning from whatever format of professional development. Error should not be reprimanded or even tolerated, “more importantly, it is welcomed and celebrated, thereby communicating to teachers that they can be secure in their role as practicing learners, similar to a practicing physician or a practicing attorney, to confidently ‘learn, re-learn, and explore knowledge and understanding’” (Smith & Smith, 2015, p. 35).

The As-Is picture of professional development in Modern Mind CUSD represents the most significant matters as they relate to technology implementation. Wagner et al.’s framework (2006) helps to highlight strengths and areas for growth in the arenas of context, conditions, competencies, and culture, some of which overlap with the next section regarding the relationship between leadership and technology implementation, especially in the arena of culture.

**Relationship Between Technology Implementation and Leadership**

Leaders help shape beliefs towards a shared vision for the use of high-quality instruction in the classroom. In the 21st century, high-quality instruction involves new technology-rich environments, a new set of skills necessary for students, and a new role for the educator. School
leaders need to become more adept at guiding schools through this dynamic learning environment because within all of this unfamiliarity, “it is still possible for teachers to accept the new ideas if they see the patience and support from the school administrator” (Sincar, 2013, p. 1275).

Six of the 19 administrators (32%) in Modern Mind CUSD participated in the leadership data collection (interview), one from each of the five buildings as well as one district office administrator. The initial step of the interview involved collection of basic information from the participants. Table 8 summarizes the data about the participants’ experience in education and their involvement in the District Technology Initiative. The average years worked in the field of education as a teacher was 9.7. The average years in the field as an administrator was 4.7 with the average number of years worked in Modern Mind CUSD as 3.5. The percentage of administration that were involved with the District Technology Initiative since its inception in 2016 was 50%, a number much lower than the district as a whole (85% as reported by the BrightBytes survey in 2018).
Table 8

**Experience in Education**

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Years as an Educator Prior to Administration</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-9 years</td>
<td>2</td>
<td>33</td>
</tr>
<tr>
<td>10-14 years</td>
<td>4</td>
<td>67</td>
</tr>
<tr>
<td><strong>Total Years as an Administrator</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-4 years</td>
<td>4</td>
<td>67</td>
</tr>
<tr>
<td>5-15 years</td>
<td>2</td>
<td>33</td>
</tr>
<tr>
<td><strong>Total Years in District</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-4 years</td>
<td>5</td>
<td>83</td>
</tr>
<tr>
<td>5-15 years</td>
<td>1</td>
<td>17</td>
</tr>
<tr>
<td><strong>Total Years in District Technology Initiative</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 years</td>
<td>3</td>
<td>50</td>
</tr>
<tr>
<td>2 years</td>
<td>1</td>
<td>17</td>
</tr>
<tr>
<td>1 year</td>
<td>2</td>
<td>33</td>
</tr>
</tbody>
</table>

*Note: Sample size (N) = 6*

**Conditions**

Using Wagner et al.’s (2006) definition of conditions as time, space, and resources, administrators often have the power and knowledge to influence the conditions for their school or district. Through modeling a vision of meaningful usage, barriers to technology implementation such as access, insufficient time for continued learning, and lack of support will cease to exist, allowing a clear path to learning. As concluded by Murphy (2016), it is much more effective for leaders to lead by influence rather than authority as:

The essence of leadership is (1) having a sense of where an organization needs to get to or what it needs to achieve and (2) creating the capacity and deploying that capacity to reach desired ends. It is about the process of influencing others, influenced exercised through relationships. (p. 37)
The conditions for discerning the relationship between technology implementation and leadership remain the same as those in the previous section regarding professional development: the current state of device distribution and formats and amounts of professional development. The difference is that leadership has more control in the creation of the conditions in terms of resources (human, financial, time) and how they are spent with the highly focused purpose of improving levels of learning for all students.

**Competencies**

One of the most important areas for the success of any initiative and its sustainability lies within the competencies of the leadership with competencies defined as “the repertoire of skills and knowledge that influences skills and learning” (Wagner et al., 2006, p. 98). This is an area in which Modern Mind CUSD has room for growth as evidenced by self-reporting of administrators in addition to 5Essentials and BrightBytes survey data. When asked to self-rank in terms of technology skill level, there were a variety of scales and numeric values mentioned. However, without being prompted, five out of the six administrators interviewed reported room for growth due to the changing nature of technology.

Leadership competencies were questioned in the professional development survey and staff interviews to gather the staff perceptions of the role leadership plays in technology implementation and the current administrators’ effectiveness in those roles through the eyes of the staff. The professional development survey showed that 24 participants of the 54 (44.4%) found their administration to be very supportive of their efforts to infuse concepts learned in all professional development formats into their teaching practices, with 20 participants (37%) reporting administrators as moderately supportive, 9 (16.7%) as slightly supportive, and 1 (1.9%) as not supportive. Following the Likert scaled question was an optional open-response area for
participants to expand upon their rating. One common theme that surfaced from those who chose to respond was regarding differentiated levels of support from district versus building level administration. This was evidenced in statements such as:

1. There is recognition from the district level, but not necessarily from our building leaders. (Personal Communication, 2018)

2. Leadership from the District Office, in particular the Instructional Technology department is great, but there isn’t much support from the building leaders. (Personal Communication, 2018)

3. We are given one message by our tech director - to be excited and motivated to try new things - but another message is conveyed with our building leadership. Building admin wants us to stick to the new curriculum, keep moving, and keep to the schedule. Therefore, teachers are uneasy about taking risks, trying new things and the possibility of failing. It's mixed messages! We expect our students to take risks and challenge themselves, according to the growth mindset, but feel like it does not apply to the teachers. Very frustrating for us as professionals. (Personal Communication, 2018)

During the staff interviews, teachers were asked about what they believe to be leadership’s role in education. From their responses (Table 9), four themes emerged: be a resource, maintain communication, provide differentiated support, and create a culture of learners. There was a close to equal balance between three of the themes with half of the participants mentioning creating a culture of learners as one of the most important roles of leadership, overlapping Wagner’s fourth arena of change. One of the less veteran teachers in the district stated, “learning is a survival skill for all of us and without the support, the knowledge of
what is going on, and the culture in which we are allowed to fail, we won’t make it” (Personal Communication, 2018).

Table 9

**Leadership’s Role in Education - Staff Interviews**

<table>
<thead>
<tr>
<th>Theme</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Leadership's Role in Technology Implementation Sample Response</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Be a Resource</strong></td>
<td>10</td>
<td>45</td>
<td>I don't expect them to be experts at the technology tools in the classroom, but they should be familiar with the tools that they could have a discussion about what could be used in a classroom. I think it is the same as leadership's role in education period or in a school period. I think any administrator should be a master teacher in the building and be role models of technology implementation. When leadership is passionate and knowledgeable about something, it trickles down to the teachers and then our passion grows and that trickles down to the students. It all starts with the modeling of the leader and being able to go to them for support and energy.</td>
</tr>
<tr>
<td><strong>Maintain Communication</strong></td>
<td>5</td>
<td>23</td>
<td>They have to communicate. They have to model appropriate usage, keeping everyone informed of the changes that are occurring and how they could affect our teaching practices. Leadership needs to maintain communication, open lines of communication and problem solving instead of leaving us uninformed or blaming problems on something else. The administrators need to be having more conversations, communicating with other administrators and other school districts that are successful with technology implementation.</td>
</tr>
<tr>
<td><strong>Provide Differentiated Support</strong></td>
<td>10</td>
<td>45</td>
<td>Their role should be to support the teachers and the things they are trying to do with technology. And by support, I mean providing us with the tools we need and meeting us where we are at in technology implementation as an educator. I'm good with differentiating with my own students. So that needs to be applied to the staff. They need to respond to the staff's needs. First and foremost, I think leadership should understand that we are all learning and we are learning this together. Some of us are stronger than others at it. So they should be able to provide us with what we need to be effective.</td>
</tr>
<tr>
<td><strong>Create a Culture of Learners</strong></td>
<td>11</td>
<td>50</td>
<td>Their role is the same thing as my role is as a teacher - a safe space to ask questions, so you aren't seen as being punished if you don't know how to do something.</td>
</tr>
</tbody>
</table>
We are here learning together. It's okay to say I don't know. I'm afraid and scared. And that's okay. As long as we learn from it.

It should be in creating the culture for us and for taking risks. How many staff are afraid to make mistakes or take risks? Do we want kids that are afraid to take risks or fail?

\textit{Note:} Sample size (N) = 22

These data display how much the staff truly look to leadership for inspiration, example, and assistance while revealing the potency of their desire to strengthen student learning. “We are facing profound adaptive challenges, which Heifetz defines as problems that are murky and hard to identify, and for which no one has a solution - not even the experts” (Drago-Severson et al., 2013, p. 14). Knowing that technology implementation is an adaptive challenge, it is crucial that leaders listen to their staff, identify their needs, and spend their resources accordingly to increase the capacity of their staff as well as themselves.

Paralleling the question in the staff interview regarding the role of leadership in technology implementation, administrators were asked the same question. From their responses, three themes emerged: be a learner, provide support, and remove barriers. Table 10 displays the results and exposes the theme that the staff and administration both agree upon - providing support. Though they may view support through a different lens, maintaining communication and creating the culture of learners as mentioned in other themes from staff interviews would provide for the differentiation needed. "Supporting real change requires a willingness to take risks at multiple levels, the patience to see things through, and the foresight to recognize that it will all be worth it" (Drago-Severson et al., 2013, p. 171). Whatever the perceived definition of support may be, without it, the continuity of any change is uncertain.
Table 10

**Leadership’s Role in Technology Implementation - Administrator Interviews**

<table>
<thead>
<tr>
<th>Theme</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Leadership's Role in Technology Implementation Sample Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Be a Learner</td>
<td>3</td>
<td>50%</td>
<td>My job is to attend the trainings alongside teachers to learn what they're learning, and then along the process, help them with the implementation of the skills that they've learned and the resources.</td>
</tr>
<tr>
<td>Provide Support</td>
<td>5</td>
<td>83%</td>
<td>I need to make sure that I provide my staff with what they need in whatever level of integration they are at. Whether it be stepping through a lesson, to suggesting ideas, I need to be available.</td>
</tr>
<tr>
<td>Remove Barriers</td>
<td>2</td>
<td>33%</td>
<td>So my role is just to make sure there's any barriers that I am there to help move them out of the way so that teachers can have access to all of the resources to support learning for their kids.</td>
</tr>
</tbody>
</table>

*Note: Sample size (N) = 6*

Supporting quality teaching also means acknowledging and rewarding teachers for their efforts in technology implementation. Identified in previous data, only 39-40% of teachers feel recognized for using technology in their teaching more than half the time according to the 2018 and 2019 BrightBytes surveys. Individualized and frequent recognition not only motivates teachers, but it also sets the standard for performance and assists with teacher retention. By affirming behaviors, the leader is providing recognition for helping the school improve. Along with the celebrations, it is equally important to map out what is still to be accomplished in order to be truly successful. Having supportive leadership can make all of the difference for educators, especially when this type of reform is occurring.

In addition to providing recognition, it is also important to be an instructional leader who is able to be a resource and model desired behaviors. To echo some of the data presented in the section regarding the relationship between technology implementation and professional development, the 5Essentials 2017 and 2019 surveys expose the low confidence the staff has in...
the instructional capacity of leadership in Modern Mind CUSD. Instructional leadership results are based on the following statements:

- Knows What’s Going On in My Classroom
- Provides Me With Useful Feedback To Improve My Teaching
- Has Provided Me With the Support I Need to Improve My Teaching
- Presses Teachers to Implement What They Have Learned in Professional Development
- Communicates a Clear Vision for Our School
- Makes Clear to the Staff the Leadership’s Expectations for Meeting Instructional Goals

Table 1 is a summary of the 2017 and 2019 results from the 5Essentials Survey in the category of instructional leadership. It is important to note that from the 2016-2017 school year to the 2018-2019 school year, building administration did undergo some significant changes. Two of the principals were let go, one resigned, one was relocated to a different building, one dean was promoted to assistant principal, one assistant principal was promoted to principal, and two new assistant principals were hired.
Table 11

5 Essentials Instructional Leadership
(Numbers below reflect the added percentages of agree and strongly agree)

<table>
<thead>
<tr>
<th>School</th>
<th>Percentage of Staff That Participate d in the Survey</th>
<th>Provides Me With Useful Feedback</th>
<th>Has Provided Me With the Support I Need to Improve My Teaching</th>
<th>Presses Teachers to Implement What They Have Learned in Professional Development</th>
<th>Makes Clear to the Staff the Leadership’s Expectations for Meeting Instructional Goals</th>
<th>Overall Implementation Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early Childhood Center</td>
<td>2017: 64.7</td>
<td>50</td>
<td>40</td>
<td>40</td>
<td>70</td>
<td>50</td>
</tr>
<tr>
<td>Innovate Elementary</td>
<td>2017: 93.5</td>
<td>38</td>
<td>32</td>
<td>51</td>
<td>60</td>
<td>53</td>
</tr>
<tr>
<td>Integrate Elementary</td>
<td>2017: 82.5</td>
<td>80</td>
<td>78</td>
<td>77</td>
<td>87</td>
<td>87</td>
</tr>
<tr>
<td>Interact Middle</td>
<td>2017: 96.9</td>
<td>84</td>
<td>81</td>
<td>85</td>
<td>81</td>
<td>88</td>
</tr>
<tr>
<td>Modern Mind HS</td>
<td>2017: 83.8</td>
<td>75</td>
<td>79</td>
<td>86</td>
<td>88</td>
<td>81</td>
</tr>
</tbody>
</table>

These data highlight the need to strengthen the capacity of leadership in Modern Mind CUSD in terms of instructional ability. Though there were gains in the early childhood and elementary buildings, there were dramatic drops in scoring for the middle and high school, with four of the five the schools remaining below average in ratings. Growing capacity will involve more than just increasing the frequency of classroom observations or providing specific
feedback. It will be about giving teachers the “vital, just-in-time information so they can change, enhance, or continue their teaching methods” (Smith & Smith, 2015, p. 21). To strengthen instructional leadership, leaders need to be proactive in collecting feedback to evaluate their impact. It would also be beneficial to include setting more specific goals to help prioritize focus, set targets for learning, and create accountability. When being interviewed, only one of the six administrators had a specific goal to increase their own technology capacity, with only one other having a school goal. The remaining four interviewees’ responses were unclear and lacked direction, with answers such as “be a learner,” “keep up with the changes,” and “prepare students for the future” as goal statements. Instructional leadership is a critical aspect of school leadership, therefore, it is an area in which measurable goals should be in place, not only for the purpose of technology implementation, but for overall school improvement.

The challenges of being a leader in technology and education are countless as they include the ability to recognize changes and ensure continuous adaptability to change. Technology continues to evolve at lightning speed and many times managing and maintaining leave little time for creating or innovating. There is a nationwide deficit in technology education as teacher and administrative preparation programs neglect to provide educational technology training in their course lists leaving educators and administrators, new and veteran, unqualified to use technology meaningfully to support student learning (Flannagan & Jacobsen, 2003; Ormiston et al., 2018; U.S. Department of Education, 2017). In the administrative survey, leaders were asked to describe challenges they faced in technology leadership. Three common themes arose: differentiation for teachers, keeping up with advancements, and knowledge levels (teachers having a larger knowledge base of best practices for technology implementation than administration) which parallel the themes of providing support, being a resource, and creating a
culture of learning from the staff and administrative interviews regarding their perception of the role of leaders in technology implementation. One of the more veteran administrators reported that:

In our district, we do not face the typical technology challenges of access, budget, infrastructure, or resistance. Strategic planning solved those problems before the initiative even began. We are challenged by more advanced problems like meaningful use and that is a good thing, but also a difficult thing. It just means we really need to step up our own skills to be able to provide the support needed. (Personal Communication, 2018)

**Culture**

Areas such as instructional leadership and behaviors are also a part of the cultural arena that Wagner et al. (2006) described, but culture also encompasses the values and beliefs, assumptions and expectations, and most importantly, the quality of relationships. The ISTE Standards for Education Leaders (2018) highlight a system that embraces shared leadership, trust, and empowerment, three areas in need of improvement in the current culture of Modern Mind CUSD as teachers feel unnoticed for their efforts, overwhelmed by initiative fatigue, and afraid of failure tied to evaluation. “Introducing a new technology into a school community can create tension within the existing culture of the school as the educational practices are reformed” requiring the leader to ensure that the culture is one in which there is an environment of mutual respect, responsibility, and accountability for creating change for the benefit of students (Berrett et al., 2012, p. 202).

Leadership needs to understand the existing culture at their schools in order to build the relationships necessary to satisfy current and anticipate future needs. In Modern Mind CUSD,
administrators identified the characteristics of a culture that support technology implementation in which people are collaborative, take risks, and value learning. They described the strengths of their schools’ cultures as an overall willingness to learn, a dedication to students, and a collaborative environment. When asked to identify areas of weakness, three nearly universal themes surfaced: letting go of control, fear of failure tied to evaluation, and consistency of communication. Table 12 exhibits the results, emphasizing the high frequency of the themes as well as supporting statements.

Table 12

<table>
<thead>
<tr>
<th>Cultural Areas of Weakness</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Leadership's Role in Technology Implementation Sample Response</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Letting Go of Control</strong></td>
<td>6</td>
<td>100</td>
<td>Some things don't quite fit in our thinking and it's been a shift to say, &quot;Okay we've got this this great piece of curriculum and we have to utilize it to maybe elevate the things that we've done in the past.&quot; I need to change a little bit of that ingrained situation with the elevation of our standards and get staff to know that it is okay to let go of practices, to lose a bit of control. It doesn't mean you were doing it wrong in the past, it just means we need to transform it a bit.</td>
</tr>
<tr>
<td><strong>Fear of Failure Tied to Evaluation</strong></td>
<td>6</td>
<td>100</td>
<td>I believe there is, whether perceived or real, a serious feel of fear, fear of trying something new fear of doing something wrong, fear of failing. And then that being tied to the evaluation. I believe that’s a huge roadblock that we currently have. Again, I feel that whether the feeling is accurate or not, it's still a feeling that needs to be tackled.</td>
</tr>
<tr>
<td><strong>Consistency of Communication</strong></td>
<td>4</td>
<td>67</td>
<td>We are a relatively small community unit district. Five schools. But we have issues with the same message being relayed in each building and at times I think we forget to focus on the vision.</td>
</tr>
</tbody>
</table>

Note: Sample size (N) = 6

There are common weaknesses among the buildings, but a lack of specificity as to how to strengthen these areas exists, with all administrators citing the importance of open lines of communication in terms of feedback, showcasing strengths, and celebrating successes, but neglecting to mention an action plan or steps towards improvement. Five out of six
administrators mentioned staying focused on the vision and mission, but when asked to elaborate on the concepts, responses were “I’m not sure,” “different for each building,” “structured,” and “seamless technology implementation,” none of which mention details as to how to “shape truly collaborative cultures that meet the evolving needs of all educators (and hence students)” (Drago-Severson et al., 2013, p. 184).

