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Design Thinking in Education: A Case Study Following One School District's Approach to Innovation for the 21st Century

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DESIGN THINKING IN EDUCATION: A CASE STUDY FOLLOWING ONE SCHOOL DISTRICT'S APPROACH TO INNOVATION FOR THE 21st CENTURY

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Dissertation Abstract

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The latest reform movement in education, known as 21st-Century Learning, is in response to the transition from a primarily industrial-based economy to a knowledge-based one. 21st-Century Learning demands that educational organizations become more receptive to societal changes and provide educational services that can make the contributions needed to sustain our economic position in the world.

The purpose of this dissertation study was to understand how design thinking supports the implementation of 21st-Century Learning within a school district. Moreover, this project was designed to capture and understand how the strategic integration of design thinking, in the form of a District Design Team (DDT), promoted innovation within an elementary school district.

An opportunistic, single-case study, this dissertation was focused on the particular phenomenon of innovation within a specific elementary school district (Merriam, 2009). A Conceptual Framework was used to interpret and discuss the findings. Known as *artifact analysis*, this dynamic model captured the process and the context of the DDT while bringing into focus the attributes of the Design Team's role as a sophisticated artifact within the district (Halverson 2003, 2006; Halverson et. al., 2004).

Findings from this study indicated that the use of the DDT supported the communication of a definition for 21st-Century Learning throughout the district. Affordances like the use of an Implementation Plan, generated from the newly adopted Strategic Plan and a shared vision among district and site level leadership, aided the DDT

in their work. Members of the DDT reported that design thinking played an important role in the mindset of the team and approach of the leadership. Further, all members of the DDT identified benefits around the use of design thinking either as a problem-solving approach used to create opportunities to explore innovations in education or as a classroom application through design learning. The DDT also identified constraints and frustrations with the DDT process and the application of design thinking. This unique opportunity in public education yielded both practical and theoretical insight into the systemic change process of this small suburban school district.

This dissertation, written under the direction of the candidate's dissertation committee and approved by the members of the committee, has been presented to and approved by the Faculty of the School of Education in partial fulfillment of the requirements for the degree of Doctor of Education. The content and research methodologies presented in this work represent the work of the candidate alone.

Loraine Rossi De Campos	January 24, 2015
Candidate	Date

Dissertation Committee

Dr. Christopher N. Thomas	January 24, 2015
Chairperson	Date
Dr. Patricia Mitchell	December 8, 2014
Dr. Kevin Oh	December 8, 2014

DEDICATION

I dedicate this dissertation to my parents, Veronica Lorain Rossi and Michael Joseph Rossi. They taught me never to give into self-doubt and to persevere even when the path becomes uncertain. Their unconditional love and dedication to me and to my sister Margaret, as well as their capacity for love and kindness towards others, inspires me.

I also dedicate this dissertation to my late grandmother and namesake, Cybella Lorain Broniarczyk. During her life, she was a constant source of encouragement through her prayers and the pride she took in my work. May she rest in peace.

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To the Superintendent, Assistant Superintendent, Director of Learning and Technology, the year one and two Design Team Leads, and all of the amazing Design Team Teachers who participated in this study for their willingness to embrace this work. Thank you for your contributions to this research. Without you, this project would not have been possible.

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CHAPTER I

INTRODUCTION TO THE STUDY

Statement of the Problem

The 21st-Century Learning and teaching movement is an effort by business leaders, policy makers, and educators to provide children with the skills necessary for success in a rapidly changing global and technology-driven society (Schoen & Fusarelli, 2008). This latest reform is in response to the transition from a primarily industrial-based economy to a knowledge-based one. Due to the increase in global competition, during which wider access and usage of new products and services is required to stay ahead of the curve, the simultaneous and continuous education or training on these new products and services is paramount. Therefore, the cycle of knowledge is rotating faster than ever before (Cernetic, 2012). In addressing the concerns of global competition, education has become one of the important sectors, and the restructuring of educational policy and educational achievement are being demanded (Bellanca & Brandt, 2010; Karoly & Panis, 2004; Yan Yan, 2010).