The As-Is picture of leadership in Modern Mind CUSD represents the most significant matters as they relate to technology implementation. With an ever-expanding demand for accountability, increased student achievement, and technology integration, administrators must become technologically savvy or risk becoming a barrier for change. Using Wagner et al.’s framework (2006), the findings highlighted strengths and areas for growth in the arenas of context, conditions, competencies, and culture to bridge the As-Is conditions with the To-Be vision of success. After all, Wi-Fi kids cannot be taught with landline strategies.
SECTION FIVE: TO-BE FRAMEWORK

To address and change relationships in education, whether relating to people or reform, it is important that new resources and expectations are not added onto an outdated educational paradigm. Educators and leaders need to confront tradition and discontinue the practice of completing for compliance. In the world of technology implementation, technology can be leveraged to empower learners to determine the right questions rather than simply providing answers. Technology and good teaching in general can energize learners, fostering exploration and inspiring problem solvers and innovators who see learning as “an active, dynamic, nonlinear, discovery-based process - more like traveling along a spider web than moving in a straight line from point A to B” (Wagner, 2008, p. 179). But few schools or districts are at that level of technology integration just yet.

Having analyzed the current As-Is scenario in Modern Mind CUSD using the 4 C’s framework by Wagner et al. (2006) and the data collected by this researcher, a To-Be picture (Appendix F) emerges that shows what is needed to continue to support staff in the dynamic area of technology implementation. The To-Be vision for Modern Mind CUSD would have educators and leaders as forward thinkers using technology to strengthen skills, enhance teaching, and transform education through strong relationships between professional development, leadership, and technology implementation. However, major issues within the arenas of context, conditions, competencies, and culture surfaced that currently act as large barriers to technology implementation as a way to impact teaching and learning. With these issues in mind and with the purpose as enhancement of teaching and learning in order to prepare students for 21st century society, the overall goal for the To-Be diagram was to paint a picture of the ideal context,
conditions, competencies, and culture necessary to move forward in meaningful technology implementation.

Context

When addressing change, it is important to define what stays the same, placing change “in the context of stability” (Reeves, 2009, p. 38). By identifying the values and practices that will be preserved and being transparent about the difficulties that lie ahead, the changes that need to occur will have more meaning for all individuals involved. The As-Is account of context in Modern Mind CUSD included continuous, job-embedded professional development opportunities as a strategy that is working for the staff, allowing for meaningful learning that is mindful of the value of teachers’ time and that allows for personalization of learning for adults. In the To-Be picture, what persists is the professional development provided for all certified staff members with ever-expanding format choices. Choice is imperative as it is common to “naturally differentiate when working to support student growth and learning, but rarely consider the different needs and orientations of adults when offering professional supports and challenges to colleagues in general and more specifically in PD offerings” (Drago-Severson et al., 2013, p. 7). Choice also makes professional development relevant to each teacher, building on strengths and developing areas of need.

The As-Is account exposed the issue of the stability of the staff in contrast with the high turnover rate for administration which has resulted in complications with trust and relationships. While the choices for professional development will remain, the To-Be state will call for a shift of focus to prioritizing administrative retention, developing 21st century leaders and, as a result, creating trust and sustainability within the schools and the district. Supported by the current
professional development strategies, the shift would include embracing shared leadership as a catalyst for change. As support for shared leadership, Reeves (2009) states that “the complexities of change leadership require not the perfect composite of every trait, but rather a team that exhibits leadership traits and exercises leadership responsibilities in a way that no individual leader, past or present, possibly could” (p. 54). Instead of considering the administration as the sole source of instructional leadership, leadership capacity should be developed across all stakeholders, broadening the definition of school leader to “anyone who takes responsibility for finding the potential in people and processes, and who has the courage to develop that potential” (Brown, 2018, p. 4) as opposed to defining by title alone. Elements of shared leadership also overlap the culture arena of change, as staff and administration would work collaboratively with a new sense of empowerment to accelerate student learning.

Conditions

Analyzation of the conditions of Modern Mind CUSD as described by Wagner et al. (2006) as “the external architecture surrounding student learning, the tangible arrangements of time, space, and resources” revealed that access to devices in the elementary and early childhood buildings was the major condition that needed to be addressed (p. 100). The To-Be diagram includes a gradual increase of device saturation in those buildings as the years pass with the possibility of grades three through six transitioning to 1:1 device take home in future years. Modern Mind CUSD uses Title funding to purchase devices to help meet the educational needs of students. The Title funding program provides financial assistance to schools and districts with high numbers of low-income students to assist with meeting state standards and requirements (Center on Education Policy & Center for Health and Health Care in Schools, 2014). In accordance with the amount of funding distributed to the district, a portion is allocated to device
purchases each year. Once the amount is allocated, the superintendent, director for curriculum and instruction, director for technology, and director for instructional technology take inventory of all devices and attempt to align the existing resources as well as potential ones, to the intended educational outcomes, dispersing devices in planned and systematic ways.

A positive condition identified by this study was the professional development opportunities offered to all certified staff in Modern Mind CUSD and the efforts made by the district to provide substitutes and schedules far in advance of the sessions. Though the future may see changes in formats, what will not change is consideration for and dedication to educator learning through targeted professional development. The ever-changing and improving features of technology can be exciting, but keeping up with this very rapid pace can add to the complexities that schools face on a daily basis. On-demand professional development provides staff and administration with support that can be accessed at any time in multiple formats to help them reach their professional goals. The To-Be environment would include constant evaluation of needs versus what is being offered to ensure that the correct number and types of support are in place for both staff and administration in order to allow them to “create a personal knowledge path” to assist them in “empowering their students with the skills, knowledge, and dispositions necessary to be successful in a global reality dominated by technology” (Whitehead et al., 2013, p. 66).

Competencies

When Wagner et al. (2006) defined competencies as “the repertoire of skills and knowledge that influences skills and learning”, they went on to delve into a systemic approach for professional development (p. 98). Even though professional development has been a major focus of strategic planning for the district, there are still As-Is struggles at both the educator and
leadership levels as indicated by the data collected throughout this study. Educators continue to struggle with the usage of the 4C’s (communication, collaboration, critical thinking, and creativity) developed by the P21 (Battelle for Kids, 2012) and assessment in the classroom, relying on the traditional teacher-student interaction in the classroom. This is also reflected in the percentage of teachers still at a Substitution and Augmentation level for teaching with technology, layering technology onto antiquated tasks. The To-Be state would include technology being used for Modification and Redefinition, moving from enhancement of teaching to transformation and altering the substance of learning experiences to use technology as a way to address skills needed to improve learning (Puente, 2018).

Another challenge teachers face is in leveraging technology for student choice as a way to provide a personalized education for each student. Educators can empower the students by giving them choice in how they learn and demonstrate learning, creating more meaningful experiences as students are tasked with thinking about which tools best meet their needs and goals. This has not been a practice of the past, requiring teachers to move away from the traditional practices of educating every student in the exact same way, and moving towards practices that acknowledge the art of learning and the requirements for a 21st century society.

The new professional responsibilities and the reinvention of the definition of educator require support from both colleagues and leaders. Currently at Modern Mind CUSD, leaders struggle to provide differentiated supports with technology, as the teacher knowledge level of technology integration surpasses that of administration. This cannot be the case if educators are to create a safe, nurturing environment for all stakeholders. The administrators at Modern Mind CUSD are surrounded by great educators and need to create the environment in which everyone is able to learn from each other, regardless of title. Since it is the “interaction between teacher
and student that truly accentuates learning in a technological environment” (Whitehead et al., 2013, p. 81), it is the job of Modern Mind CUSD to provide the proper training, knowledge, and support to staff and administration alike, helping all stakeholders take full advantage of the power of technology in education and creating a culture of learning around technology.

In the To-Be picture, technology implementation competencies transform producing educators who use the 4C’s (communication, collaboration, critical thinking, and creativity) developed by the P21(Battelle for Kids, 2012) and assessment in the classroom to drive instruction and personalize learning while incorporating student choice and involving Modification and Redefinition of tasks. Leadership and staff work together to adjust support based on need and staff leaders share expertise and act as resources to address all technology needs. In addition to further professional development for leaders, shared leadership is encouraged as it opens the door for greater retention, clearer communication, stronger problem solving, and trust.

Technology integration in the classroom should be seamless, supporting curricular goals and helping students reach them. Stepping into any classroom, there should be evidence of 21st century learning which includes “helping young learners be adaptable and literate in cultural, societal, and technological aspects of their world” (Whitehead et al., 2013, p. 117). Technology in the To-Be environment moves beyond engagement and towards changing learning by adding value, scaffolding supports, and deepening learning. Meeting the needs of both student and adult learners that differ in interests, learning styles, and levels of commitment can be a challenge. To conquer the challenge, strong supports need to exist, resulting in an increase in confidence in abilities, a prevailing culture of learning, and technology risk-taking on behalf of student learning (Borthwick & Pierson, 2008, p. 39).
Culture

Culture is the one arena for change in which Modern Mind CUSD has the greatest potential for growth and also the arena that weaves its way through the fabric of Modern Mind CUSD, affecting context, conditions, and competencies. To embrace risk and promote innovative practices, a progressive culture is necessary - one that allows for growth mindset and develops strong, trusting relationships. Though the vision and mission statements of Modern Mind CUSD include references to “encouraging growth mindsets in everyone in order to prepare our students for an ever-changing world in which they can thrive” (Ormiston et al., 2018, p. 8), there are still major barriers preventing growth mindset from becoming the norm. “Culture is reflected in the behavior, attitudes, and beliefs of individuals and groups” (Reeves, 2009, p. 37), and the As-Is cultural picture leaves educators feeling a lack of recognition for their efforts, low trust and confidence in the instructional capacity of leadership, and fear of failure tied to evaluation. Leaders struggle to understand the existing culture in their schools resulting in a lack of specificity and strategy when addressing issues which further widens the trust gap.

The ideal culture for professional learning and the To-Be scenario for educators would include a willingness to learn with shared leadership in areas of strength, an understanding and involvement with all educational reform in the district from multiple stakeholders, and “bravos for engagement, trying it out, and small successes in order to keep adult learners feeling safe and respected” (Borthwick and Pearson, 2008, p. 27). The leaders would feel confident in their abilities to support teachers who are implementing technology to enhance teaching and learning and be able to clearly define and articulate technology implementation and what its function is in the classroom.

This culture would be one in which educators and leaders faced failure in order to breed
success with emphasis on a growth mindset, allowing for the discovery and usage of technology in ways that are meaningful. The SAMR Model and ISTE Standards, grounded in the principles of learning and cognition, would be used on a regular basis as frameworks to construct learning experiences. More than standards and frameworks, there would be a community of shared learning, with individuals taking ownership of their own professional growth, fostering a sense of pride and trust in the school community. Overlapping issues displayed in the context section of the As-Is diagram (Appendix E), development of trust would lead to and help maintain a healthy culture. In an article by Covey and Conant (2016), the authors place emphasis on one mission - inspiring trust. Using information from the annual list of “100 Best Companies to Work For,” they came to the conclusion that:

While few leaders would argue against the idea that trust is necessary for building elite performance, not nearly enough realize the height of its importance, and far too many disregard trust-building as a soft or secondary competency. But in our joint experience, we’ve learned that trust is the one thing that changes everything. It’s not a nice-to-have; it’s a must-have. Without it, every part of your organization can fail, literally, into disrepair. With trust, all things are possible - most importantly: continuous improvement and sustainable, measurable, tangible results in the marketplace. (para. 2)

Though the world of education is not a business, the message remains the same. Trust is an important factor in building a collaborative and positive environment. Though it may be less quantifiable, relational trust facilitates accountability, reduces vulnerability, and supports all stakeholders as they shoulder the difficulty of school improvement (Bryk & Schneider, 2002).

Those who will benefit the most from the To-Be future state of Modern Mind CUSD will be the students as they capitalize on the increased capacity of both their teachers and leaders.
Keeping the focus on context, conditions, competencies, and culture creates a clear, detailed path for moving away from the constructs of the old paradigm of teaching with a focus on knowledge transfer, impersonal relationships, competitive structures, and expertise, towards student agency, development of competencies and talents, and co-learning, creating a true learning community.
The purpose behind this program evaluation was to inspect technology implementation in Modern Mind CUSD and evaluate the relationships between technology implementation, professional development efforts, and leadership with the goal of increasing both teacher and leadership capacity. Identifying and defining all of the factors in the current As-Is and the desired To-Be states is only one step in transforming vision into results. The challenge is in providing strategies and actions that bridge the As-Is state of Modern Mind CUSD with what is To-Be breaking the large, complex, adaptive challenge into manageable pieces that can be effectively addressed. I have suggested strategies and actions that address the conditions, context, competencies, and culture of Modern Mind CUSD, adjusting the current circumstances to move towards the desired To-Be state.

Strategy One: Increased Access to Devices at the Elementary and Early Childhood Levels

When rolling out devices to a district with multiple buildings and grade levels, it is imperative that there is a distribution plan designed to create equitable access to technology across the district. The first strategy to approach the sought after To-Be state of Modern Mind CUSD addresses the conditions and involves access to devices, particularly at the elementary and early childhood levels. This is the one part of the larger challenge that can be addressed from a technical perspective, requiring strategic planning and a bit more communication of the solution to reach the sought-after conditions. When the initiative first began in the 2016-2017 school year, no additional devices were added to the buildings as the focus was professional development for the staff on use of GSuite for Education, the set of apps that the district would be using with the goal of preparing students for 21st century society. In the 2017-2018 school
year, a few carts of Chromebooks were distributed at the elementary and middle school buildings, with all of the current laptops in the district being shipped to the high school. On average, the elementary buildings were 4:1, the middle school was 3:1, and the high school was 5:1. Teachers slowly began to implement what they learned during the first year of training, taking small steps forward in using these tools for their own organizational purposes and at a basic substitution level with students. A week prior to the start of the 2018-2019 school year, devices were distributed to high school students as Modern Mind High School transitioned completely to 1:1 with Chromebooks. The transition was such a success that the middle school was able to go 1:1 in January of 2019, six months earlier than planned.

With an Acceptable Use and Chromebook Policy updated, approved by district lawyers and the school board, and publicized through all district communication sources, expectations for devices were clear to the students. This included the responsibility for coursework to be completed at home. In addition to teaching responsibility, these expectations and policies allowed teachers to freely assign project-based learning, implement student choice, and personalize learning, knowing that the students would have access to a device at all times. This also led to more instructional choices for the staff and improved outcomes for the students.

The early childhood and elementary schools also saw an increase in the saturation of devices in the 2018-2019 school year with the average ratio for grades kindergarten through sixth as 2:1. Devices in these buildings remained on carts in classrooms, with teachers responsible for collaborating to create schedules for usage among their grade level teams. The teachers in these buildings completely bought into the benefit of technology as an educational strategy and continued to become frustrated by the inability to adjust instruction due to the lack of immediate access to devices. Student inability to take devices home also restricts planning project based
learning or extended activities to do outside the school hours as there is inequity in access to devices at home.

Modern Mind CUSD uses multiple funding sources to purchase devices to help meet the educational needs of students. Like many districts, Modern Mind is facing other large-scale educational reforms that require funding as well from implementation of full day kindergarten to moving sixth grade to the middle school to construction projects for three of the five buildings. These upcoming changes impact not only the amount of funding remaining for device purchasing, but also have larger ramifications as grade levels are moved and buildings are consolidated. What is needed for staff is an action plan that clarifies the distribution of devices for the next few school years as the grade levels and buildings undergo major organizational and structural change. Being able to anticipate when the next influx of devices will occur would assist teachers with planning, and an open line of two-way communication regarding needs and resources available would create the culture of transparency and connectivity.

Strategy Two: Professional Development Continues to be Provided for All Staff Members with Ever-Expanding Format Choices.

One of the common pitfalls of technology implementation is neglecting to provide professional learning supports for the usage of technology prior to, during, and after device saturation. It is these supports that make teachers more likely to use technology for student inquiry and self-directed learning as opposed to presentation of information (Ormiston et al., 2018). In Modern Mind CUSD, the second strategy that is essential for making change regarding the context, conditions, and competencies necessary for impactful technology implementation is the continuance of professional development that allows for teacher and administrative choice, with the focus shifting to areas of need identified by the research collected
for this study. “If schools are to thrive in the future, technology initiatives and implementation plans must be familiar to everyone and adaptable enough to reflect situational change” (Whitehead et al., 2013, p. 58). Using the data collected from the professional development surveys and staff and administrative interviews, a formal professional learning plan should be developed that addresses current needs and demands, leaving room for reevaluation as time passes. Ideally this plan would be part of a larger professional development plan for the district that includes the needs for all of the large-scale initiatives and reforms.

The data uncovered areas that need strengthening as the 4C’s (communication, collaboration, critical thinking, and creativity) developed by the P21 (Battelle for Kids, 2012), assessment, and student choice, all characteristics essential for students to succeed in the modern workplace and society. Part of the design of future professional development should also include aligning the SAMR Model and the ISTE Standards with current teaching and curriculum evaluation frameworks which, in this district, would include the Danielson Model as well as all of the different curricular frameworks in each of the content areas. Rather than treating them as separate entities, technology skills and standards should be embedded throughout existing frameworks and models to develop a picture of good teaching that aligns with the district’s mission and vision.

Alongside the content, what remains equally important is that “adopters have the ability to choose to continue involvement in the professional development in a variety of capacities, including leadership” (Borthwick & Pierson, 2008, p. 97). Much of the feedback regarding the current state of professional development in Modern Mind CUSD highlighted the variety of offerings from the district and the positive impact that choice was having on teaching practices. Though staff need professional development to grow in any area, they all have different
strengths, backgrounds, and areas of vulnerability. Attending professional development that staff
do not find relevant impacts engagement which can easily transfer to students. Providing
personalized learning for staff not only prevents disengagement, but demonstrates that time,
expertise, and growth is valued (Whitehead et al., 2013).

In addition to the professional learning plan, a system to monitor and evaluate the plan
would also need to be developed as “professional development plans need to be sustained if
support is to be provided over extended periods of time” (Borthwick & Pierson, 2008, p. 65).
This plan would be developed by the District Technology Committee and could include
strategies such as walkthroughs, informal observations with administrative and peer feedback,
surveys and interviews with stakeholders at the end of projects to assess perceptions regarding
the outcomes of instruction and the technology integrated, and analysis of common formative
assessments. Resources needed to review this plan (time, human, and financial) would be
budgeted every year and administration would use aspects of the plan for their review and hiring
practices. A professional learning plan with an accompanying system to monitor and evaluate it
would fit the description of “capacity building” Fullan (2008) describes, supporting the goals
presented in this study:

Capacity building concerns competencies, resources, and motivation…Individuals and
groups are high in capacity if they possess and continue to develop knowledge and skills,
if they attract and use resources…wisely, and if they are committed to putting in the
energy to get important things done collectively and continuously. (p. 57)
The collective aspect of capacity building is also addressed in strategy three in terms of shared
leadership.
Strategy Three: Embracing Shared Leadership as a Catalyst for Change

Traditionally, schools have been structured under a hierarchical model - a top-down, pyramid-shaped design with a clear chain of command. However, as the role of education changes and major reform is at the forefront, "teachers and administrators, working alone all day every day, cannot possibly meet the new demands for improvements that are being thrust upon them with increasing urgency from all sides" (Wagner, 2008, p. 156). Systemic change is too large an issue to be addressed in isolation. What is required is a culture in which influence, authority, and decision-making are shared and promoted throughout the school, thus having an impact on the district’s context as well as teacher and leader competencies. Not only do the people in formal leadership roles have leadership capabilities, but so do the teachers, staff, parents, and students, and shared leadership will leave stakeholders viewing themselves less as independent contractors, and more as a company (Whitehead et al., 2013). “Without collaborative problem solving, individual change may be possible, but school change is not” (Hawley & Valli, 1999, p. 141).