While the nation is calling for real change within the education system to support this increased rate of information exchange, true innovation could prove to be a challenge. The shift from the industrial age to the knowledge age has created fundamental changes in the structure of our economies worldwide. In the United States, about 54 percent of the economy was based on the production of material goods and services in 1967. Thirty years later, 63 percent of the United States' economy had moved to an information product and service economy. Additionally, within the last two decades, millions of service sector jobs have been created and millions of manufacturing jobs have

been lost (Hodge & Lear, 2011; Partnership for 21Century Skills, 2008). As a result, we are encountering problems that can only be addressed through innovation. American society is demanding that schools prepare students to be ready to compete within the new terrain and within a global marketplace that is constantly and rapidly changing. According to Norris, Brodnick, Lefrere, Gilmour, & Baer (2012), "these jump shifts are calling for learner-centric, perpetual, just-in-time, personalized, and unbundled learning experiences along with the seamless systems, processes, and services needed to facilitate them" (p.19). Further, the prevalent doctrine in education pedagogy must have a strong focus in theories of human capital (Cernetic, 2012). Much of this language is found within the discourse supporting the 21st-Century Learning reform movement in education. Proponents of the movement argue that educational organizations at all levels need to become more responsive to societal changes and provide educational services that can make the contributions needed to sustain our society (Ananiadou & Claro, 2009, Kereluik, Mishra, Fahnoe, & Terry, 2013; Laguardia & Pearl, 2009; Norris, et. al, 2012; Partnership for 21Century Skills; Rutkowski, Rutkowski, & Sparks, 2011; Trilling and Hood, 1999; Yan Yan, 2010).

Creating opportunities for innovation to occur within the field of education is critical work for today's education leaders (Bellanca & Brandt, 2010; Christensen, Johnson, & Horn, 2008; Finn & Horn, 2013; McCharen, Song, & Martens, 2011; Schlechty, 2009). Universities and school districts across the country are faced with developing new strategies to address the rapid changes and reform initiatives like 21st-Century Learning while simultaneously continuing to meet the everyday demands (Schoen & Fusarelli, 2008). Unfortunately, educational institutions have historically

innovated using systematic and sustaining innovative processes, which are incremental and do not require much in terms of systematic change (Christensen, et. al., 2008; Duffy, Reigeluth, Solomon, Caine, Carr-Chellman, Almeida, DeMars, 2006; Norris et. al., 2012). To accomplish the transformation called for by the current economic paradigm and the 21st-Century Learning reform movement, schools and school districts will need to undergo systemic change, as well as introduce innovations that are disruptive to many of the current processes served by the present arrangement of schools (Duffy et. al., 2006; Christensen et. al., 2008; McCharen et. al., 2011; Schlechty, 2009).

Disruptive innovations are those innovations that are not congruent with the current systems in place and require an enhancement of capacity and skill level within the organization in order to become sustainable innovations (Christensen et. al., 2008; Duffy et. al, 2006; Finn & Horn, 2013). Disruptive innovation rarely results in an abrupt shift within a system but over time, it almost always results in a new system or a new way of doing business (Christensen et. al., 2008; Finn & Horn, 2013). Consequently, new approaches to innovation are being prototyped in many educational organizations, therefore changing the business model and creating spaces for new orientations within educational institutions (Norris et. al., 2012). One such example is the strategic application of *design thinking*. Well received within the business world, design thinking has been recognized as a driver of innovation within product design for a long time and it has recently (within the last decade) been acknowledged as an effective approach for creating systematic change within organizations (Gloppen, 2009; Gloppen, 2011; Rice, 2011). Accordingly, design thinking has the potential to be an effective tool for systemic change in education as well (Chance 2010; Rice, 2011).

Purpose of the Study

The purpose of my dissertation study was to understand how design thinking led to the implementation of 21st-Century Learning within a school district. Specifically, this study attempted to capture and understand how the strategic integration of design thinking through the form of a District Design Team (DDT) can promote innovation within an elementary school district. In order to draw lessons from an attempt to blend design thinking principles into the strategic approach used by the school district's leadership, the DDT was followed for a period of time.