Combining what Drago-Severson et al. (2013) refers to as pillars of practice entitled “teaming” and “providing leadership roles,” shared leadership involves nurturing and capitalizing on the leadership in everyone in the school community which also “creates opportunities for private and group reflection, reduces isolation, nurtures innovation, builds individual and group capacity, and establishes knowledge-based management systems” (p. 35). Not to be confused with simple task assignment or delegation, fostering the culture of interdependence relies on the relationships among people, an area in need of improvement in Modern Mind CUSD. It starts with renewing an understanding of the mission and vision of the district and the purpose of the collective work as the district prepares students for 21st century
society. Murphy (2016) breaks the process of effective collaboration into four steps: purpose, structure, focus, and nature.

Systemic change is defined by a focus or a purpose which in this case would be a school culture conducive to shared leadership. Every member of the team has to put individual agendas aside for the greater good of student learning. This purpose as defined by Zoul and Link (2007): empowers individual stakeholders to collaborate, committing to sharing responsibility and individual accountability while building the confidence that:

Together, the school community can set specific goals for improved results in any particular area; develop actions, strategies, and interventions to ensure that the goals are realized, and implement a plan and schedule for monitoring the progress of the plan throughout the year. (p. 16)

Structure refers to creating the norms and expectations for the joint work as well as the criteria for determining its authenticity. When norms are in place, the commitment becomes collective and the shared responsibility for student learning becomes the foundation for the work ahead. In conjunction and equally as important as the structure is the focus of the work. If the focus is logistics and non-academics, collaboration may not be the outcome. If the focus is rooted in issues of teaching and learning, including backwards mapping from student learning, collaboration to strengthen instructional practices is more likely to occur. The final step is nature which is also known as reflective practice. Serving as a large part of strategy four as well, reflective practice can include dialogue, but also studying one’s own patterns of thinking as they circle back to the purpose of the work (Murphy, 2016).

Taking into account the nature of the work needed to move from singular superhero to crime fighting team in terms of technology implementation and the nature of sustaining the
change, Borthwick and Pierson (2008) suggest the following actions:

- Establishing Professional Learning Communities (PLCs) for influencing change
- Involving leadership at all levels in modeling technology use and promoting technology adoption

Part of shared leadership as a catalyst for change is also establishing learning communities to influence change. “Where individual teachers are organized into teaching teams, they are empowered by their administration to see themselves as both capable and responsible for improving both teaching and learning” (Borthwick & Pierson, 2008, p. 40). Modern Mind CUSD is structured by grade level teams at the early childhood and elementary buildings, and content area teams at the middle and high school buildings. However, structure alone does not promote continuous improvement or collective responsibility. Authentic listening and collaboration require “engagement in inquiry, action research, data analysis, planning, implementation, reflection, and evaluation” (LearningForward, 2011, para. 2). Though the district has begun the process of working with an educational company to implement PLCs as a way to improve the quality of student learning, create a collaborative culture, and maintain focus on results, more dramatic steps need to be taken to move from testing the waters to commitment. The collaborative culture that PLCs develop would help to create the environment in which shared leadership is the norm, shifting from the singular leader model to that of a team and from the idea of one person having all of the knowledge to a mindset where expertise is sought from others. “No one person was ever meant to lead a classroom, school, or district all alone, not if they want to propel the work that needs to be done to a maximum level of efficiency and to sustain a high quality of work over a long period of time” (Casas, 2017, p. 63).
Building on the idea of PLCs, part of that process would be “involving leadership at all levels in modeling technology use and promoting technology adoption” (Borthwick & Pierson, 2008, p. 42). ISTE realized the importance of PLCs and shared leadership which was reflected in the change from what used to be known as the ISTE Standards for Administrators prior to 2017 to the current ISTE Standards for Education Leaders. The reason for this change was to reflect the movement from top-down management to developing leaders, regardless of title, who leverage technology to build a positive learning landscape (ISTE, 2018, para. 3). Modern Mind CUSD has teachers with very strong technology integration skills; yet, they are not being asked or encouraged to share their knowledge with others. During the staff interviews, when asked to whom teachers looked to for support in terms of technology implementation, there were only two answers: the Instructional Technology department and my colleagues. Yet, as the As-Is picture reveals, teachers continue to work in isolation, afraid to ask for help for fear of judgement.

Modern Mind CUSD has a District Technology Committee comprised of representative members of all stakeholder groups. The idea of creating leaders of all stakeholders could begin with this group, identifying their own strengths and then finding opportunities to support others through structured collaboration time, study groups, mentoring, and peer coaching (Borthwick & Pierson, 2008). Another way to share the responsibility of learning for all would be to capitalize on the skill level of those identified as the advanced participants from the cluster analysis, regardless of title or number of years in education. These participants demonstrated competency with both the SAMR Model and the ISTE Standards and could help build the capacity of their colleagues in a non-evaluative manner, building a strong sense of community and strengthening interpersonal relationships.
As educators and leaders, we are responsible for student learning as well as our own. But increasing demands call for educators to be responsible for their colleagues’ learning as well, prompting the need for a new framework for school improvement. Shared leadership is that new framework and can serve as the key to linking leadership and learning, especially when accompanied by a growth mindset and trust, the fourth strategy proposed for Modern Mind CUSD (Lambert, 2002).

Strategy Four: Growth Mindset is Encouraged Supported by Trust

With the idea of shared leadership in mind, we must “capture the essence of school improvement leadership by managing the instructional program and creating productive culture” (Murphy, 2016, p. 45). That productive culture would include a growth mindset supported by a foundation of trust. Carol Dweck (2008) coined the term growth mindset, defining it as a person’s belief in their ability to grow, learn, and change. Growth mindset occurs in both actions and words and guides movement forward in the improvement of learning for both students and adults. In an environment with growth mindset, teachers and administrators would feel confident in continuing to develop their skills and talents through effort and persistence while being receptive to lessons and feedback. There would be strong belief in improvement through hard work, trying new methods, and perseverance, and failure would be viewed as ways to discover greatness. Culture and growth mindset are not areas in which one can simply decree change; it requires practice, time, a strategic plan, and relentless action and reevaluation (Ormiston et al., 2018).

Because the “culture of your organization will be defined by the worst behavior you are willing to tolerate”, it is important to examine actions to support growth mindset and foster trust (Casas, 2017, p. 97). From his research and observations, Casas (2017) identified commonalities
in strong leaders at all levels:

- Value the importance of learning from others
- Define themselves as model learners, not model teachers/leaders
- Self-driven and self-motivated to push themselves in order to bring about positive change
- Run into challenge, not away from it
- Approach adversity as an opportunity to educate themselves and others (p. 60-61)

Most importantly, leaders transform the culture to one in which *gotcha* is used to celebrate success instead of fostering feelings of fear, blame, powerlessness, and doubt, building up the organization instead of tearing it down. “When an entire school is filled with people who care about each other, it is likely one also filled with people who care deeply about teaching and learning” (Zoul & Link, 2007, p. 18). This care also translates into relational trust, allowing all stakeholders to feel psychologically safe and able to be vulnerable, take risks, and fail. With the ultimate beneficiaries as the students, Bryk and Schneider (2002) identify four reasons to focus on the difficult work of relational trust:

1. Relational trust reduces the sense of vulnerability that presents itself when asking professionals to take on something new.
2. Relational trust facilitates collaborative problem-solving.
3. Relational trust allows for a complete group understanding of professional standards while providing autonomy and support for individual efforts.
4. Relational trust becomes the moral foundation for systemic improvement. (p. 117)

Genuine praise is one way to change the *gotcha* culture and foster relational trust, avoiding praise for intelligence and effort and instead focusing on the importance of planning and trying new approaches that “relate to the values, goals, traits, and visions that are commonly
shared” (Zoul & Link, 2007, p. 29). This type of praise also serves to affirm the behaviors expected from those involved while mapping out actions still to be accomplished. It also highlights the value in each individual, supporting the shared leadership environment that is necessary for sustaining success. Whether recognition occurs in public formats such as media mentions, staff meetings, bulletin boards, award ceremonies or in informal conversations, emails, or notes of praise, it has a significant impact on the desire to continue to grow, take risks, and learn every day. One example of online self-guided instruction that used very little financial resources to provide recognition for efforts was a digital PD badging system designed by the District Technology Committee and implemented in the 2018-2019 school year. Over 100 teachers and administrators (47%) participated in the first year, earning 260 badges. Earners were given recognition through the instructional technology website, during staff meetings, and in the superintendent’s newsletters. An additional benefit of digital badging for teachers was the use of the badges as evidence for their evaluations, displaying competencies developed throughout the school year. The resounding popularity of the system prompted ideas for new badges for the 2019-2020 school year, with incentives for individuals, teams, and buildings, employing game mechanics to inspire collaboration. Though simple in its design, an approach such as digital badges provides genuine praise and recognition, personalizes learning, and demonstrates a shared understanding of goals, promoting a culture of learning for all.

Another action item that addresses the culture would include formative feedback that is non-evaluative and from multiple sources. Creating a culture that welcomes feedback means ensuring that relational trust and learning are the core focus of the work (Smith & Smith, 2015). Reeves (2011) equates giving feedback to either a “witch hunt” or a “treasure hunt” (p. 30). The “witch hunt” contributes to the gotcha culture, with leaders barging into classrooms with
checklists to identify what is missing in a purely evaluative format. Instead of fostering defensiveness, the “treasure hunt” approach builds trust with a list of prioritized instructional practices about which constructive feedback can be provided.

Using the feedback model that Hattie and Timperley (2007) describe, feedback should be direct and specific, while answering the essential questions of: Where am I going? How am I going? Where to next? in order to “reduce discrepancies between current understandings, performance, and the learning goal or target” (p. 43). Feedback regarding Where am I going? addresses connection to learning goals and what success looks like in relation to these goals. How am I going? documents progress towards accomplishing the learning goal and where they are in relation to it. In order to focus efforts to close the gap between learning goals and existing performance levels, Where to next? is the final question answered. In her article The 6 Characteristics of Effective Praise, Barbara Blackburn (2015) uses the acronym PRAISE to highlight the desired qualities of feedback: Positive, Reinforces high expectations, Appropriate, Independence is promoted, Sincere, Effort and progress are noted. Though the article focused on students, this acronym is equally applicable to staff, shifting the mentality from feedback as a performance review aimed to criticize, to feedback as a strategy for goal-referenced growth.

Feedback from multiple sources (peer, student, leadership, and self) can be a significant resource for growth (Smith & Smith, 2015). Peers provide specificity in terms of particular elements of teaching, balancing their strengths with areas for growth, and promoting a culture of learning. When accepted as part of the culture, peer feedback also results in improved communication and better understanding of overall expectations, supporting shared leadership and co-learning. Student feedback is important to both leaders and teachers as they adjust the culture and instructional practices by making informed changes that are beneficial to both
student learning and staff development. Leadership in the form of administration and senior teachers or teacher leaders can also provide targeted feedback with the larger picture of the methodology of the institution in mind. Self-evaluation is an important form of feedback which includes heightening self-awareness and reflecting on your own perception of progress towards goals (Reeves, 2011).

Allowing time for goal-based reflection is another action that supports growth mindset and trust and is perhaps “one of the most underutilized tools educators use” (Konen, 2018). So much time is spent focused on student progress that educators often forget their own progress. Whether perceived as difficult or time-consuming, omitting reflection is “missing the power to change or confirm practices” (Konen, 2018). It is imperative that there is time set aside for structured thinking and reflection on feedback given from multiple sources as well as oneself not solely to identify areas of improvement, but also to celebrate positive aspects. Reflection can be about routines, instruction, or relationships and can occur before a lesson starts, during a lesson, or a week after a lesson is complete. The power of the reflection lies in the search for strategies, people, or ideas that can lead to positive adjustments in instruction and the potential for personal as well as student growth.

Conclusion

The purpose of these strategies and actions is not only to strengthen the arenas of change Wagner (2006) has identified as context, conditions, competencies, and culture, but also to ensure engaging and meaningful lessons every day for every student. Technology has the potential to expand growth possibilities for students, organizing learning around real-world challenges and having students and teachers “side-by-side becoming engineers of collaboration, designers of learning experiences, leaders, guides, and catalysts of change” (U.S. Department of
Education, 2017, p. 28). Without the change necessary to paint the *To-Be* picture as a reality, the opportunities that technology presents will go unrealized, having little to no effect on increased capacity of any stakeholder and unable to contribute to the environment necessary to prepare students for the demands of the 21st century.
SECTION SEVEN: IMPLICATIONS AND POLICY RECOMMENDATIONS

With the increased importance of developing 21st century skills in students, ongoing professional development and leadership support are crucial in transforming teaching and learning with technology. This requires efforts to gear evaluation towards determining the ideal combination of technology and instruction in order to reach learning targets, outcomes, and curricular goals. Patton states in his work that “social science has proven especially inept at offering solutions for the great problems of our time…..There is a pressing need to make headway with these large challenges and push the boundaries of social innovation to make real progress” (Patton, 2006, p. 28).

One area in which the boundaries need to be challenged and expanded is in evaluating technology integration in schools, moving beyond qualitative perception satisfaction surveys and towards integration of the ISTE Standards with current evaluation frameworks and tools. At this stage of technology integration in Modern Mind CUSD, there has been little to no structure for evaluation of what constitutes effective practices with technology, leaving its potential unrecognized. To truly transform teaching and increase both teacher and leadership capacity, there needs to be a shift in the current evaluation tools and processes in order to avoid doing old things in new ways. A successful evaluation tool will not only create procedures, but will “satisfy the demands for quality assurance while promoting professional learning” (Danielson, 2011, para. 10).

At the present time, the evaluation tool for teachers in Modern Mind CUSD (Appendix H) is structured using the Danielson 2013 framework. Though technology-related competencies weave into the Danielson framework and many of the domains and indicators align with the ISTE Standards for Educators (Appendix I), there is no overt mention of technology integration
in the current tool as it stands. Appropriate use of technology is a common theme, but the rubrics do not define what constitutes appropriate use (Saltmarsh, 2015). The intention of this framework was to identify the components of teacher practice that have been documented through empirical studies and theoretical research as promoting student learning (Danielson, 2013). However, given the current state of technology in education and the increased amount of quantitative data and research about technology integration that has become available since the inception of the Danielson framework for teaching, there is opportunity to review how ISTE and Danielson can be used to encourage the growth of teachers and provide evaluators with areas for targeted professional development.

The ability for leadership to support staff is also crucial to the success of technology implementation as it is integrated into a school’s instructional program and culture. Leadership needs to be able to model best practices, encourage risk-taking, and recognize effective instructional use of technology in addition to assessing staff’s needs in order to provide support and training in deficit areas. Modern Mind CUSD used the Illinois Performance Standards for School Leaders (IPSSL) to shape their evaluation tool for building and district-level administrators (Appendix J). Similar in structure to the Danielson framework, there are domains with multiple components that are ranked according to performance. Also akin to the Danielson framework, there is no mention of the ability to identify, model, and support technology integration even though there are direct connections to the ISTE Standards for Education Leaders (Appendix K). The integration of technology demands that administrators conduct evaluations in an environment that is new to them as well, leaving “principals and school administrators tasked with conducting teacher evaluations in a rapidly changing educational environment that can be unfamiliar if not altogether intimidating” (Saltmarsh, 2015, para. 1).
Weaving technology into evaluation can be a gray area because not every lesson taught requires technology. However, if the goal is to improve technology implementation as a way to positively impact teaching and learning through providing actionable feedback and targeted professional development, specific and formal tools and frameworks for thoughtful analysis will be necessary (Drago-Severson et al., 2013; Ertmer, 2005). Professional development that understands where each individual is at on the continuum of technology implementation will always be more successful than “those that plunge headlong into the content of a session with little or no attempt to get to know each participant” (Borthwick & Pierson, 2008, p. 13). Adjusting the current evaluation frameworks to connect with components of the ISTE Standards would address strategies suggested in the previous section concerning professional development options, shared leadership for change, and growth mindset supported by trust as feedback becomes directed at processes, efforts, and strategies instead of gotcha moments. This targeted feedback creates a culture of learning that promotes reflection, shared responsibility for students, and a learning community centered around technology.

Policy Statement

The policy I am recommending is a revised evaluation system that incorporates the ISTE Standards for Educators and Education Leaders. In implementing this policy, Modern Mind CUSD will provide focused training and collaborative individualized discussions prior to developing a timeline and evaluation cycle that will vastly improve the infusion of technology and the quality of instruction in Modern Mind CUSD.

The critical issues that make this policy a necessity include preparing students for 21st century society, targeting professional development and supports to increase teacher and leadership capacity, and creating a culture of learners that supports shared leadership and growth
mindset. The focus is not on technology alone, but on quality instruction, dialogue, and providing support.

The Partnership for 21st Century Learning (2019) brings attention to the need to bridge the gap between how students learn and how they live or risk irrelevance in education (para. 1). Students are accustomed to complex social networks, instant access to information, and real-time feedback, all of which need to be incorporated into modernized technology plans in schools. Technology enables personalized learning that is not only more relevant and engaging, but also prepares 21st century students for a global society with an emphasis on the 4C’s (communication, collaboration, critical thinking, and creativity) developed by the P21 (Battelle for Kids, 2012), adaptability, initiative, curiosity, and imagination (Wagner, 2008). Modern Mind CUSD took the first steps by researching and implementing a District Technology Initiative with the mission of innovative uses of 21st century technologies for teaching and learning. However, to ensure that resources are being used effectively and that the mission is being accomplished, there is a need to better align evaluation processes with technology standards maintaining the goal of fostering staff (and student) learning (Whitehead et al., 2013).

Evaluation systems are central to ensuring quality teaching and leadership which has now come to include technology implementation, requiring updates to the systems themselves in order to reflect all aspects of 21st century teaching and learning. With the expectation of the district to use technology for teaching and learning, it is imperative that evaluation rubrics are built to match that vision.

Revising the evaluation system to include the ISTE Standards would also ensure that teachers receive specific feedback as to how to improve their practice and that leaders have the capacity to provide this feedback as a part of being held accountable for teacher performance and
providing necessary supports. This would allow for targeted professional development to increase the capacity of both teachers and leaders that is personalized to each individual’s strengths and weaknesses. Professional development needs to strengthen student learning and elicit improvements in knowledge and instruction. Because it can affect participants differentially depending on prior knowledge, level of experience, and other factors, the stronger the evaluation system becomes in reflecting the vision and mission, the stronger the supports become as they are personalized and directed to increase the capacity of each individual (Desimone, 2009). The type of support that enables teachers and leaders to develop knowledge and skills in areas of deficit also sends a message that “technology and 21st century learning are essential to the school reform process” (Whitehead et al., 2013, p. 122).