This case study explored how one school district introduced 21st-Century Learning practices into the organization through the use of the DDT. The DDT was considered a locus of this activity because it was tasked with spearheading the implementation of the district's vision of 21st-Century Learning. Using the conceptual lens of *artifact analysis*, discussed in detail later in this chapter, this study examined the function of the District's Design Team in leading this charge.

Significance of the Study

The current innovations needed in education are centered on how we train teachers to teach and the outcomes we desire for students. As a result, institutions will need to recalibrate by creating visions or missions that embrace a focus on human capital and the philosophy of lifelong learning embedded in the 21st-Century Learning rhetoric. The current lack of consensus around a definition for 21st-Century Learning is of growing concern for the academic community as it is seen as a barrier to implementation of 21st-Century skills or competencies within our education system (Ananiadou & Claro, 2009, Dede, 2010; Jerald, 2009, Kereluik et al., 2013, Silva 2008, and Voogt & Roblin, 2012).

Further, there are few examples found within the field of education that tell the story of how a school district defined 21st-Century Learning and implemented or articulated that vision throughout the district. This study is important because it added to the literature on 21st-Century Learning in two aspects. First, it explored a definition of 21st-Century Learning designed by a school district. Secondly, it captured an example of how that school district took the definition and began disseminating it throughout the organization.

As the barriers to implementation of innovations within education systems are human-centered problems, they require a human-centered, creative, iterative, and practical approach in order to find the best solutions to these barriers (Brown, 2008; Duffy, 2003; Duffy et al., 2006; Fullan, 2001; Joseph & Reigeluth, 2010; McCharen et. al., 2011; Peters, 2009; Schlechty, 2009; Thompson & Kritsonis, 2009). Design thinking applied strategically and tied to products, services, communication, and outcomes can result in the implementation of creative, radical changes, which enables an organization to innovate (Braganza & Ward, 2001; Rylander, 2009; Snowden, 2002; Vogel, 2009). Nonlinear problem solving approaches like design thinking are applicable to education planning and can result in a "best fit" for an organization in terms of the successful paring of decision-making practices and appropriate solutions (Acklin, 2010; Chance; 2010; Drost, 2008; Wetzler, 2013). Though design thinking has been embraced for over a decade within the business world as a strategic approach to creating conditions for innovation within organizations, little research is available on how it can be strategically integrated into educational organizations. This study added to the body of research in this area. Specifically, this study contributed to the literature by exploring a design process used by a school district to plan for the implementation of 21st-Century Learning within

the district. Further, the notion of design thinking as a strategic approach to developing and managing organizations originated from the work of designers and design teams. For this reason, it is important to consider the work of multidisciplinary teams, often called design teams, with connections to both design and management as an approach to achieving innovations within an educational organization (Johansson-Skoldberg, Woodilla, & Cetinkaya, 2013). This study added to the literature on design teams in education by capturing the work of a design team focused on implementing a definition of 21st-Century Learning within a school district.

Overall, the significance of this undertaking emerged from the documentation of how one Bay Area public school district set out to implement 21st-Century Learning within the district. This project examined the extent to which the use of a District Design Team (DDT) created an impetus for innovation within the district and what functions of the team allowed this to happen. Of particular interest was the role of the DDT in the articulation and implementation of the district's newly adopted definition of 21st- Century Learning throughout the district. This unique opportunity in public education will provide both practical and theoretical insight into the systemic change process of a small suburban school district. This research could help to identify next steps for school leaders who wish to innovate within their organizations.

Background and Need

In order to better situate this study within a context, the conditions and variables surrounding the current 21st-Century reform movement in education needed to be considered. This included a look at the worldwide economic conditions that have greatly influenced this reform as well as the local environment. Further, a strategic management

process that can result in educational innovations and is compatible with this type of reform movement was also considered.

In a seminal report conducted for the U.S. Department of Labor and sponsored by the RAND Corporation, entitled *The 21st Century At Work,* Karoly & Panis (2004) presented five economic conditions that act as propellers for the 21st-Century Learning reform movement in education. First, globalization continues to increase trade in intermediate and final goods and services. For the purpose of this work, globalization can be "perceived as a set of changes that include the shaping of new, global forms in culture, the media and technologies of communication that nations have to accept and follow in order to be able to embrace global competition and respond positively" (Yan Yan, 2010, p. 75). Globalization also will be used as a term to express the concept of a "changing world".

According to Karoly & Panis (2004), the continued trade increase on a global scale has allowed for a more rapid transfer of knowledge and technologies. This has extended the flow of capital into new markets and resulted in mobile populations. Their second condition recognized that technological advances will continue to accelerate in the next 10 to 15 years and are expected to continue to increase demand for a highly skilled workforce. Third, they suggested that rapid technological change and increased international competition will place pressure on the preparation and skill level of our workforce in this country, particularly the ability to adapt to changing technologies and shifting product demand. Karoly & Panis (2004) also indicated that this would change the nature of business organizations by highly commoditizing knowledge-based work. Work that will favor strong non-routine cognitive skills, such as abstract reasoning, problem

solving, communication, and collaboration will be available. As a result, the researchers proposed that education and training should become a continuous process through a life course. Further, they acknowledged that technology mediated learning has the potential to support lifelong learning both on the job and through traditional public and private education and training institutions.

The fourth condition discussed by Karoly & Panis (2004) illustrated a U.S. workforce that continues to increase in size, but at a considerably slower rate making it difficult for corporations to fill various positions in the future. This deficit leads to the fifth condition identified by researchers, which indicated that more specialized firms that outsource noncore functions and more decentralized forms of organization within firms will succeed in the future. As a result, we can expect to shift away from more permanent, lifetime jobs toward less permanent, even nonstandard employment relationships (e.g., self-employment) and work arrangements (e.g., distance work). Overall, this depicts a very different landscape than that of the previous era. Karoly & Panis (2004) recognized that developing an education and training system that responds to the needs of the 21st-century labor market is a key challenge for public and private educational institutions.

The United States Organization for Economic Co-operation and Development (OECD) also plays a critical role in this reform movement. According to the OECD, human capital unites knowledge, qualifications, competences and individual characteristics that increase the creation of personal, social, and economic welfare (Cernetic, 2012). Though this idea of human capital is not new, it has achieved popularity within international institutions and western governments, not only because it proposes a strategy of permanent development as its advocates suggest, but because it economically

justifies education under the current economic conditions (Cernetic, 2012). Besides these underlying philosophical assumptions shared by policy makers, the widely discussed results of two large-scale surveys, The International Adult Literacy Survey (IALS) and The Programme for International Student Assessment (PISA) are used to fuel the argument further. Both surveys are sponsored by the OECD and involve multiple countries.

The IALS, conducted by the OECD in 1994–1998, tested adults aged 16 to 65 in three areas that mimicked broad requirements of white-collar jobs: prose literacy (the ability to process narrative text), document literacy (the ability to process forms, charts, tables, schedules, and maps), and quantitative literacy (the ability to perform practical arithmetic operations). U.S. adults ranked around the middle of the 21 participating countries on all three assessments; however, the U.S. also demonstrated the largest spread of all countries assessed (Karoly & Panis, 2004; OCED, 2005). This suggests a wide discrepancy between the highly skilled and very unskilled workers within our workforce.

The PISA is used regularly to test 15-year-olds on reading, mathematical, and scientific literacy from 43 different countries. Similar to their adult counterparts, the results have indicated that U.S. students have traditionally scored near the middle when compared to other developed countries and remained within the mean average on the OECD scale (Karoly & Panis, 2004; OECD, 2005; OECD, 2009). In 2012, results indicated that U.S. students are still scoring within the average range for reading (ranked 17 out of 34) and science. Unfortunately, U.S. students as a whole are now performing below the average in math and the U.S. ranks about 26th in the world (OECD, 2012). Considering that 34 developed nations are included in the sample, ranking 26th indicates

that 15-year-old students in only eight other countries performed lower on the test than the students in the United States. Overall, it is important to note that the results of both surveys are being used to gauge the competitive advantage or qualifications of our current and future workforces (Bellanca & Brandt, 2010; Darling-Hammond, 2010; Hargreaves, 2010).