An updated evaluation framework would also include the addition of an individualized discussion prior to the start of the evaluation cycle (Appendix L). Currently, the timeline begins with a group evaluation process meeting in which the entire timeline and expectations are reviewed. The observation cycle starts after the meeting is complete with the first individualized discussion occurring after the initial informal observation and the first discussion of goals occurring at the post-conference. Though there is no official timeline for administrative evaluations, they follow a similar cycle void of the group meeting. The addition of an individualized discussion prior to the start of the cycle would allow for consistency in expectations about technology integration as it relates to the vision and mission of the district, holding every staff member equally accountable. This shared responsibility then translates to bringing together teams of people who have the skills to meet the objectives and create the culture of continuous learning, growth mindset, and shared leadership. As Barth concluded through his studies (2006):
A precondition for doing anything to strengthen our practice and improve a school is the existence of a culture in which professionals talk about practices, share their craft knowledge, and observe and root for the success of each other. Without these in place, no meaningful improvement - no staff or curriculum development...no sustained change is possible. (p. 13)

The addition of personalized, continuous dialogue around professional practice would help transform both teaching staff and administration into instructional leaders, moving away from evaluation as punitive and towards evaluation as a way to improve student achievement.

The ISTE Standards provide a foundation for goal setting and longitudinal tracking of technology usage in the classroom with a focus of improving instructional designs and outcomes. Integrating these standards into the current teacher and leadership evaluation frameworks will not only bring specificity to feedback, but will enable connections to be drawn between standards, best teaching practices, and effective use of technology.

Analysis of Needs

The modernization of the evaluation system is necessary to provide individualized, specific feedback with the goal of improving instruction. A 2012 report from the Bill and Melinda Gates Foundation entitled Gathering Feedback for Teaching summarized the failings of educational evaluation and its current inability to address the quality of instruction:

The nation's collective failure to invest in high-quality professional feedback to teachers is inconsistent with decades of research reporting large disparities in student learning gains in different teachers' classrooms (even within the same schools). The quality of instruction matters. And our schools pay too little attention to it. (p. 3)
As access to technology in schools becomes more commonplace and its role as a powerful tool to transform learning becomes more defined, few schools have adapted evaluation frameworks or technology competency expectations for teachers or leaders, leaving uncertainty as to capacity levels and supports needed. Redesigning evaluation frameworks will also require training all staff involved in order to recognize the “true potential to transform professional learning” (Danielson, 2011, p. 36). With the intention of supporting and promoting effective leadership, quality teaching, and student learning, both those being evaluated and those doing the evaluation need to establish a common understanding of the standards, rubrics, and rating scales being used. Developing such frameworks and providing staff with training on these frameworks could take years and have many implications on educational, economic, social, political, legal, and moral factors as addressed in the forthcoming sections, but these significant corrections need to be made to move away from perfunctory and episodic procedures and towards meaningful and supportive processes in order to truly increase capacity of leaders, educators, and students.

*Educational Analysis*

The Illinois State Board of Education requires that evaluation be grounded in the purposes of accountability, improving system performance, and professional learning. The ISBE also promotes the goal of evaluation as a method to improve teaching and learning by better preparing students for 21st century society and teachers and leaders to adapt to this type of classroom and school environment (ISBE, 2010). Updating evaluation processes to include technology integration and timelines to include individualized discussions will not only create mutually respectful relationships, but will provide opportunities for the supervisor and evaluatee to examine professional practice collaboratively to identify strengths, weaknesses, and areas for growth and development.
As the 21st century brings to light a new set of demands and skills, the role of the teacher changes. “Children need teachers more than ever in a world where information overload creates confusion in immature minds. But they need teachers less and less as imparters of knowledge and more and more as imparters of wisdom” (Poole et al., 2009, p. 316). Just as there are new demands and skills for student learners, the role of a teacher also comes with a new set of skills and demands necessary to become the facilitator of learning in an environment where technology integration is seamless and has the power to transform learning. An evaluation tool and process that reflects the advancements made in the area of educational technology would promote personalizing learning for both students and staff and create a culture of modern learners prepared for the 21st century.

Also a part of the culture of modern learners are the educational leaders in the schools and districts who have roles with evolving definitions as well. Transitioning away from the point-person and towards the co-learner in an environment of shared leadership, educational leaders are tasked with developing trust in order to “reduce the sense of risk associated with a change in practice” (Smith & Smith, 2015, p. 32). An environment that includes technology implementation includes new teaching practices and implementing new teaching practices involves risk. With a modernized administrative evaluation framework that integrates the ISTE Standards for Education Leaders, there would be an opportunity to provide leaders with the support needed to increase their capacity to provide targeted support to staff which would ultimately lead to increased learning for students.

Another significant purpose of educational evaluation is to promote professional learning (Danielson, 2011). More than just assessing, evaluation provides professional development opportunities tailored to areas in need of growth. Due to the fact that “technology integration is a
moving target and research designs need to be flexible to capture the dynamic nature of preparing and supporting teachers to integrate technology into their classrooms” (Lawless & Pelligrino, 2007, p. 598), it is imperative that support be personalized and in multiple formats with the level and intensity determined by a collaborative and relevant evaluation process that includes clear, common standards for effective teaching and leading.

**Economic Analysis**

Analyzing needs encompasses the assurance that resources are being used effectively as “how you spend your resources – financial, time, and human – really does speak to the ethics, morals, and values about what is important” (Miles & Frank, 2008, p. 21). From a financial perspective, revising evaluation tools and policies is not of great economic burden to a school or district. The potential for monetary expenditures in terms of retraining staff and administrators would be minimized since the process would be structured, driven, and approved by committees comprised of all representative stakeholder groups, creating internal experts, leaders, mentors, and coaches who would have the ability to lead job-embedded professional development opportunities. The largest expense would be time as it would be needed to develop the tool, process it through all needed avenues of approval, and then train all stakeholders in its use.

But technology implementation as a whole is not void of monetary expenditures. In order to remain current, technology staff, maintenance and upkeep of devices, and infrastructural changes will remain the largest financial burdens of technology implementation. Once the investment is made in sustaining technology implementation, a strategic plan is necessary in order to be prepared for the recurring expense of supporting technology in schools. “Appropriately financing school technology is a key to reforming and improving schools” (Whitehead et al., 2013, p. 170) and with more digital natives on the way, creative and
nontraditional sources of external funding will need to be discovered in order to keep students competitive on a global level. Through the use of budgeting techniques aligned to goals and with frequent stakeholder input, schools can continue to close the technology implementation gap. With the priorities set correctly, and the focus on the district’s shared vision and philosophy of teaching rather than on cost and hardware, the results will boost student performance and encourage innovation, rather than restrict it (Whitehead et al., 2013).

In addition to the resources of time and money, the revision of evaluation policy also has implications of development of human capital. The economic growth would be in the form of better prepared teachers and leaders with the capacity to integrate technology into instruction in a way that provides students with the skills necessary for 21st century society. A shared understanding of the definition of good teaching or good leadership will allow for a common language when discussing professional practice, engaging both the supervisor and the evaluatee in promoting learning and increasing capacity (Danielson, 2011).

Social Analysis

Performance evaluation can have social implications through the effect on school culture, often creating a culture of fear and isolation instead of a culture of learning. Meaningful evaluations not only provide feedback that cultivates a culture of continuous improvement, but also support the vision and goals of the district while creating collaborative partnerships and a learning community. “Creating and sustaining a safe and supportive environment is foundational to instructional leadership ability in that although orderliness is not sufficient for a high-quality learning environment, its absence makes the work of educating students practically impossible” (Smith & Smith, 2015, p. 92). Through the design and implementation of evaluation tools and processes that include technology integration, Modern Mind CUSD would not only be reflecting
the current vision and mission, but would also be communicating their dedication to what the district values.

The purpose of the new evaluation tools would be to prioritize and develop great teaching and leadership in a participatory manner, ensuring quality through active intellectual engagement including self-assessment, reflection of practice, and professional conversation. Through a consistent definition of good teaching and leadership, opportunities to engage in meaningful conversations about practice, and a focus on instruction, it is possible to build the culture of continuous improvement with students at the center thus strengthening the social connections in the school community (Danielson, 2011).

With social analysis also comes discovering and remedying inequalities in education. Void of technology integration as they stand, current evaluation tools do not guarantee the equitable distribution of well qualified teachers and leaders in schools. To further the district mission in Modern Mind CUSD of “innovative uses of 21st century technologies for teaching and learning” (omitted for confidentiality, 2019, para. 2), teachers and leaders have to have the capacity to do so and be evaluated as such. Research consistently shows that teacher quality is one of the most important factors in student success (Danielson, 2011; Drago-Severson et al., 2013; Martin et al., 2010; Ormiston et al., 2018; Reeves, 2009) and every student deserves teachers that have the correct certifications, strong knowledge of content and pedagogy, and who employ relevant methods and best practices as well as leaders that can provide supportive climates and cultures, increase teacher motivation, and model instructional best practices which have now come to include technology integration. The inequity reflected in the distribution of highly qualified teachers and leaders would be addressed through the creation of comprehensive evaluations that allow for targeted feedback and supports. Adjusting accountability systems to
more accurately assess teacher and leadership effectiveness would help advance educational equality as this would ensure that all students have equal access to high-quality teachers and leaders (Miles & Frank, 2008).

**Political Analysis**

Mary Lee Smith (2004) stated that “when the stakes are high….the political processes that undermine policy reveal themselves as particularly salient” (p. 2). Research has affirmed that teaching quality is the single most important factor influencing student achievement. Therefore, ensuring that all classrooms have highly qualified teachers and that all leaders know how to support teachers in their professional growth is a salient concern (Anderson & Dexter, 2005; Ertmer, 2005; Ormiston et al., 2018). But issues surrounding teacher and principal evaluation can be very political, especially as year-to-year data declines or remains stagnant while the number of high-stakes tests and federal mandates rise. There is a push for increased access not only to devices, but to courses surrounding computer science, as driven by the U.S. Department of Education as well as initiatives such as President Barack Obama’s *Computer Science for All* which aimed to “empower all American students from kindergarten through high school to learn computer science and be equipped with the computational thinking skills they need to be creators in the digital economy, not just consumers, and to be active citizens in our technology driven world” (Smith, 2016, p. 1). With such demands comes the need to increase educator and leadership capacity.

Though it may be easy to assume that unions and school boards will agree that modernized evaluation systems are necessary to improve supports and provide more targeted feedback, what it will require is convincing all stakeholder groups of the positive consequences such a change would have for student learning. Critical to the process will be the involvement of
all stakeholders, particularly members of the union and informal leaders. “If efforts to implement new teacher evaluations are to be successful – and ultimately effective – policymakers must understand when and why school district leaders, local teacher unions, and other key players collaborate, and how their interactions influence the reform process and its outcomes” (Katz, 2015, p. iii). Because of the frequent opposition on many issues, it will be crucial that the district engages in a strategic planning process that aligns teacher and administrative evaluation with current district goals focused on 21st century skills and learning in order to gain buy-in from the unions and school boards. By articulating clear standards for instruction that include technology integration, revamping outdated evaluation tools, and making decisions about retention and development based on the new processes, the purpose of evaluation becomes part of a district improvement strategy as opposed to a procedural part of a school year.

Legal Analysis

The introduction of technology in schools has risks that involve protecting students as well as the district from liabilities. There are many legal implications involved with technology and schools including:

- Precautions against misuse and protecting students’ privacy
- Creating and adopting Acceptable Use Policies (AUPs)
- Ensuring compliance with the Family Educational Rights and Privacy Act (FERPA) and the Children’s Online Privacy Protection Act (COPPA)
- First amendment concerns regarding freedom of speech and district control over network usage and access (Whitehead et al., 2013)

Assuming that schools integrating technology have considered the above components and taken steps to protect students as Modern Mind CUSD has done, the legal implications of this
suggested policy change would involve ensuring that the process follows state code, joint committee rules, and union guidelines.

The year 2010 brought about the Performance Evaluation Reform Act (PERA) which prescribed combinations of student growth and professional practice as well as rules for observations, conferences, and evaluator requirements. Along with a more streamlined process for dismissal on performance rather than seniority, performance category terminology was determined and an evaluation schedule was established (ISBE, 2010). Regardless of the changes made to the evaluation tool, these elements must remain structured as the state has outlined in the legislation and updated if the state reforms the legislation. On a local level, the evaluation reform process will be situational, with each school and district having different rules and guidelines. In Modern Mind CUSD, any and all changes made to the evaluation tool and process will require approval by the teachers’ union, Modern Mind Educational Team (MMET), prior to implementation. The practice that Modern Mind CUSD employs is to involve a joint committee comprised of a representative sample of teachers and administrators from the district in the change process in order to balance the vision with local context and legal reality.

Moral and Ethical Analysis

It is the moral and ethical responsibility of all educators and educational leaders to individualize education for all students while being responsible with tax dollars. Technology has the power to do this by facilitating collaboration, redefining the role of the teacher, and increasing intercultural communication. But without accountability in place, it is difficult to ensure that the strategic allocation of resources is truly benefiting learning (Poole et al., 2009). The cost of educational technology programs for schools can vary, but ultimately include expenditures in hardware, software, infrastructure, personnel, and staff development. Strategic
financial plans often include special levies, bond issues, and grant support alongside partnerships with local businesses and fundraising. Due to the small amount of commercial properties in Mente, residents already pay nearly two times the national average for property taxes according to a Local Government Information Service (LGIS) analysis of real estate (omitted for confidentiality, 2018).

Because the schools are funded by property taxes and because technology is such a substantial, long-term investment, it is imperative that the impact of technology on teaching and learning can be measured and assessed. “Public schools are public institutions; they take public money, and the public has a right to expect high-quality teaching” (Danielson, 2011, para. 3). As technology begins to release the teacher from the constraints of the primary source of knowledge transfer to the person ensuring “optimal conditions for knowledge acquisition” (Poole et al., 2009, p. 316), it is imperative that both the teachers and leaders have the correct supports in place to increase their capacity which would be substantiated by modernized tools with which to evaluate their areas of strengths and shortcomings.

Implications for Staff and Community Relationships

The idea of policy change in the area of teacher and leadership evaluation that includes intertwining existing frameworks with new standards can have implications on relationships among stakeholders, especially for teaching staff, administration, community members (including parents), and students. Drago-Severson et al. (2013) write about the importance of a strong focus on professional learning as a way to build capacity in schools. The focus of these proposed evaluation systems is to better prepare teachers to employ best practices of teaching and administrators to provide targeted supports. In doing so, the capacity of both teachers and
administrators will expand, allowing them to provide high-quality instruction and learning opportunities for students, and create the culture of learning driven by growth mindset and trust.

Referring back to the strategies and actions suggested through the analysis of data collected from Modern Mind CUSD and the areas of tension surrounding trust among teachers and administration, this policy would address staff relationships through the ability to provide continuous professional development with format choices, promote shared leadership, and foster a growth mindset. There are many gaps that even the most experienced and talented teachers and administrators can and do face. Many times, the gaps are technical such as assistance with analyzing data in a way that drives immediate and individual action at the student level or time and space to analyze data and plan for the work ahead. In other cases, the gaps are more adaptive and there is a need for exposure to new strategies and time to practice implementation. With the integration of the ISTE Standards for Educators and Education Leaders, clarity on whether the gap is technical, adaptive, or both, and designing supports with those gaps in mind becomes possible. Supervisors of teachers and leaders would be able to indicate which areas are in need of support and link those to existing forms of professional development that target that area, or force creation of new supports to personalize learning for all stakeholders, not just students. This personalization of support and the addition of dialogue to the evaluation process focus on growth - growing educators’ teaching capacities, growing leaderships’ ability to provide support, and ultimately growing student achievement - through trusting relationships and a culture of learning. Hatch (2013) refers to schools void of trust as an issue because:

Without strong relationships and the collective commitment and understanding that can help foster those relationships, innovations and improvements are likely to remain sequestered in the classrooms, departments, or other small groups of pioneers and early
adopters. In turn, those independent innovations are likely to be difficult to sustain over significant periods of time. (p. 35)

Knowing that a modernized evaluation tool and process has been implemented in Modern Mind CUSD and making those updated tools and processes transparent to the community will also provide community members with the confidence that the schools are able to ready their children for the demands of a 21st century society. The relational factors of student achievement and school improvement are what connect the community and parents to the schools as the schools are supporting their children and spending their tax dollars. Recognizing and acting upon the need to change accountability measures to reflect current societal demands and responding to current mounting pressures to show student and school improvement, this policy revision demonstrates the high level of responsibility the schools are taking for student success, thus strengthening the quality of the relationship between the school and the community.

Each of the stakeholder groups (teaching staff, administrators, community members, and students) has vested interest in improving education to reflect 21st century demands. Once the new evaluation tools and processes are approved and implemented with fidelity, this revision to policy has the potential to ensure that specific support and job-embedded professional development for teachers and leaders is realized, creating a culture of learning centered around students.

Conclusion

The modernization of evaluation processes as a way to provide information about the performance of teachers and administrators as individuals will not only increase capacity and improve instruction, but will shift the focus of evaluation away from management tasks of compensation and firing to creating a culture of learning. With the goal of using technology to
amplify great teaching instead of just layering technology on top of an outdated paradigm, strong relationships, shared responsibility, and a community of practice as defined by James et al. (2008) can be created as Modern Mind CUSD’s stakeholders become “a group of people who share a concern, set of problems or passions, and who deepen their knowledge and expertise through regular interaction and accountability” (p. 10).

Referring back to some of the areas of growth discovered in the results section, incorporating the ISTE Standards for Educators and Education Leaders into the Danielson Domains and Illinois Performance Standards for School Leaders frameworks used by Modern Mind CUSD would address some of the more glaring issues in the areas of competencies and culture. The As-Is state revealed deficit competencies regarding teacher usage of the 4C’s (communication, collaboration, critical thinking, and creativity) developed by the P21 (Battelle for Kids, 2012) and leveraging technology for student choice, two areas that would also lend to climbing up to higher integration levels on the SAMR ladder. ISTE Standard 5 for Educators is entitled “Designer” and has sub-standards that focus on using “technology to create, adapt, and personalize learning experiences that foster independent learning and accommodate learner differences and needs” and designing “authentic learning activities that align with content area standards and use digital tools and resources to maximize active, deep learning” (ISTE, 2018, para. 5). Appendix I shows how this standard pairs well with Danielson Domain 1: Planning and Preparation, bringing specificity to areas such as demonstrating knowledge of content and pedagogy, demonstrating knowledge of students, and designing coherent instruction, all of which support usage of the 4C’s (communication, collaboration, critical thinking, and creativity) developed by the P21 (Battelle for Kids, 2012) and student choice.
With regards to leadership competencies, shortfalls existed when attempting to provide differentiated supports for technology integration. The third IPSSL is improving teaching and learning. Appendix K depicts the alignment between the IPSSL standard three indicators and ISTE Standards for Education Leaders numbers 2 (Visionary Planner), 3 (Empowering Leader), and 5 (Connected Learner) as they both address the effectiveness of instruction, with the ISTE Standards detailing ways to provide specific supports using technology.

The As-Is analysis also exposed weaknesses in the culture that could be addressed with adjustments to the evaluation process and protocol for both teachers and leaders. Teachers question the instructional capacity of leadership in terms of providing useful feedback and support, citing the lack of recognition of their efforts in integrating technology into their practice. Teacher-principal trust was also a weak point uncovered in the data analysis portion of the results section. Knowing that the ISTE Standards are a part of both the formal evaluation processes of teachers and leadership, trust would be repaired as both groups of stakeholders would be held accountable for growth in the area of technology implementation as a way to modernize teaching and learning practices. It is this trust and accountability that would then lend to technology integration as a way to personalize learning for all stakeholders, especially students, as teachers and leaders demonstrate “a willingness to rethink teaching, learning, assessment, and even the school buildings in order to get results” (Wagner, 2008, p. 228).
SECTION EIGHT: CONCLUSION

The increase of technology available to schools has precipitated the increase in studies regarding its impact on student outcomes. The majority of the studies typically fall short by focusing on:

1. The general use of technology, treating technology as a *single thing* void of distinction between types of devices, programs, and applications and their usage in different contexts.