Adding to this platform is the work of Harvard and MIT economists like Frank Levy and Richard Murnane (2005), who have created "future models" that hypothesize what the economy and jobs of the future will look like. As a result of the construction of their future models, these researchers identified skills that they believe will be necessary for the workforce of the future. The list of skills includes "expert thinking" or problem-solving abilities, complex communication literacies, cognitive tasks that indicate inductive and deductive reasoning, manual tasks that can illustrate deductive and inductive reasoning, and non-routine manual tasks (Bellanca & Brandt, 2010; Dede, 2010; Levy and Murnane, 2005). Of notable mention is the connection that many of these skills have to reform efforts of the past. The progressive education movement of the late 19th century is an example. Some of the pedagogies, said to bring about the learning of these types of 21st-Century skills can be linked as far back as the insights found in John Dewey's *Democracy and Education,* Esther Lloyd-Jones and Margaret Ruth Smith's *Student Personnel Work as Deeper Teaching,* and Nevitt Sanford's *The American College* (Taylor, 2005). This aspect has created a controversy within the 21st-Century Learning reform movement literature (Bellanca & Brandt, 2010).

Another important component that should be recognized is the fact that *Information, Communication, and Technology* (ICT) competencies are not a new

component to education reform either. This pedagogical agenda can be traced back to the 1980s with the first significant attempt to integrate ICT in schools (Christensen et. al., 2008; Dede, 2010; Finn & Horn, 2013, Rutkowski, et. al., 2011). In the early 1990s, with the birth of multimedia and affordable personal computers, there was another strong push to integrate technology into classrooms and into the instructional approach of educators. The results of these initial movements did not create the transformation that was intended. They acted more like augmentations to what was already being done in 20th century classrooms and in many schools, expanded vocational opportunities. This current 21st-Century Learning reform movement is often connected to technology and communication literacies and is intended to shift the way we do business in education. This is in large part due to the fact that the ICT revolution is occurring on a global scale and typically flows through a change process of diffusion (Karoly & Panis, 2004; Rutkowski et. al., 2011).

According to Christensen et. al. (2008), there are two kinds of innovations: sustaining and disruptive. Historically, educational institutions have innovated using systematic innovative processes, which are incremental and increase capacity for change over time (Christensen et. al., 2008; Norris et. al., 2012). Our current economic paradigm and the diffusion change processes seen in the ICT revolution are requiring leaders in education to consider processes that can result in a type of innovation known as disruptive innovation. In the business world, disruptive innovation rarely results in an abrupt shift in reality but over time, it almost always results in a new market or a new way of doing business (Christensen et. al., 2008; Finn & Horn, 2013; Schlechty, 2009). Up until this point, the business of education in this country could be regarded as a type

of value-chain business (Christensen et. al., 2008). The shift toward 21st-Century Learning and the student-centric learning models, brought in on waves of disruptive innovations from the technology world, are changing the business model right from under our feet. This suggests that if universities, colleges, and K-12 schools wish to remain an important part of the knowledge cycle, they will need to get out in front of this reform movement and guide its course (Christensen et. al., 2008; Cernetic, 2012; Finn & Horn, 2013; Norris et. al, 2012).

Fourteen years into the 21st century, the definition of 21st-Century Learning and a consensus of what constitutes critical 21st-Century Skills still have not been achieved. Over 20 different frameworks, models, or lists of skills, competencies, or literacies have been introduced since this movement began in the late 1990s and early 2000s. Of course there are those that are cited most often, such as The Partnership for 21st-Century Skills (P21) "*Framework for 21st Century Learning*" and The North Central Regional Educational Laboratory (NCREL) and the Metiri Group's "*enGauge Framework.*" The single most influential consortium supporting the 21st-Century Learning reform movement in education at this time is The Partnership for 21st-Century Skills (Bellanca & Brandt, 2010). P21 members include Apple Inc., Cable in the Classroom, Cengage Learning, Cisco Systems, Inc., The College Board's Advanced Placement Program (AP), Common Sense Media, Crayola, EdLeader21, EF Education, Education Networks of America, Follett, Ford Motor Company Fund, Goddard Systems Inc., Intel Corporation, JP – Inspiring Knowledge, LEGO Education, National Board for Professional Teaching Standards, National Education Association, Pearson Foundation, Project Management Institute Educational Foundation, VIF International Education, The Walt Disney

Company, and Wireless Generation. This can lead one to believe that this consortium has won the right to define this movement and should be recognized as such. Although many of the conglomerates and "think tanks" like P21 have educators or education research organizations as members, much of the momentum and fuel for this shift in education stems from economic and business literature (Hargreaves & Goodson, 2006). Very little academic literature is available within the field of education that can define what 21st-Century Learning is, let alone inform education leaders on how to begin implementing it successfully within our schools.