2. The impact of the quantity of technology in use and how often it is being used, ignoring the quality of technology (Lei, 2010).

Where general usage can strengthen basic proficiencies and increase technology literacy, it does not enhance instruction nor does it provide meaningful, authentic learning experiences. Many districts saturate buildings with devices without comprehensive, strategic plans leaving the potential for technology to enhance learning untapped. The absence of a plan with a focus on instruction can easily reduce technology to challenges with access, routines, and technical support, making sustainability problematic and failing to validate the recurring resource investment. The actual possession of devices does not define technology implementation, rather it is the integration of technology as “routine, seamless, and both efficient and effective in supporting school goals and purposes” (Lawless & Pellegrino, 2007, p. 577).

The purpose of this study was to glean lessons and policies that enhance technology implementation in school districts through professional development and leadership by investigating current data in Modern Mind CUSD to shift the paradigm of teaching to match the needs of 21st century society. Current schooling systems are outdated in many aspects - from the curriculum, to assessments, to teaching methods. The 21st century students, often referred to
as the *Net Generation*, are very familiar with technology as a way of life, which leaves educators and leaders to re-envision the role of technology in the classroom and to redefine the traditional definitions of teacher and leader (Wagner, 2008). “The key challenge to making technology integration successful is to have a conceptual understanding of what the technology can do, have a significant amount of support and understanding from administrators, and make better use of the tools in one’s own area of teaching” (Berrett et al., 2012, p. 216). This type of shift requires tailored, personalized support plans for each educator and leader, ensuring that they can create learning experiences and cultures that can adapt to the needs of emergent learners as opposed to simply layering new concepts for change on top of old beliefs.

This gap in research regarding technology implementation supports and the need for increased educator and leadership capacity in the area of technology implementation led to the collection of data regarding professional development and leadership in order to create policy recommendations. The driving question that guided the data collection addressed the extent to which professional development and leadership relate to technology implementation in order to develop a technology-infused culture in Modern Mind CUSD and districts undergoing similar work. Due to the nature of the problem, “the work of reinventing schools and districts is not technical work that can be controlled by fiat from the top of the organization. Instead, it is adaptive work that requires changes in people's heads, hearts, and actions” (Wagner et al., 2006, p. 138) in order to address teaching, learning, and ultimately, student growth. As with any large-scale reform, change is slow, dramatic, and dynamic and this program evaluation addressed what is necessary to not only transform, but to sustain.
Discussion

For students to remain competitive in the 21st century workplace, schools need to reexamine skills and learning experiences necessary for developing a sense of agency and a love of learning in all stakeholders. This is especially critical for students as we prepare them for the unique needs of 21st century society. "In the age of the Internet, using new information to solve new problems matters more than recalling old information" (Wagner, 2008, p. 257). This transformation of the role of schooling and the capacity for teachers and leaders to provide authentic opportunities for students to acquire the skills necessary to prosper in the information age requires change which may not be welcomed with open arms due to the level of disruption it may cause (Poole et al., 2009). But as Dr. Philip Phenix, philosopher and proponent of the power of schooling quoted for the study conducted by Poole, Sky-McIlvain, Evans, Jackson, and Singer (2009):

The most fundamental element in education is change. This is implicit in its very definition. All learning requires change. Education as a ‘process’ must ‘proceed’ or move ahead. Stagnation is therefore directly and fundamentally opposed to education. It is the basic evil for education. (p. 1)

With that thought in mind, it is necessary that all involved develop a willingness to embrace change which is supported by a culture of continuous learning for all, a growth mindset, and a readiness for shared leadership and responsibility.

Yet despite the expansion of access to technology in schooling, it is still not being consistently utilized in a way that integrates curricular relevance, choice in learning, and depth of understanding and many times becomes the equivalent of a $300 pencil. With the teacher as the most important resource in the room and the key to successful implementation, support through
ongoing, personalized professional development is crucial both for the teachers delivering the lessons and the leaders providing the feedback to strengthen instruction. Increased teacher and leadership capacity, in addition to “sustained attention to curriculum, school organization, educational philosophies, instructional practices, and family and community involvement” (Hawkins, 1997, p. 2), will unleash the true power technology has to metamorphose education.

The challenges faced by Modern Mind CUSD in terms of technology implementation are by no means unique. Few schools have truly approached technology as a way to support learning goals and further student achievement (U.S. Department of Education, 2017). However, through this program evaluation and an in-depth analysis of the current As-Is situation in relation to the desired To-Be, a few strategies and a redesigning of policy will help Modern Mind CUSD develop stakeholder capacity for seamless technology integration and blended instruction. Though dynamic by nature and situational at best, the strategies will take time, patience, and reevaluation. More time will be spent experimenting than solving, inventing as opposed to searching, and failing instead of succeeding. But in order to take responsibility for the future of students, these are all necessary parts of true reform.

The As-Is state of Modern Mind CUSD revealed areas for improvement categorized by Tony Wagner’s (2006) Arenas of Change (or 4C’s) - context, culture, conditions, and competencies. Though conditions in terms of professional development offerings, access to devices, and stakeholder involvement are prime for successful technology implementation, tenure in the district is an area of context that is a challenge as administrative turnover conflicts with staff longevity, causing significant cultural obstacles including a lack of trust, a prevalence of fear, and minimal collaboration. These cultural struggles also suppress growth in
competencies as teachers avoid risk-taking and learning from failures, while leadership encounter difficulties attempting to provide individualized supports.

As more devices enter the district and access is no longer an issue for any of the buildings, the *To-Be* vision has the potential to become a reality with a few adjustments to the culture and competencies of teachers and leaders, preventing technology from “hanging around the prison yard of lost potential waiting to escape” (Casas, 2017, p. 24). Through establishing growth mindset and shared leadership, Modern Mind CUSD and other schools and districts can move forward in transforming classroom practice and making innovation the norm. By establishing a community of learners who actively engage in learning from each other, the environment becomes one in which all stakeholders are constructing knowledge together while feeling a collective responsibility for individual growth.

The *To-Be* scenario is not far from reach for Modern Mind CUSD and through these four proposed strategies, the researcher believes that the district can and will close the implementation gap: 1) increased access to devices, 2) continued choice and voice in professional development opportunities, 3) shared leadership as a catalyst for change, and 4) a focus on growth mindset for all stakeholders. Addressing both the context and conditions of the district, increasing access to devices at the early childhood and elementary grade levels and communicating the plan for access at those levels will provide the transparency needed for teachers to continue to move forward with their skills and take risks. Though this strategy can seem technical in nature, it also addresses smaller elements of the larger adaptive challenges faced by Modern Mind CUSD by fostering trust and open lines of communication among all involved.

One of the areas in which Modern Mind CUSD has ranked strong since the start of the District Technology Initiative was in the approach to professional development. Through the
study of other districts prior to implementation, constant re-evaluation of needs, and adjustment of strategic planning as often as needed per continuous feedback from participants, classroom observations, and national surveys such as BrightBytes, the district has been able to make progress towards technology implementation as a way to impact teaching and learning. In addition to the quantity and quality of the professional development offered was the choice in format and frequency by every staff member in the district. Led by data analyzed by the District Technology Committee and the Director for Instructional Technology, professional development continues to evolve each year as needs shift, best practices are identified, and technology continues to advance.

Where improvement is needed is in creating shared leadership to maximize talent, empower all stakeholders, and sustain the initiative through changes in staffing, policies, and practices. Due to the dynamic nature of technology in general, “a group of people working together on technology leadership makes it more likely that the necessary amount of expertise is available and that the team can keep up to date and address all technology leadership needs” (Dexter, 2011, para. 1). Shared leadership will not only lead to challenging the collective capacity of all involved, but will become a cost-effective way to personalize learning for each individual. Starting with a small cohort of staff identified as pioneers in technology implementation, providing them with the support and autonomy needed to create learning opportunities for themselves and others will transform the traditional structure of leadership into one in which there are multiple capable drivers and a resiliency that can stand the test of time.

With shared leadership comes another important component in the To-Be culture of Modern Mind CUSD - a focus on growth mindset for all stakeholders which includes building relational trust. Not only does the lack of trust in Modern Mind CUSD suppress growth in many
facets of education and change, but it also promotes defaulting which Heifetz et al. (2009) defines as “the ways of looking at situations that lead people to behave in ways that are comfortable and that have generated desirable results in the past” (p. 64). This causes practices to exist long after they have stopped being effective due to the known lack of disruption. The key to change is becoming comfortable with discomfort by confronting fear and taking risks. Supported by trust, the expectation of risk-taking promotes innovation and, in turn, creates a culture in which there are no mistakes, only experiences from which opportunities are derived.

In addition to the strategies proposed for Modern Mind CUSD and other schools and districts facing similar issues with technology implementation comes the need for adjusting evaluation policies as a way to increase capacity of teachers and leaders in teaching and learning with technology. Technology alone cannot impact teaching or learning. Part of the reason for the mixed conclusions regarding the efficacy of technology in education is due to the lack of evaluation plans and tools that focus on connection to learning processes and systems. In order to clearly diagnose strengths and weaknesses, there need to be clear expectations and defined outcomes and currently, evaluation systems are deficient in clarity regarding the use of technology (Whitehead et al., 2013). Due to the amount of resources being spent, technology programs and initiatives are under constant scrutiny to provide concrete evidence of the impact on learning outcomes. The exposure, type, or quantity of devices do not equal educational benefits. It is the interoperation of technology with content and pedagogical strategies that have an effect on learning outcomes. The interconnection requires that teachers and leaders are “motivated and energized to create needed change by involving them in the study and improvement of their practice” (James et al., 2008, p. 11) which would be aided by modernized evaluation policies and procedures.
Leadership Lessons

As an educator, leader, and change agent attempting to tackle the challenge of adaptive, systemic change, it is important to remember that the process can be volatile, complex, and daunting. Though this program evaluation concerns technology implementation, an area often viewed as a technical challenge, the biggest leadership lessons learned revolve around the human aspect of change, focusing on the importance of culture and stakeholder involvement throughout a change process, especially in terms of instructional practices and large-scale goals. To be truly effective, school improvement processes must go beyond perfunctory activities and checklists of changes. Schools make a difference; teachers and instructional practices make the most difference and without the culture in which we encourage innovation, promote collaboration, and advocate change, any reform efforts will be futile. From this process, there are five leadership takeaways that not only apply to successful technology implementation, but to any reform that attempts to transform teaching and learning:

1. A Team Is Critical to Success
2. Tools and Training Need to Be Personalized and Linked to Teaching Practices
3. Communicate a Clear Link to the District or School’s Vision
4. Evaluation is Key
5. Strong Cultures Equal Strong Schools

Lesson #1: A Team is Critical to Success

John Lennon said that “a dream you dream alone is only a dream. A dream you dream together is a reality.” This could not be truer with educational reform and systemic change. Major organizational change cannot be driven from the top down by a single individual with a
significant title. A strong team, representative of all stakeholders involved, is necessary to lay the foundation for any initiative, as they become momentum champions and eventually sustainability leaders. "Enabling large numbers of students to reach high levels of learning means coming to terms with the fact that effective education takes more than individual effort. It takes an entire system to enable every child to reach high standards of learning” (Hatch, 2013, p. 37). The presence of a well-established committee or team will not only assist with the delegation of responsibilities, but will give credibility to the need for the change.

To move change forward, an effective strategy involves the flywheel effect, a term coined by Jim Collins in his book Good to Great (2001). Though it was meant to apply to business, the concept applies to change in education as well. The challenge is being assigned the task of getting a huge flywheel weighing over 5,000 pounds to rotate on the axle as fast and as long as possible, demonstrating the tremendous power in team effort for continued improvement, beginning with small, tangible accomplishments in order to start the momentum or the push which generates the enthusiasm to keep moving forward. A sound team, framed in policies and procedures within the school system, acts as a guiding coalition, providing implementation specialists that bring in diverse and sometimes dissonant perspectives. Their presence ensures that all voices are heard and that change is carried out in a meaningful way for all students, starting the flywheel and keeping it spinning through changes in personnel, practices, and policies.

The District Technology Committee is the team at Modern Mind CUSD that was fundamental to the initial success of the initiative and remains the power behind progress and sustainability as technology continues to advance. Composed of students, community members, support staff, teachers, and administrators from each of the five buildings, this team meets
throughout the year to provide feedback, generate involvement through the planning and execution of school and districtwide events, and analyze data to determine needs and areas for targeted support. Their consistent involvement in all aspects of the process helps the mission, vision, and goals of the initiative remain transparent to the district and community while ensuring that all voices are heard. This team is the driving force behind building community around innovative technology in education. Without them, efforts made in regards to technology implementation could easily be perceived as top-down, autocratic demands, fostering resentment and resistance to the change (Patton, 2008).

**Lesson #2: Tools and Training Need to Be Linked to Teaching Practices**

The goal of any educational reform is to improve student achievement. For technology to do so, usage must be meaningful, focused on content and pedagogy, and individualized to the learner. Learning new technology is an area of anxiety for many people and as Borthwick and Pierson (2008) point out:

Some teachers will respond well and be naturally motivated when they see what they are learning will help them be better teachers and meet the needs of their learners. On the other hand, teachers may demonstrate outright signs of anxiety or mask their concern through disinterest, distraction, or inattention (p. 26).

Due to the ever changing nature of technology and the enormity of changing teaching practices to impact learning, it is crucial that professional development be linked to pedagogy because “if the primary purpose of professional development is to improve the learning outcomes of students, then the first goal should be to change the ways each teacher actually teaches” (Borthwick & Pierson, 2008, p.12). With a framework focused on teacher action and context, professional development needs to happen prior to any changes (in terms of devices entering the
schools for student usage), during the change, and should culminate in PLCs and shared leadership that provide the ongoing support needed. The devices alone are not enough, nor is training on tools. What is needed is a direct connection between tools, relevancy, skill level, and curriculum in order to yield changes to teaching practices and ultimately student achievement.

Individualization and choice of formats of professional development also play a major role in the impact on student achievement. "Expanding your bandwidth is not easy. It means moving out of your comfort zone into a space where your incompetence may show" (Heifetz et al., 2009, p. 206). Professional development needs to allow for the open expressions of personalized learning goals and concerns and should include scaffolded learning experiences that build confidence, increase capacity, and allow learners to move forward to reach self-determined and districtwide goals. According to data collected both for the purpose of this program evaluation and as a way to continue to provide target supports for all stakeholders, Modern Mind CUSD does excel in the area of choice and professional development. Both the qualitative perception data and the quantitative survey data reveal that the choices of professional development format and participation offered in Modern Mind CUSD not only allow participants to connect with their areas of content and pedagogy, but also align to the overall vision of creating personalized learning experiences and supports for all stakeholders.

Linking tools and techniques to practices through differentiate professional development requires many resources (time, financial, human). Planning professional development and allocating resources needs to be based on strategy, keeping continuity, connection to content, and choice at the forefront of the planning in order to have the most impact on student achievement. Based on multiple forms of feedback from all stakeholders, the areas of greatest need should become the areas to which the majority of resources are distributed (Whitehead et al., 2013).
The level of attention to detail in the planning stages of supports for technology implementation, or any large-scale educational reform, will only contribute to creating a professional community centered on the integration of technology and a true transformation of a school or district into a learning organization.

**Lesson #3: Communicate a Clear Link to the District or School’s Vision**

It is very easy to get lost in systemic change as the work can be slow, complex, and often lead to a myriad of dead ends in the process. Navigating change without a clear vision that helps set meaningful short- and long-term goals often ends in getting lost in the transition. Educational reform needs to begin with a framework and roadmap with the district or school’s vision serving as the driving force behind the change, acting as the signpost pointing in the direction that leads the work forward. Strategic plans can and should change as the reform is occurring as “an organizational design is not a static end result of a strategic planning process. It is a dynamic and living plan” (Miles & Frank, 2008, p. 189). However, regardless of how many times the plan changes, the vision should remain the focus - strong, specific, optimistic, transparent, and well communicated. With this end point always in sight, any forms of disruption can be metamorphosed into sustainable change.

Equally as important as the physical and technical part of any school or district’s infrastructure for technology implementation and integration is communication. Communication is paramount and has the power to make or break any initiative and everyone involved with a large-scale reform effort needs to “share responsibility for the larger organization’s future in addition to their identification with specific roles and functions” (Heifetz et al., 2009, p. 103). Many problems in schools can be directly connected to the ineffectiveness of communication. With the vision and mission in mind, change processes begin to develop a shared language and
partnerships and networks in support of student learning are strengthened. Modern Mind CUSD has a multitude of avenues for communication from a district website that is consistently updated with information, articles, videos, and photo galleries, to a Podcast channel, social media accounts, email and phone blasts of information in multiple languages, and news coverage of large events. Though the maintenance and upkeep of these communication sources can be time consuming, being transparent, addressing difficult issues, and keeping the focus on the vision and the students “communicates the values at stake, the reasons that make it worthwhile for people to suffer and stay in the game, and it sustains everyone through the ebb and flow of hope and despair that often come when people tackle tough challenges” (Heifetz et al., 2009, p. 269).

Lesson #4: Evaluation is Key

Built into any initiative or school reform should be procedures to continuously monitor and evaluate the changes taking place, their relationship with the district or school vision, and the impact of the change on teaching and learning. Through the process of evaluation, meaningful data is collected, progress towards goals is presented, and continuous improvement can occur. In this program evaluation of Modern Mind CUSD, teacher and leadership evaluation became a focus, with the suggestion of updating current tools to include technology integration in order to improve teaching quality and support. Technology integration driven by a modernized evaluation tool would lead to targeted professional development as a result of a common definition guided by clear expectations aligned with district priorities. Clarity in expectations is emphasized by Danielson (2001) as she concludes that:

Abundant evidence from both informal observation and formal investigation indicates that a thoughtful approach to evaluation - one that engages in reflection and self-assessment - yields benefits far beyond the important goal of quality assurance. Such an
approach provides the vehicle for growth and development by providing opportunities for professional conversation around agreed-on standards of practice. (para. 29)

The presence of clear, rigorous performance standards relevant to 21st century teaching and leading would result in improved overall practice and ultimately stronger student achievement.

Lesson #5: Strong Cultures Equal Strong Schools

School culture gives meaning to any and all school practices. It is not static and is under constant construction and remodeling. It is shaped by the words and actions of all stakeholders and “is reflected in the behavior, attitudes, and beliefs of individuals and groups” (Reeves, 2009, p. 37). For transformation to occur, the culture needs to be one in which every stakeholder knows their voice matters and that their contributions are valued - more than just everybody putting something down on a Google Doc. “The real game of improving education is about changing the educational mindset of schools and how schools serve learning. That's the responsibility of everyone in the organization and means focusing on the essence of what is important in the context of the growth and development of children” (Ormiston et al., 2018, p. 15). This is done by fostering a culture of learning to help weather the dynamic nature of systemic change and the myriad of issues that arise throughout the process (Barth, 2006; Borthwick & Pierson, 2008; Donaldson, 2006; Dweck, 2008).

The arena of culture is the one in which Modern Mind CUSD has the most room for growth. The As-Is analysis revealed areas of strength in terms of willingness to learn and strong beliefs in the importance of technology education, but that was overshadowed by a lack of trust among stakeholders, a lack of recognition for efforts made, and an overwhelming feeling of fear. In order to reach the ideal culture in which failure is viewed as an avenue to success and a true community of shared learning exists, the culture must change. Without doing so, there is a
strong likelihood that pervading oppositional and acerbic attitudes will become larger barriers for any form of change (Casas, 2017). School culture touches the lives of all stakeholders therefore it is crucial that the focus is not directed towards the easier, superficial aspects of schools but instead is targeted on the values, beliefs, and behaviors that affect the culture and ultimately change.

When I reflect back on my years as a student in school, I am fortunate that the memories of positive learning experiences outweigh the negative ones and that, despite the destructive nature of my early years of schooling, I was able to become a lifelong learner. Even as a child, I knew what kind of learner I was, but instead of the school recognizing and adjusting to my needs, I was punished, being left to feel judged for being different, alone and without connection and belonging, and forced to hide creativity and innovation just to survive. My memories consist of a corner and counting ceiling tiles rather than learning experiences and relationships.

The purpose of my dissertation work was to remind the readers of the potential of technology implementation, its relationship to professional development and leadership, and the changes necessary in order to realize technology’s ability to impact teaching and learning. As we head into a world where creativity and innovative thinking will be more valuable than rote learning, basic skills training in most fields will become obsolete at faster rates. Students will need to become “new and improved knowledge workers - those who can think in disciplined ways, but also those who have a burning curiosity, a lively imagination, and can engage others empathetically” (Wagner, 2008, p. 38-39). In order to do so, educators and leaders will need to be both responsive and relevant as it is not only the students’ futures they are preparing for, but their now and that now includes technology as a powerful form of engagement, communication, and learning.
Though the focus of my work was on the connection between technology, leadership, and professional development and how we prepare leaders, educators, and students for the 21st century, the strategies, actions, and policy revisions apply to all aspects of education as we continue to innovate to keep pace in a dynamic world. The skills for the 21st century society are vastly different than those needed in the past. As Dr. Ormiston and her co-authors emphasized (2018):

Innovation is not a one-and-done committee; planning and monitoring will continue for years, and as devices and products change, new conversations will occur among the planning team. Even as tools, devices, and apps change, the central part of the vision must remain: teaching and learning first, technology in their service. (p. 45)

School culture and growth mindset prevail over pedagogy which prevails over technology - all of which weave together to create community rather than isolation. Instead of sending students into a corner of solitude and darkness, education should be sending them into the cloud where there are no boundaries and they are free to collaborate with others as they design their own learning in preparation for the 21st century and beyond.
References


Donaldson, G. (2006). *Cultivating leadership in schools: Connecting people, purpose, and


175-202.


Appendix A: Professional Development Survey Protocol

An email was sent to staff members including the purpose of research statement below followed by a link to the survey:

*The purpose of this study is to inspect technology implementation in Modern Mind CUSD and evaluate its relationship to districtwide professional development efforts and leadership characteristics, resulting in recommendations for future improvements. The goal of this study is to evaluate the relationship between professional development, leadership, and technology implementation by measuring evidence of:*

1. *Increased educator capacity. This will include a definition of successful technology implementation based upon the SAMR Model and the ISTE Standards, as well as a dissection of the quantity, quality, and current types of professional development strategies that support the use of technology as a vehicle for engagement.*

2. *Increased leadership capacity. This will include determining the role of leadership in technology implementation and what is needed to become agents of change, including not only shifts in instructional paradigms, but also changes in culture.*

With this evidence, I would then be able to use my findings to recommend changes to professional development and leadership in order to strengthen technology implementation as a way to impact teaching and learning.

Survey questions were categorized into four areas: basic information, professional development formats, professional development and SAMR/ISTE, and professional development and leadership.
<table>
<thead>
<tr>
<th>Question</th>
<th>Format</th>
<th>Answer Choices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informed consent</td>
<td>Checkbox</td>
<td>I agree</td>
</tr>
</tbody>
</table>
| Please check the school buildings in which you work during the 2018-2019 school year | Checkbox      | a. ECC  
b. Integrate Elementary  
c. Innovate Elementary  
d. Interact Middle  
e. Modern Mind High School |
| Preferred Pronoun (Gender with which you identify)                       | Multiple Choice | a. He  
b. She  
c. They  
d. Other |
| Race                                                                     | Multiple Choice | a. White  
b. Black  
c. Hispanic  
d. Asian  
e. American Indian  
f. Two or more races  
g. Pacific Islander |
| What is your role for the 2018-2019 school year?                         | Dropdown Menu  | a. Core content area/grade level teacher (ie. 3rd grade, Math, ELA, etc.)  
b. Special education teacher  
c. EL/Bilingual teacher  
d. Specials area teacher (ie. art, music, PE, technology, enrichment, business, etc.)  
e. Specialist (ie. reading, coach)  
f. Administrator |
| How many years have you worked in the field of education as a teacher/administrator? | Short Answer   | N/A                                                                            |
| How many years have you worked in District 401 as a teacher/administrator? | Short Answer   | N/A                                                                            |
| How many years have you been a part of the District Technology Initiative (which began in the 2016-17 school year)? | Dropdown Menu  | 1, 2, or 3                                                                    |
| Rank your skill level in terms of technology implementation               | Dropdown Menu  | Basic, Intermediate, Advanced, Expert                                          |
**Section 2: Professional Development Formats**

Definition of Professional Development (PD): For this survey, PD is defined as activities that help develop skills, knowledge, and expertise that support the goals of the district and improve student learning.

<table>
<thead>
<tr>
<th>Question</th>
<th>Format</th>
<th>Answer Choices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have you participated in these types of PD offered in the district?</td>
<td>Multiple Choice, Likert Scale</td>
<td>Yes/No</td>
</tr>
<tr>
<td>(If yes: How effective was this format in increasing your technological pedagogical and content knowledge?)</td>
<td></td>
<td>If Yes: Likert 1-4 (1=not effective 4=very effective)</td>
</tr>
<tr>
<td>1. Professional development sessions that occur during the school day</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Help Desk ticket responses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Lesson planning, coaching or classroom observation (requested through the Help Desk ticket)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. PD Badging System</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Website resources</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Discussions among work colleagues</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Observation visits to other schools</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Conferences/seminars</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Qualification programs (ie. degrees or certifications, Google Online Certification and Training Program)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Individual research or outside workshop</td>
<td></td>
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<thead>
<tr>
<th>Question</th>
<th>Format</th>
<th>Answer Choices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thinking back on the PD you engaged in over the past year or years involved with the District Technology Initiative, please rank the following items:</td>
<td>Likert Scale</td>
<td>Likert 1-4 (1=completely disagree 4=completely agree)</td>
</tr>
<tr>
<td>1. There are enough professional development opportunities offered for technology implementation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Technology implementation professional development improved my knowledge/skills.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Technology implementation professional development increased my effectiveness with students.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Technology implementation professional development is likely to have a positive and lasting impact on my career goals.</td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Question</th>
<th>Format</th>
<th>Answer Choices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can you suggest any other types of technology implementation PD you would like to see in the district?</td>
<td>Open Ended (Optional)</td>
<td></td>
</tr>
</tbody>
</table>
## Section 3: PD and SAMR/ISTE

<table>
<thead>
<tr>
<th>Question</th>
<th>Format</th>
<th>Answer Choices</th>
</tr>
</thead>
<tbody>
<tr>
<td>How familiar are you with the SAMR Model?</td>
<td>Likert Scale</td>
<td>Likert 1-4 (1=not familiar 4=very familiar)</td>
</tr>
<tr>
<td>How often are you using the SAMR Model as a framework to structure lessons?</td>
<td>Likert Scale</td>
<td>Likert 1-4 (1=not often 4=very often)</td>
</tr>
<tr>
<td>How familiar are you with the ISTE Standards for Students and Educators?</td>
<td>Likert Scale</td>
<td>Likert 1-4 (1=not familiar 4=very familiar)</td>
</tr>
<tr>
<td>How often are you using the ISTE Standards for Students and Educators as a framework to structure lessons?</td>
<td>Likert Scale</td>
<td>Likert 1-4 (1=not often 4=very often)</td>
</tr>
<tr>
<td>What are your needs in terms of the SAMR Model and the ISTE Standards?</td>
<td>Open Ended (Optional)</td>
<td></td>
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</tbody>
</table>

## Section 4: PD and Leadership

<table>
<thead>
<tr>
<th>Question</th>
<th>Format</th>
<th>Answer Choices</th>
</tr>
</thead>
<tbody>
<tr>
<td>How supportive is leadership of your efforts to integrate concepts learned in PD sessions into your teaching practices?</td>
<td>Likert Scale</td>
<td>Likert 1-4 (1=not supportive 4=very supportive)</td>
</tr>
<tr>
<td>If you would care to elaborate on that rating, please do so here.</td>
<td>Open Ended (Optional)</td>
<td></td>
</tr>
</tbody>
</table>
Appendix B: Staff Interview Protocol

An email was sent to staff members including the purpose of research statement identical to the one sent for the PD Survey Protocol, requesting volunteers for a 30-40 minute, in-person interview. Informed consent forms were signed in the interview setting, prior to the start of interview and containing the same information used in the Professional Development Survey Protocol.

Semi-structured Interview Questions

Thank you for agreeing to participate in this interview today. The purpose of this study is to inspect technology implementation in Modern Mind CUSD and evaluate its relationship to districtwide professional development efforts and leadership characteristics, resulting in recommendations for future improvements. Today we are going to focus on the professional development aspect of technology implementation. Please remember that your answers are completely confidential and will in no way be associated with you at any time. This is not an evaluation of your teaching, but rather an evaluation of the district in terms of providing you with the support needed to have technology integration impact your teaching and the students’ learning. I will not be offended by any answers you provide as my goal is to use the information to transform technology integration in our district.

The interview questions were categorized into four areas: basic information, self-perceptions, role of technology in education, and technology implementation.
**Section 1: Basic Information**

- Please state your name, title, and in which building(s) you work during the 2018-19 school year.
- What is your preferred pronoun (the gender with which you identify)?
- What is your race?
- How many years have you worked in the field of education as a teacher?
- How many years have you worked in District 401 as a teacher?
- How many years have you been a part of the District Technology Initiative (which began in the 2016-17 school year)?

**Section 2: Self-Perceptions**

- How do you rank yourself in terms of technology skill level?

**Section 3: Role of Technology in Education**

- What do you believe is the role technology plays in education?
- What is the district’s vision for technology usage in our schools?

**Section 4: Technology Implementation**

- What is successful technology implementation and what does it look like?
- What factors do you consider when assessing the effectiveness of technology implementation in your teaching?
  - Are there any frameworks you use when planning?
  - Who do you contact when you are in need of help?
- What is the number one factor that prevents you from integrating more technology into your lessons?
- How effective is the PD offered by the district in terms of technology implementation?
- What is leadership’s role in technology implementation?
- Is there anything you would like me to know?
- Do you have any questions for me?
Appendix C: Administrative Interview Protocol

An email was sent to administrators including the purpose of research statement identical to the one sent for the Professional Development Survey Protocol, requesting volunteers for a 30-40 minute, in-person interview. Informed consent forms were signed in the interview setting, prior to the start of interview and containing the same information used in the Professional Development Survey Protocol.

Semi-structured Interview Questions

Thank you for agreeing to participate in this interview today. The purpose of this study is to inspect the current supports in place for technology integration and evaluate their impact on teaching and learning, resulting in recommendations for professional development, accountability, and leadership. Today we are going to focus on the leadership aspect of technology integration. Please remember that your answers are completely confidential and will in no way be associated with you at any time. This is not an evaluation of your leadership, but rather an evaluation of the district in terms of providing you with the support needed to have technology integration impact teaching and the students’ learning. I will not be offended by any answers you provide as my goal is to use the information to transform technology integration in our district.

The interview questions were categorized into four areas: basic information, self-perceptions, leadership, and school culture.
### Section 1: Basic Information

Please state your name, title, and in which building(s) you work during the 2018-19 school year.

What is your preferred pronoun (the gender with which you identify)?

What is your race?

Prior to your role in administration, for how many years did you work as an educator and what were your titles?

How many years have you worked in the field of education as an administrator?

How many years have you worked in District 401 as an administrator?

How many years have you been a part of the District Technology Initiative (which began in the 2016-17 school year)?

### Section 2: Self-Perceptions

How do you rank yourself in terms of technology skill level?

### Section 3: Leadership

What is your role in technology implementation as a way to impact teaching and learning?

What does successful technology integration look like?

What challenges do you face in technology leadership?

Do you have any set goals that involve technology implementation (personal or professional)?

### Section 4: Culture

What are the characteristics of a culture that supports technology implementation?

What are the strengths of your school/district’s culture?

What are some of the areas of weakness or tension?
- How do you go about strengthening that weakness or resolving the tension?

Is there anything else you would like me to know?

Do you have any questions for me?
Appendix D: Observation Protocol

An email was sent to staff members including the purpose of research statement found in both the Professional Development Survey Protocol and the Staff Interview Protocol followed by the informed consent information. If staff wanted to participate, they were asked to reply to the email agreeing to the informed consent. Once the observation protocol was completed, they were then asked to complete the Professional Development Survey Protocol in order to create a regression analysis based on the scoring of the Observation Protocol and the scoring of the Professional Development Survey Protocol.

<table>
<thead>
<tr>
<th>Selection (ISTE Standard 5 for Educators: Designer)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The use of technology tools is intentional</td>
</tr>
<tr>
<td>• Supports the goals, learning standards, or curricular area of focus</td>
</tr>
<tr>
<td>• A need is identified first, then an appropriate resource is selected</td>
</tr>
<tr>
<td>2. Technology tools are developmentally appropriate and create scaffolds to make it easier to understand concepts or ideas</td>
</tr>
<tr>
<td>• Age-appropriate, stereotype-free, provide clear instructions and prompts</td>
</tr>
<tr>
<td>• Technology features are deliberately chosen to meet instructional goals for the developmental needs of the student</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Use (ISTE Standard 6 for Educators: Facilitator and ISTE Standard 4 for Educators: Collaborator)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. New curriculum is being accessed digitally as part of instruction</td>
</tr>
<tr>
<td>4. Technology offers opportunities for joint engagement, collaboration, information sharing, and conversation with peers and teachers</td>
</tr>
<tr>
<td>5. Technology skills are built through classroom instruction</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Student Centered Learning (ISTE Standard 1 for Students: Empowered Learner)</th>
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<tbody>
<tr>
<td>6. Students leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals</td>
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<table>
<thead>
<tr>
<th>SAMR Model</th>
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<tbody>
<tr>
<td>7. Technology allows creation of a new task, previously inconceivable (This is an ‘R’ or redefinition task).</td>
</tr>
</tbody>
</table>
Appendix E: As-Is Diagram

Context
- One district, five schools, 19 administrators, 215 staff
- High turnover rate for administration. Longevity for staff.
- Middle and HS 1:1 take home; Elementary and Early Childhood saturation 2:1
- District Technology Initiative started in 2016-17 SY. Teachers have been involved in 1, 2 or 3 years of the initiative. 83% of teachers surveyed were involved for 3 years.
- Job-embedded PD provided for all certified staff members during the school day

Culture
- Willingness to learn
- Strong belief in support of the importance of technology in education
- Access to technology is the norm, but usage remains inconsistent.
- Unsafe use of technology changes with the new curricular program
- Overwhelmed by the number of overlapping initiatives occurring in the district
- Teachers do not feel recognized for using technology in their teaching
- Teachers do not have teacher-principal support and do they feel their leaders have the capacity for instructional leadership in terms of providing useful feedback and support
- There is a fear to discuss failure with leaders
- There is a fear of failure tied to certification

Conditions
- Staff Technology PD is offered at a district level, with options and choices.
- Staff must attend the meetings.
- A District Technology Committee is in place to guide the initiative, they have regularly scheduled meetings.
- Middle and HS 1:1 take home; Elementary and Early Childhood saturation 2:1
- Instructional technology support in the form of districtwide PD offerings of different formats and a Director of Instructional Technology

Competencies
- Teachers know the District vision for tech usage.
- Teachers know the technology tools that are developmentally appropriate for students.
- Teachers struggle with usage of the 4Cs and Assessments in the classroom.
- Teachers struggle with leveraging technology for student choice.
- 83% of teachers still at an S and A level for teaching with technology (SAMR Model)
- Teachers struggle with knowing when to use technology and maintaining a balance analog and digital teaching strategies.
- Leadership struggle to provide differentiated supports with technology.
- Teacher knowledge level of technology strategies is above that of students.
Appendix F: To-Be Diagram

Context
- One district, five schools, 19 administrators, 215 staff
- Low staff and administrative turnover
- Middle and HS: 1:1 take home; Elementary and Early Childhood saturation 1:1
- District Technology Initiative started in 2016–17 SY. Teachers have been involved in 1, 2 or 3 years of the initiative. 81% of teachers surveyed were involved for 3 years.
- 3D-embedded PD provided for all certified staff members during the school day

Culture
- Usage of technology is meaningful, with the SAMR model and ISTE standards used on a regular basis as frameworks
- Willingness to learn and with distributed leadership in areas of strength
- Strong beliefs in support of the importance of technology in education
- New curricular programs are seamlessly supported with technology in a way to push for improved student learning.
- Understanding and involvement with all educational reform in the district from multiple stakeholders
- “It was for engagement, trying it out, and small successes keep adult learners feeling valued and respected” (Borthwick and Pearson, 2008, 27)
- Leaders support teachers who are implementing technology to enhance teaching and learning. They can clearly define and articulate technology implementation and what its function in the classroom is.
- Staff and administration face failure in order to break success with emphasis on a growth mindset
- Community of shared learning

Conditions
- Technology PD is offered at a district level, with options and choices. Substitutes are provided by the district. Attended by both staff and administration.
- A District Technology Committee is in place to make decisions regarding the initiative. They have regularly scheduled meetings.
- Middle and HS: 1:1 take home, Elementary and Early Childhood saturation 1:1
- Instructional technology support in the form of districtwide PD offerings of different formats and a Director of Instructional Technology