In an attempt to look at mechanisms that can achieve this level of reform work, new approaches to moving through barriers related to implementing reform efforts must be considered. The focus for leaders must be on innovation and how to support it within educational organizations. Discourse on "design thinking" as it applies to organizational problem solving and strategic management seems to offer promise. In fact, due to the call for system-wide innovation in education, experts have initiated a discussion around the strategic use of design thinking in educational organizations in order to promote innovation (Chance, 2010; Rice 2011).

Educational organizations need to develop strategic management processes that can anticipate future trends. Using an iterative thinking process like design thinking allows problems to be defined over time and to be paired with appropriate solutions (Dorst 2006; Chance, 2010). It is a type of problem-solving technique often associated with abductive reasoning and rapid and iterative brainstorming processes that can result in innovative and alternative viewpoints for meeting an identified need. The design thinking process, as shown in Figure 1, can be talked about in terms of a system of five

spaces. According to Brown (2008), the five spaces of a design project include empathize, define, ideate, prototype, and test. Of those five spaces, three more encompassing spaces must occur for innovation to be achieved. The three larger spaces are known as Inspiration, Ideation, and Implementation. Inspiration includes the circumstances (i.e. problem of practice or problem setting) and the spaces called empathize and define. Ideation is the space in which brainstorming (i.e. generating, developing, and testing ideas) can lead to solutions. This space also encompasses ideate and prototype. Brown (2008) made it clear that design teams working on a project will loop back through these first two spaces multiple times as they refine their process. Implementation is the final space and includes the communication and execution of the team's vision for the project.

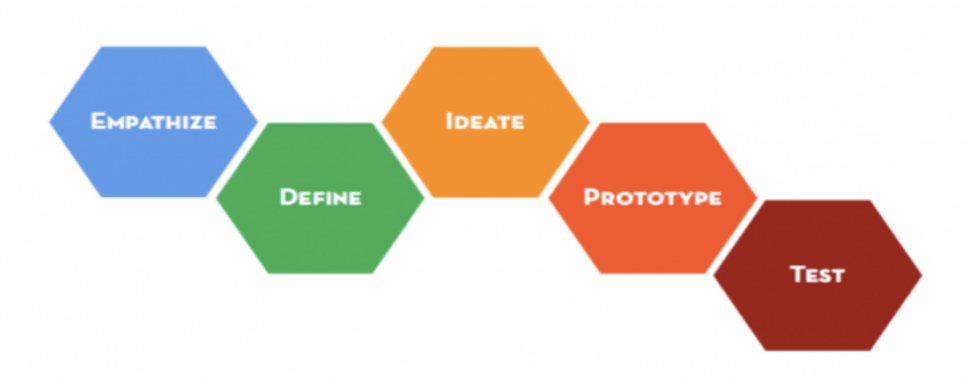

Figure 1: Design Thinking Process (Rice, 2011)

Design thinking allows for flexibility and adaptability in planning processes as well as the integration of viewpoints from all stakeholders. Moreover, Rice (2011) asserted that design thinking has already been embraced as a strategy for educational reform efforts in K-12 education. In a case study, Rice (2011) captured this design thinking process as it can be applied to educational organizations. The study followed ten district leadership teams who participated in the California Linked Learning District

Initiative and showcased the practice of design thinking processes as it applies to education based design teams. According to Rice (2011), each of the ten participating districts was able to address "high priority central" questions as a result of the process. The design thinking process called *Design Thinking in Action* is presented in Table 1.