Competencies
- Staff know the District vision for tech usage.
- Staff know the technology tools that are developmentally appropriate for students.
- Teachers use the 4Cs and assessment to drive instruction and personalize learning.
- Teachers incorporate student choice, allowing students to begin to think about their use of technology and which tools best meet their needs and goals.
- More than 60% of the staff are teaching lessons that involve Modification and Redefinition levels of a task (SAMR Model).
- Technology integration in the classroom is seamless, supporting the curricular goals and helping students reach them.
- Leadership and staff work together to adjust support based on need.
- Staff leaders share expertise and act as resources to identify all technology needs.
### Appendix G: Strategies and Actions Chart

| Conditions: Increased access to devices at the elementary and early childhood levels. | Create a device distribution plan that includes gradual increase of device saturation in those buildings as the years pass with the possibility of grades 3 through 6 transitioning to 1:1 device take home in future years:  
- Uses Title funding to purchase devices to help meet the educational needs of students  
- Take inventory of all devices and attempt to align the existing resources as well as potential ones, to the intended educational outcomes  
- Communicate the plan to the staff |
| --- | --- |
| Context, Conditions, Competencies: Professional development continues to be provided for all staff members with ever-expanding format choices. | Using the data collected from the professional development surveys and staff and administrative interviews, enact a formal professional learning plan:  
- Ensure that the participants have the ability to choose to continue involvement in the innovative program in a variety of capacities, including leadership  
- Focus on the areas identified by the data as needs-focus from exposure and tools to usage for 4C’s (communication, collaboration, critical thinking, and creativity) developed by the Partnership for 21st Century Skills (P21) (Battelle for Kids, 2012), assessment, and student choice  
- Align the SAMR Model and ISTE Standards with current teaching and curriculum evaluation frameworks  
- Develop a system for monitoring and evaluating the professional learning plan with the District Technology Committee (ie. walkthroughs, informal observations with administrative and peer feedback, analysis of common formative assessments) |
| Context, Competencies, Culture: Embracing shared leadership as a catalyst for change. | Foster a culture in which influence, authority, and decision-making are shared and promoted throughout the school:  
- Establish learning communities as social networks for influencing change  
- Involve leadership at all levels in modeling technology use and promoting technology adoption |
| Culture: Growth mindset is encouraged supported by trust. | Teachers and administrators know they can continue to develop their skills and talents through effort and persistence, as well as being receptive to lessons and feedback:  
- Genuine praise  
- Formative feedback that is non-evaluative and from multiple sources  
- Allow time for goal-based reflection |
Appendix H: Current Evaluation Tool for Educators at Modern Mind CUSD

**Domain 1: Planning and Preparation**

<table>
<thead>
<tr>
<th>Component</th>
<th>Unsatisfactory</th>
<th>Proficient</th>
<th>Distinguished</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1a Demonstrating Knowledge of Content and Pedagogy</strong></td>
<td>The teacher’s plans and practice display little knowledge of the content, prerequisite relationships between different aspects of the content, or the instructional practices specific to that discipline.</td>
<td>The teacher’s plans and practice reflect some awareness of the important concepts in the discipline, prerequisite relationships between them, and the instructional practices specific to that discipline.</td>
<td>The teacher’s plans and practice reflect solid knowledge of the content, prerequisite relationships between important concepts, and the instructional practices specific to that discipline.</td>
</tr>
<tr>
<td><strong>1b Demonstrating Knowledge of Students</strong></td>
<td>The teacher demonstrates little or no knowledge of students’ backgrounds, cultures, skills, language proficiency, interests, and special needs, and does not seek such understanding.</td>
<td>The teacher indicates the importance of understanding students’ backgrounds, cultures, skills, language proficiency, interests, and special needs, and attains this knowledge for the class as a whole.</td>
<td>The teacher actively seeks knowledge of students’ backgrounds, cultures, skills, language proficiency, interests, and special needs, and attains this knowledge for individual students.</td>
</tr>
<tr>
<td><strong>1c Setting Instructional Outcomes</strong></td>
<td>Instructional outcomes are unsuitable for students, represent trivial or low-level learning, or are stated only as activities. They do not permit viable methods of assessment.</td>
<td>Instructional outcomes are of moderate rigor and are suitable for some students, but consist of a combination of activities and goals, some of which permit viable methods of assessment. They reflect more than one type of learning, but the teacher makes no attempt at coordination or integration.</td>
<td>Instructional outcomes are stated as goals reflecting high-level learning and curriculum standards. They are suitable for most students in the class, represent different types of learning, and can be assessed. The outcomes reflect opportunities for coordination.</td>
</tr>
<tr>
<td><strong>1d Demonstrating Knowledge of Resources</strong></td>
<td>The teacher demonstrates little or no familiarity with resources to enhance own knowledge, to use in teaching, or for students who need them. The teacher does not seek such knowledge.</td>
<td>The teacher demonstrates some familiarity with resources available through the school or district to enhance own knowledge, to use in teaching, or for students who need them. The teacher does not seek to extend such knowledge.</td>
<td>The teacher seeks out resources in and beyond the school or district in professional organizations, on the internet, and in the community to enhance own knowledge, to use in teaching, or for students who need them.</td>
</tr>
<tr>
<td><strong>1e Designing Coherent Instruction</strong></td>
<td>The series of learning experiences is poorly aligned with the instructional outcomes and does not represent a coherent structure. The experiences are suitable only for some students.</td>
<td>The series of learning experiences demonstrates partial alignment with instructional outcomes, and some of the experiences are likely to engage students in significant learning. The lesson or unit has a recognizable structure and reflects partial knowledge.</td>
<td>The teacher coordinates knowledge of content, of students, and of resources, to design a series of learning experiences aligned to instructional outcomes, differentiated where appropriate to make them suitable to all students and likely to engage them in significant learning. The lesson or unit structure is clear and allows for different pathways according to student needs.</td>
</tr>
<tr>
<td><strong>1f Designing Student Assessments</strong></td>
<td>The teacher’s plan for assessing student learning contains no clear criteria or standards, is poorly aligned with the instructional outcomes, or is inappropriate for many students. The results of assessment have minimal impact on the design of future instruction.</td>
<td>The teacher’s plan for student assessment is partially aligned with the instructional outcomes, without clear criteria, and inappropriate for at least some students. The teacher intends to use assessment results to plan for future instruction for the class as a whole.</td>
<td>The teacher’s plan for student assessment is fully aligned with the instructional outcomes, with clear criteria and standards that show evidence of student contribution to their development. Assessment methodologies may have been adapted for individuals, and the teacher intends to use assessment results to plan future instruction for individual students.</td>
</tr>
</tbody>
</table>
## Domain 2: The Classroom Environment

<table>
<thead>
<tr>
<th>Component</th>
<th>Unsatisfactory</th>
<th>Basic</th>
<th>Proficient</th>
<th>Distinguished</th>
</tr>
</thead>
<tbody>
<tr>
<td>2a Creating an Environment of Respect and Rapport</td>
<td>Classroom interactions, both between the teacher and students and among students, are negative, inappropriate, or insensitive to students’ cultural backgrounds and are characterized by sarcasm, put-downs, or conflict.</td>
<td>Classroom interactions, both between the teacher and students and among students, are generally appropriate and free from conflict, but may be characterized by occasional displays of insensitivity or lack of responsiveness to cultural or developmental differences among students.</td>
<td>Classroom interactions between the teacher and individual students are highly respectful, reflecting genuine warmth and caring and sensitivity to students’ cultures and levels of development. Students themselves ensure high levels of civility among members of the class.</td>
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</tr>
<tr>
<td>2b Establishing a Culture for Learning</td>
<td>The classroom environment conveys a negative culture for learning, characterized by low teacher commitment to the subject, low expectations for student achievement, and little or no student pride in work.</td>
<td>The teacher’s attempt to create a culture for learning is partially successful, with little teacher commitment to the subject, modest expectations for student achievement, and little student pride in work. Both the teacher and students appear to be only “going through the motions.”</td>
<td>High levels of student energy and teacher passion for the subject create a culture for learning in which everyone shares a belief in the importance of the subject and all students hold themselves to high standards of performance—for example, by initiating improvements to their work.</td>
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</tr>
<tr>
<td>2c Managing Classroom Procedures</td>
<td>Much instructional time is lost because of inefficient classroom routines and procedures for transitions, handling of supplies, and performance of noninstructional duties.</td>
<td>Some instructional time is lost because classroom routines and procedures for transitions, handling of supplies, and performance of noninstructional duties are only partially effective.</td>
<td>Little instructional time is lost because of classroom routines and procedures for transitions, handling of supplies, and performance of noninstructional duties, which occur smoothly.</td>
<td>Students contribute to the seamless operation of classroom routines and procedures for transitions, handling of supplies, and performance of noninstructional duties.</td>
</tr>
<tr>
<td>3d Managing Student Behavior</td>
<td>There is no evidence that standards of conduct have been established and little or no teacher monitoring of student behavior. Response to student misbehavior is repressive or disrespectful of student dignity.</td>
<td>It appears that the teacher has made an effort to establish standards of conduct for students. The teacher tries, with uneven results, to monitor student behavior and respond to student misbehavior.</td>
<td>Standards of conduct appear to be clear to students, and the teacher monitors student behavior against those standards. The teacher’s response to student misbehavior is appropriate and respects the students’ dignity.</td>
<td>Standards of conduct are clear, with evidence of student participation in setting them. The teacher’s monitoring of student behavior is subtle and preventive, and the teacher’s response to student misbehavior is sensitive to individual student needs. Students take an active role in monitoring the standards of behavior.</td>
</tr>
<tr>
<td>2e Organizing Physical Space</td>
<td>The physical environment is unsafe, or some students don’t have access to learning. Alignment between the physical arrangement and the lesson activities is poor.</td>
<td>The classroom is safe, and essential learning is accessible to most students; the teacher’s use of physical resources, including computer technology, is moderately effective. The teacher may attempt to modify the physical arrangement to suit learning activities, with partial success.</td>
<td>The classroom is safe, and learning is accessible to all students; the teacher ensures that the physical arrangement is appropriate to the learning activities. The teacher makes effective use of physical resources, including computer technology.</td>
<td>The classroom is safe, and the physical environment ensures the learning of all students, including those with special needs. Students contribute to the use or adaptation of the physical environment to advance learning. Technology is used skillfully, as appropriate to the lesson.</td>
</tr>
</tbody>
</table>
### Domain 3: Instruction

<table>
<thead>
<tr>
<th>Component</th>
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<th>Basic</th>
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<th>Distinguished</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>3a Communicating with Students</strong></td>
<td>Expectations for learning, directions and procedures, and explanations of content are unclear or confusing to students. The teacher’s use of language contains errors or is inappropriate for students’ cultures or levels of development.</td>
<td>Expectations for learning, directions and procedures, and explanations of content are clarified after initial confusion; the teacher’s use of language is correct but may not be completely appropriate for students’ cultures or levels of development.</td>
<td>Expectations for learning, directions and procedures, and explanations of content are clear to students. Communications are appropriate for students’ cultures and levels of development.</td>
<td>Expectations for learning, directions and procedures, and explanations of content are clear to students. The teacher’s oral and written communication is clear and expressive, appropriate for students’ cultures and levels of development, and anticipates possible student misconceptions.</td>
</tr>
<tr>
<td><strong>3b Using Questioning and Discussion Techniques</strong></td>
<td>The teacher’s questions are low-level or inappropriate, eliciting limited student participation and recitation rather than discussion.</td>
<td>Some of the teacher’s questions elicit a thoughtful response, but most are low-level, posed in rapid succession. The teacher’s attempts to engage all students in the discussion are only partially successful.</td>
<td>Most of the teacher’s questions elicit a thoughtful response, and the teacher allows sufficient time for students to answer. All students participate in the discussion, with the teacher stepping aside when appropriate.</td>
<td>Questions reflect high expectations and are culturally and developmentally appropriate. Students formulate many of the high-level questions and ensure that all voices are heard.</td>
</tr>
<tr>
<td><strong>3c Engaging Students in Learning</strong></td>
<td>Activities and assignments, materials, and groupings of students are inappropriate for the instructional outcomes or students’ cultures or levels of understanding, resulting in little intellectual engagement. The lesson has no structure or is poorly paced.</td>
<td>Activities and assignments, materials, and groupings of students are partially appropriate to the instructional outcomes or students’ cultures or levels of understanding, resulting in moderate intellectual engagement. The lesson has a recognizable structure, but that structure is not fully maintained.</td>
<td>Activities and assignments, materials, and groupings of students are fully appropriate for the instructional outcomes and students’ cultures and levels of understanding. All students are engaged in work of a high level of rigor. The lesson’s structure is coherent, with appropriate pace.</td>
<td>Students, throughout the lesson, are highly intellectually engaged in significant learning, and make material contributions to the activities, student groupings, and materials. The lesson is adapted as necessary to the needs of individuals, and the structure and pacing allow for student reflection and closure.</td>
</tr>
<tr>
<td><strong>3d Using Assessment in Instruction</strong></td>
<td>Assessment is not used in instruction, either through monitoring of progress by the teacher or students, or through feedback to students. Students are unaware of the assessment criteria used to evaluate their work.</td>
<td>Assessment is occasionally used in instruction, through some monitoring of progress of learning by the teacher and/or students. Feedback to students is uneven, and students are aware of only some of the assessment criteria used to evaluate their work.</td>
<td>Assessment is regularly used in instruction, through self-assessment by students, monitoring of progress of learning by the teacher and/or students, and high-quality feedback to students. Students are fully aware of the assessment criteria used to evaluate their work.</td>
<td>Assessment is used in a sophisticated manner in instruction, through student involvement in establishing the assessment criteria, self-assessment by students, monitoring of progress by both students and teacher, and high-quality feedback to students from a variety of sources.</td>
</tr>
<tr>
<td><strong>3e Demonstrating Flexibility and Responsiveness</strong></td>
<td>The teacher adheres to the instruction plan, even when a change would improve the lesson or address students’ lack of interest. The teacher brushes aside student questions; when students experience difficulty, the teacher blames the students or their home environment.</td>
<td>The teacher attempts to modify the lesson when needed and to respond to student questions, with moderate success. The teacher accepts responsibility for student success, but has only a limited repertoire of strategies to draw upon.</td>
<td>The teacher promotes the successful learning of all students, making adjustments as needed to instruction plans and accommodating student questions, needs, and interests.</td>
<td>The teacher seizes an opportunity to enhance learning, building on a spontaneous event or student interests. The teacher ensures the success of all students, using an extensive repertoire of instructional strategies.</td>
</tr>
<tr>
<td>Component</td>
<td>Unsatisfactory</td>
<td>Basic</td>
<td>Proficient</td>
<td>Distinguished</td>
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</tr>
<tr>
<td>4a Reflecting on Teaching</td>
<td>The teacher does not accurately assess the effectiveness of the lesson and has no ideas about how the lesson could be improved.</td>
<td>The teacher provides a partially accurate and objective description of the lesson but does not cite specific evidence. The teacher makes only general suggestions as to how the lesson might be improved.</td>
<td>The teacher provides an accurate and objective description of the lesson, citing specific evidence. The teacher makes some specific suggestions as to how the lesson might be improved.</td>
<td>The teacher’s reflection on the lesson is thoughtful and accurate, citing specific evidence. The teacher draws on an extensive repertoire to suggest alternative strategies and predicts the likely success of each.</td>
</tr>
<tr>
<td>4b Maintaining Accurate Records</td>
<td>The teacher’s systems for maintaining both instructional and noninstructional records are either nonexistent or in disarray, resulting in errors and confusion.</td>
<td>The teacher’s systems for maintaining both instructional and noninstructional records are rudimentary and only partially.</td>
<td>The teacher’s systems for maintaining both instructional and noninstructional records are accurate, efficient, and effective.</td>
<td>The teacher’s systems for maintaining both instructional and noninstructional records are accurate, efficient, and effective, and students contribute to its maintenance.</td>
</tr>
<tr>
<td>4c Communicating with Families</td>
<td>The teacher’s communication with families about the instructional program or about individual students is sporadic or culturally inappropriate. The teacher makes no attempt to engage families in the instructional program.</td>
<td>The teacher adheres to school procedures for communicating with families and makes modest attempts to engage families in the instructional program. But communications are not always appropriate to the cultures of those families.</td>
<td>The teacher communicates frequently with families and successfully engages them in the instructional program. Information to families about individual students is conveyed in a culturally appropriate manner.</td>
<td>The teacher’s communication with families is frequent and sensitive to cultural traditions; students participate in the communication. The teacher successfully engages families in the instructional program, as appropriate.</td>
</tr>
<tr>
<td>4d Participating in a Professional Community</td>
<td>The teacher avoids participating in a professional community or in school and district events and projects; relationships with colleagues are negative or self-serving.</td>
<td>The teacher becomes involved in the professional community and in school and district events and projects when specifically asked; relationships with colleagues are cordial.</td>
<td>The teacher participates actively in the professional community and in school and district events and projects, and maintains positive and productive relationships with colleagues.</td>
<td>The teacher makes a substantial contribution to the professional community and to school and district events and projects, and assumes a leadership role among the faculty.</td>
</tr>
<tr>
<td>4e Growing and Developing Professionally</td>
<td>The teacher does not participate in professional development activities and makes no effort to share knowledge with colleagues. The teacher is resistant to feedback from supervisors or colleagues.</td>
<td>The teacher participates in professional development activities that are convenient or are required, and makes limited contributions to the profession. The teacher accepts, with some reluctance, feedback from supervisors and colleagues.</td>
<td>The teacher seeks out opportunities for professional development based on an individual assessment of need and actively shares expertise with others. The teacher welcomes feedback from supervisors and colleagues.</td>
<td>The teacher actively pursues professional development opportunities and initiates activities to contribute to the profession. In addition, the teacher seeks feedback from supervisors and colleagues.</td>
</tr>
<tr>
<td>4f Showing Professionalism</td>
<td>The teacher has little sense of ethics and professionalism and contributes to practices that are self-serving or harmful to students. The teacher fails to comply with school and district regulations and time lines.</td>
<td>The teacher is honest and well intentioned in serving students and contributing to decisions in the school, but the teacher’s attempts to serve students are limited. The teacher complies minimally with school and district regulations, doing just enough to get by.</td>
<td>The teacher displays a high level of ethics and professionalism in dealings with both students and colleagues and complies fully and voluntarily with school and district regulations.</td>
<td>The teacher is proactive and assumes a leadership role in making sure that school practices and procedures ensure that all students, particularly those traditionally underserved, are honored in the school. The teacher displays the highest standards of ethical conduct and takes a leadership role in seeing that colleagues comply with school and district regulations.</td>
</tr>
</tbody>
</table>
### Domain 1: Planning and Preparation

<table>
<thead>
<tr>
<th>Danielson Framework for Teaching</th>
<th>ISTE Standards for Educators</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1a Demonstrating Knowledge of Content and Pedagogy</strong></td>
<td>5b Design authentic learning activities that align with content area standards and use digital tools and resources to maximize active, deep learning.</td>
</tr>
<tr>
<td><strong>1b Demonstrating Knowledge of Students</strong></td>
<td>2b Advocate for equitable access to educational technology, digital content and learning opportunities to meet the diverse needs of all students.</td>
</tr>
<tr>
<td><strong>1c Setting Instructional Outcomes</strong></td>
<td>5a Use technology to create, adapt and personalize learning experiences that foster independent learning and accommodate learner differences and needs.</td>
</tr>
<tr>
<td><strong>1d Demonstrating Knowledge of Resources</strong></td>
<td>2c Model for colleagues the identification, exploration, evaluation, curation and adoption of new digital resources and tools for learning.</td>
</tr>
<tr>
<td><strong>1e Designing Coherent Instruction</strong></td>
<td>5c Explore and apply instructional design principles to create innovative digital learning environments that engage and support learning.</td>
</tr>
<tr>
<td><strong>1f Designing Student Assessments</strong></td>
<td>7b Use technology to design and implement a variety of formative and summative assessments that accommodate learner needs, provide timely feedback to students and inform instruction.</td>
</tr>
</tbody>
</table>

### Domain 2: Classroom Environment

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<thead>
<tr>
<th>Danielson Framework for Teaching</th>
<th>ISTE Standards for Educators</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2a Creating an Environment of Respect and Rapport</strong></td>
<td>3a Create experiences for learners to make positive, socially responsible contributions and exhibit empathetic behavior online that build relationships and community.</td>
</tr>
<tr>
<td><strong>2b Establishing a Culture for Learning</strong></td>
<td>3b Establish a learning culture that promotes curiosity and critical examination of online resources and fosters digital literacy and media fluency.</td>
</tr>
<tr>
<td></td>
<td>4b Collaborate and co-learn with students to discover and use new digital resources and diagnose and troubleshoot technology issues.</td>
</tr>
<tr>
<td>2c Managing Classroom Procedures</td>
<td>3c Mentor students in safe, legal and ethical practices with digital tools and the protection of intellectual rights and property.</td>
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</tr>
<tr>
<td>2d Managing Student Behavior</td>
<td>3d Model and promote management of personal data and digital identity and protect student data privacy.</td>
</tr>
<tr>
<td>2e Organizing Physical Space</td>
<td>6b Manage the use of technology and student learning strategies in digital platforms, virtual environments, hands-on makerspaces or in the field.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Domain 3: Instruction</th>
<th>Standards 3, 4, 5, 6, 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>3a Communicating with Students</td>
<td>7b Use technology to design and implement a variety of formative and summative assessments that accommodate learner needs, provide timely feedback to students and inform instruction.</td>
</tr>
<tr>
<td></td>
<td>7c Use assessment data to guide progress and communicate with students, parents and education stakeholders to build student self-direction.</td>
</tr>
<tr>
<td>3b Using Questioning and Discussion Techniques</td>
<td>5c Explore and apply instructional design principles to create innovative digital learning environments that engage and support learning.</td>
</tr>
<tr>
<td>3c Engaging Students in Learning</td>
<td>3a Create experiences for learners to make positive, socially responsible contributions and exhibit empathetic behavior online that build relationships and community.</td>
</tr>
<tr>
<td></td>
<td>4c Use collaborative tools to expand students' authentic, real-world learning experiences by engaging virtually with experts, teams and students, locally and globally.</td>
</tr>
<tr>
<td></td>
<td>6a Foster a culture where students take ownership of their learning goals and outcomes in both independent and group settings.</td>
</tr>
<tr>
<td></td>
<td>6c Create learning opportunities that challenge students to use a design process and computational thinking to innovate and solve problems.</td>
</tr>
</tbody>
</table>
### Domain 4: Professional Responsibilities

<table>
<thead>
<tr>
<th>Standards 1, 2, 4, 7</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>4a Reflecting on Teaching</strong></td>
</tr>
<tr>
<td><strong>4b Maintaining Accurate Records</strong></td>
</tr>
<tr>
<td><strong>4c Communicating with Families</strong></td>
</tr>
<tr>
<td><strong>4d Participating in the Professional Community</strong></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>3d Using Assessment in Instruction</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>5b Design authentic learning activities that align with content area standards and use digital tools and resources to maximize active, deep learning.</strong></td>
</tr>
<tr>
<td><strong>5c Explore and apply instructional design principles to create innovative digital learning environments that engage and support learning.</strong></td>
</tr>
<tr>
<td><strong>7a Provide alternative ways for students to demonstrate competency and reflect on their learning using technology.</strong></td>
</tr>
<tr>
<td><strong>7c Use assessment data to guide progress and communicate with students, parents and education stakeholders to build student self-direction.</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3e Demonstrating Flexibility and Responsiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>5a Use technology to create, adapt and personalize learning experiences that foster independent learning and accommodate learner differences and needs.</strong></td>
</tr>
<tr>
<td><strong>7a Provide alternative ways for students to demonstrate competency and reflect on their learning using technology.</strong></td>
</tr>
<tr>
<td><strong>7b Use technology to design and implement a variety of formative and summative assessments that accommodate learner needs, provide timely feedback to students and inform instruction.</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Domain 4: Professional Responsibilities</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>4a Reflecting on Teaching</strong></td>
</tr>
<tr>
<td><strong>4b Maintaining Accurate Records</strong></td>
</tr>
<tr>
<td><strong>4c Communicating with Families</strong></td>
</tr>
<tr>
<td><strong>4d Participating in the Professional Community</strong></td>
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<tr>
<td>4e Growing and Developing Professionally</td>
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<tr>
<td>4f Showing Professionalism</td>
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Appendix J: Current Evaluation Tool for Leaders at Modern Mind CUSD

PROFESSIONAL PRACTICE MONITORING TOOL
ILLINOIS PERFORMANCE STANDARDS FOR SCHOOL LEADERS
For each Illinois Performance Standard for School Leaders, the rating will be determined by the rating of each indicator. To receive a “Distinguished” rating, half of the indicators must be “Distinguished” and the remaining indicators no lower than “Proficient.” To receive a “Proficient” rating, half of the indicators must be “Proficient” and the remaining indicators no lower. To receive a “Needs Improvement,” at least half of all indicators within the standard rated as “Needs Improvement” and the remaining indicators have no more than one (1) “Unsatisfactory” rating. To receive an “Unsatisfactory,” two indicators within the standard are marked “Unsatisfactory.”

I. Living a Mission and Vision Focused on Results
The principal works with the staff and community to build a shared mission, and vision of high expectations that ensures all students are on the path to college and career readiness, and holds staff accountable for results.

a. Coordinates efforts to create and implement a vision for the school and defines desired results and goals that align with the overall school vision and lead to student improvement for all learners. __ D __ P __ B __ U
b. Ensures that the school’s identity, vision, and mission drive school decisions. __ D __ P __ B __ U
c. Conducts difficult but crucial conversations with individuals, teams, and staff based on student performance data in a timely manner for the purpose of enhancing student learning and results. __ D __ P __ B __ U

II. Leading and Managing Systems Change
The principal creates and implements systems to ensure a safe, orderly, and productive environment for student and adult learning toward the achievement of school and district improvement priorities.

a. Develops, implements, and monitors the outcomes of the school improvement plan and school wide student achievement data results to improve student achievement. __ D __ P __ B __ U
b. Creates a safe, clean and orderly learning environment. __ D __ P __ B __ U
c. Collaborates with staff to allocate personnel, time, material, and adult learning resources appropriately to achieve the school improvement plan targets. __ D __ P __ B __ U

III. Improving Teaching and Learning
The principal works with the school staff and community to develop a research-based framework for effective teaching and learning that is refined continuously to improve instruction for all
a. Works with staff to develop a consistent framework for effective teaching and learning that includes a rigorous and relevant standards-based curriculum, research-based instructional practices, and high expectations for student performance. __ D __ P __ B __ U

b. Creates a continuous improvement cycle that uses multiple forms of data and student work samples to support individual, team, and school-wide improvement goals, identify and address areas of improvement and celebrate successes. __ D __ P __ B __ U

c. Implements student interventions that differentiate instruction based on student needs. __ D __ P __ B __ U

d. Selects and retains teachers with the expertise to deliver instruction that maximizes student learning. __ D __ P __ B __ U

e. Evaluates the effectiveness of instruction and of individual teachers by conducting frequent formal and informal observations providing timely feedback on instruction as part of the district teacher appraisal system. __ D __ P __ B __ U

f. Ensures the training, development, and support for high-performing instructional teacher teams to support adult learning and development to advance student learning and performance. __ D __ P __ B __ U

g. Develops systems and structures for staff professional development and sharing of effective practices including providing and protecting time allotted for development. __ D __ P __ B __ U

h. Advances instructional technology within the learning environment. __ D __ P __ B __ U

IV. Building and Maintaining Collaborative Relationships

The principal creates a collaborative school community where the school staff, families, and community interact regularly and share ownership for the success of the school.

a. Creates, develops and sustains relationships that result in active student engagement in the learning process. __ D __ P __ B __ U

b. Utilizes meaningful feedback of students, staff, families, and community in the evaluation of instructional programs and policies. __ D __ P __ B __ U

c. Proactively engages families and communities in supporting their child’s learning and the school’s learning goals. __ D __ P __ B __ U

d. Demonstrates an understanding of the change process and uses leadership and facilitation skills to manage it effectively. __ D __ P __ B __ U
V. Leading with Integrity and Professionalism

The principal works with the school staff and community to create a positive context for learning by ensuring equity, fulfilling professional responsibilities with honesty and integrity, and serving as a model for the professional behavior of others.

a. Treats all people fairly, equitably, and with dignity and respect.  __ D __ P __ B __ U

b. Demonstrates personal and professional standards and conduct that enhance the image of the school and the educational profession. Protects the rights and confidentiality of students and staff.  __ D __ P __ B __ U

c. Creates and supports a climate that values, accepts and understands diversity in culture and point of view.  __ D __ P __ B __ U

VI. Creating and Sustaining a Culture of High Expectations

The principal works with staff and community to build a culture of high expectations and aspirations for every student by setting clear staff and student expectations for positive learning behaviors and by focusing on students’ social-emotional learning.

a. Builds a culture of high aspirations and achievement and for every student.  __ D __ P __ B __ U

b. Requires staff and students to demonstrate consistent values and positive behaviors aligned to the school’s vision and mission.  __ D __ P __ B __ U

c. Leads a school culture and environment that successfully develops the full range of students’ learning capacities—academic, creative, social-emotional, behavioral and physical.  __ D __ P __ B __ U

<table>
<thead>
<tr>
<th>Illinois Performance Standard for School Leaders</th>
<th>ISTE Standards for Education Leaders</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I. Living a Mission and Vision Focused on Results</strong></td>
<td><strong>2. Visionary Planner</strong></td>
</tr>
<tr>
<td>a. Coordinates efforts to create and implement a vision for the school and defines desired results and goals that align with the overall school vision and lead to student improvement for all learners.</td>
<td>2a Engage education stakeholders in developing and adopting a shared vision for using technology to improve student success, informed by the learning sciences.</td>
</tr>
<tr>
<td>b. Ensures that the school’s identity, vision, and mission drive school decisions.</td>
<td>2b Build on the shared vision by collaboratively creating a strategic plan that articulates how technology will be used to enhance learning.</td>
</tr>
<tr>
<td>c. Conducts difficult but crucial conversations with individuals, teams, and staff based on student performance data in a timely manner for the purpose of enhancing student learning and results.</td>
<td>2c Evaluate progress on the strategic plan, make course corrections, measure impact and scale effective approaches for using technology to transform learning.</td>
</tr>
<tr>
<td>2d Communicate effectively with stakeholders to gather input on the plan, celebrate successes, and engage in a continuous improvement cycle.</td>
<td>2d Communicate effectively with stakeholders to gather input on the plan, celebrate successes, and engage in a continuous improvement cycle.</td>
</tr>
<tr>
<td><strong>II. Leading and Managing Systems Change</strong></td>
<td><strong>1. Equity and Citizenship Advocate</strong></td>
</tr>
<tr>
<td>a. Develops, implements, and monitors the outcomes of the school improvement plan and school wide student achievement data results to improve student achievement.</td>
<td>4d Establish partnerships that support the strategic vision, achieve learning priorities and improve operations.</td>
</tr>
<tr>
<td>b. Creates a safe, clean and orderly learning environment.</td>
<td>4a Lead teams to collaboratively establish robust infrastructure and systems needed to implement the strategic plan.</td>
</tr>
<tr>
<td>c. Collaborates with staff to allocate personnel, time, material, and adult learning resources appropriately to achieve the school improvement plan targets.</td>
<td>4c Protect privacy and security by ensuring that students and staff observe effective privacy and data management policies.</td>
</tr>
<tr>
<td><strong>III. Improving Teaching and Learning</strong></td>
<td><strong>1. Equity and Citizenship Advocate</strong></td>
</tr>
<tr>
<td></td>
<td><strong>2. Visionary Planner</strong></td>
</tr>
<tr>
<td>1b Ensure all students have access to the technology and connectivity necessary to participate in authentic and engaging learning opportunities.</td>
<td>1b Ensure all students have access to the technology and connectivity necessary to participate in authentic and engaging learning opportunities.</td>
</tr>
<tr>
<td>4b Ensure that resources for supporting the effective use of technology for learning are sufficient and scalable to meet future demand.</td>
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</tr>
<tr>
<td>3. Empowering Leader</td>
<td>5. Connected Learner</td>
</tr>
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<td>-----------------------</td>
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</tr>
<tr>
<td>a. Works with staff to develop a consistent framework for effective teaching and learning that includes a rigorous and relevant standards-based curriculum, research-based instructional practices, and high expectations for student performance.</td>
<td>2c Evaluate progress on the strategic plan, make course corrections, measure impact and scale effective approaches for using technology to transform learning.</td>
</tr>
<tr>
<td>b. Creates a continuous improvement cycle that uses multiple forms of data and student work samples to support individual, team, and school-wide improvement goals, identify and address areas of improvement and celebrate successes.</td>
<td>3e Develop learning assessments that provide a personalized, actionable view of student progress in real time.</td>
</tr>
<tr>
<td>c. Implements student interventions that differentiate instruction based on student needs.</td>
<td>2d Communicate effectively with stakeholders to gather input on the plan, celebrate successes and engage in a continuous improvement cycle.</td>
</tr>
<tr>
<td>d. Selects and retains teachers with the expertise to deliver instruction that maximizes student learning.</td>
<td>1a Ensure all students have skilled teachers who actively use technology to meet student learning needs.</td>
</tr>
<tr>
<td>e. Evaluates the effectiveness of instruction and of individual teachers by conducting frequent formal and informal observations providing timely feedback on instruction as part of the district teacher appraisal system.</td>
<td>1a Ensure all students have skilled teachers who actively use technology to meet student learning needs.</td>
</tr>
<tr>
<td>f. Ensures the training, development, and support for high-performing instructional teacher teams to support adult learning and development to advance student learning and performance.</td>
<td>3a Empower educators to exercise professional agency, build teacher leadership skills and pursue personalized professional learning.</td>
</tr>
<tr>
<td>g. Develops systems and structures for staff professional development and sharing of effective practices including providing and protecting time allotted for development.</td>
<td>2e Share lessons learned, best practices, challenges and the impact of learning with technology with other education leaders who want to learn from this work.</td>
</tr>
<tr>
<td>h. Advances instructional technology within the learning environment.</td>
<td>5d Develop the skills needed to lead and navigate change, advance systems and promote a mindset of continuous improvement for how technology can improve learning.</td>
</tr>
</tbody>
</table>

### IV. Building and Maintaining Collaborative Relationships

<table>
<thead>
<tr>
<th>2. Visionary Planner</th>
<th>3. Empowering Leader</th>
<th>5. Connected Learner</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Creates, develops and sustains relationships that result in active student engagement in the learning process.</td>
<td>3a Empower educators to exercise professional agency, build teacher leadership skills and pursue personalized professional learning.</td>
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<td>b. Utilizes meaningful feedback of students, staff, families, and community in the evaluation of instructional programs and policies</td>
<td>2d Communicate effectively with stakeholders to gather input on the plan, celebrate successes and engage in a continuous improvement cycle. Communicate effectively with stakeholders to gather input on the plan, celebrate successes and engage in a continuous improvement cycle.</td>
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<td></td>
<td>c. Proactively engages families and communities in supporting their child’s learning and the school’s learning goals.</td>
<td>2a Engage education stakeholders in developing and adopting a shared vision for using technology to improve student success, informed by the learning sciences.</td>
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<tr>
<td></td>
<td>d. Demonstrates an understanding of the change process and uses leadership and facilitation skills to manage it effectively</td>
<td>5a Set goals to remain current on emerging technologies for learning, innovations in pedagogy and advancements in the learning sciences.</td>
</tr>
</tbody>
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**V. Leading with Integrity and Professionalism**

<table>
<thead>
<tr>
<th></th>
<th>1. Equity and Citizenship Advocate</th>
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<td>a. Treats all people fairly, equitably, and with dignity and respect.</td>
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<td>3. Empowering Leader</td>
</tr>
<tr>
<td></td>
<td>b. Demonstrates personal and professional standards and conduct that enhance the image of the school and the educational profession. Protects the rights and confidentiality of students and staff.</td>
</tr>
<tr>
<td></td>
<td>1c Model digital citizenship by critically evaluating online resources, engaging in civil discourse online and using digital tools to contribute to positive social change.</td>
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<tr>
<td></td>
<td>c. Creates and supports a climate that values, accepts and understands diversity in culture and point of view.</td>
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<td></td>
<td>1d Cultivate responsible online behavior, including the safe, ethical and legal use of technology.</td>
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</table>

**VI. Creating and Sustaining a Culture of High Expectations**

<table>
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<td>c. Leads a school culture and environment that successfully develops the full range of students’ learning capacities—academic, creative, social-emotional, behavioral and physical.</td>
</tr>
<tr>
<td></td>
<td>3d Support educators in using technology to advance learning that meets the diverse learning, cultural, and social-emotional needs of individual students.</td>
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## Appendix L: Current Evaluation Tool for Educators at Modern Mind CUSD

Proposed Changes in Bold and Edits in Strikethrough Font

<table>
<thead>
<tr>
<th>PRE-TENURED TEACHING STAFF – Years 1 &amp; 2, Steps 1-9 + 2-10 (2nd cycle) Years 3 &amp; 4, Minimum Steps 1-10</th>
<th>TENURED TEACHING STAFF – Every other Year, minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td>Building administrator(s) hold(s) an “Evaluation Process Meeting” for Certified Staff Member</td>
</tr>
<tr>
<td><strong>August - September</strong></td>
<td><strong>Step 2</strong></td>
</tr>
<tr>
<td><strong>Step 3</strong></td>
<td>Informal: Unannounced visit is made. An informal takes place before the end of Semester 1. Minimum 30 minutes for specialists, longer for instructional classes.</td>
</tr>
<tr>
<td><strong>Step 4</strong></td>
<td>Informal Self-Assessment of Practice is completed by the Certified Staff Member after reflecting on the observation.</td>
</tr>
<tr>
<td><strong>Step 5</strong></td>
<td>Certified staff member and evaluator schedule an informal post-conference approximately within a week of the informal observation.</td>
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<tr>
<td><strong>Step 6</strong></td>
<td>Informal Post-Conference: Certified Staff Member and Administrator discuss teacher’s Self-Assessment of Practice. Form to be retained by teacher and used throughout the year. In the 1st cycle only, 1-2 goals are determined &amp; entered on form Individual Professional Development Plan. Teacher completes and submits to administrator. Certified Staff Member begins to enter information in the log (ongoing process). 2nd cycle – goals reviewed. Can be changed if mutually agreed upon.</td>
</tr>
<tr>
<td><strong>Step 7</strong></td>
<td>Formal Pre-Conference form is filled out before the formal observation. Meeting is set up with the administrator and information is shared.</td>
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<tr>
<td><strong>Step 8</strong></td>
<td>Formal Observation Intent - observe entire class period, barring an emergency.</td>
</tr>
<tr>
<td><strong>Step 9</strong></td>
<td>Formal Self-Assessment of Practice form (form from step 3) is filled out again (highlighting or dating new boxes).</td>
</tr>
<tr>
<td><strong>Step 10</strong></td>
<td>Formal Post-Conference Certified Staff Member reviews completed Self-Assessment of Practice form w/admin. Certified Staff Member provides an update of Individual Professional Development Plan &amp; log. Administrator reviews data collected for formal observation. Copies are signed. Copy of supervisor write-up plus the pre-conference form to teacher, administrator &amp; personnel file.</td>
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<tr>
<td><strong>By March 1</strong></td>
<td><strong>Step 11</strong></td>
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