Table 1

Design Thinking in Action

Design Process Phase	Action
Empathize	Design teams learn about the people for whom a solution is being designed. With data gathered through stakeholder interviews, observations, and other research activities, the team creates a character sketch to represent the target user.
Define	Design teams synthesize findings from their inquiry and clarify end goals, including specific client needs.
Ideate	This brainstorming stage uses specific guiding principles.
Create a prototype	Teams visualize potential solutions: this may include drawings, models, videos, and role-plays. Instead of figuring out one perfect solution, teams decide on one or more ideas to attempt.
Test your prototype	Teams take prototypes "out for a spin." The success or failure of these trials informs next steps as part of a cycle of continuous improvement.

According to assertions within the literature, design thinking can address human-centered problems of practice, thus allowing for the potential of our educational systems to be realized (Brown, 2008; Hackett, 2009). Currently, little research is available that illustrates the integration of design thinking into the strategic management of educational organizations. As a result, there is a need for studies that can evaluate these claims further.

At a local level and at the center of this study was the need for the implementation of 21st-Century Learning within a Bay Area school district. Nestled on the outskirts of the Silicon Valley, the ICT explosion was palpable within the district. Further, strong partnerships with local businesses and corporations (like Google, Oracle, Hewlitt Packard, and Stanford New Schools), as well as popular political views have created conditions within the district that make the 21st-Century Learning reform movement a shared reality for all stakeholders.

In 2009, the school district determined that students needed to be educated using 21st-Century Skills and competencies and for that to happen, 21st-century teaching and instruction needed to be supported and employed within the district. This adoption of the 21st-Century Learning reform movement began with community forums aimed at educating the school community on what 21st-Century Learning is. This prompted the discussion of how to define 21st-Century Learning for the district. Discussions and meetings with different stakeholder groups (i.e., the School Board, parents, community partners, teachers, administrators, and students) took place for over two years. During the 2011-12 and 2012-13 school year, a strategic planning committee was formed. The district's Superintendent worked with this group to synthesize the information gleaned from the community forums and the various discussions around 21st-Century Learning and teaching that occurred within the district. In 2012-13, the community passed a bond to further support the district's 21st-Century Learning Initiative. At the center of this new vision for teaching and learning was the promise of two new, state-of- the-art learning centers for fourth- and fifth- grade students. These centers are to be designed specifically with the district's definition of 21st-Century Learning in mind. Using a strategic planning

process, the district's Superintendent was able to engage members of all major stakeholder groups while developing the district's newly adopted plan. Iterations of the plan were made available for comment and feedback from any interested school community member. In June of 2013, the School Board officially adopted the plan, effectively solidifying the district's vision for 21st-Century Learning and teaching.

The district's vision includes three major areas: alignment of curriculum and instruction to 21st-Century Learning principals and mindsets, alignment of human capital to support this shift, and the alignment of environments to reflect the shift. The language used to describe these three areas as well as the substantive pedagogies and some of the key approaches that define them are summarized below (see Appendix A for the full Strategic Plan):

Align Curriculum and Instruction to a 21st-Century Model of Learning

A. Articulate and implement a coherent and innovative PK–8 curriculum;
B. Create greater emphasis on a relevant, real-world, global curriculum;
C. Continue and expand the district's emphasis on the arts;
D. Implement a comprehensive, district-wide Technology Plan;
E. Experiment with "blurring the lines of time and place";
F. Partner with a cogent set of support providers (parents, program/community partners, elective teachers, design schools, subject matter experts working virtually, etc.);
G. Support learners across the continuum;
H. Create new rubrics and measurements of student, school, and district success;
I. Build internal mechanisms to allow for "rapid prototyping."

Align Human Capital to Support Staff as 21st-Century Educators

A. Pursue a path to more greatly professionalize the role of the educator;
B. Build a robust professional development ("PD") plan;
C. Create time for teachers to engage in professional learning and collaboration;
D. Build social-based forums for staff collaboration and learning;
E. Expand the definition of "educator" to include larger community-based and worldwide resources;
F. Establish a new system of evaluation for all staff;
G. Create new system of career path, roles, and compensation that reflect the increased professionalism of our staff (including master teachers, mentors, coaches, resource specialists, etc.) and the modern requirements of the role.

Build Learning Environments for all [district] Schools that will Reflect, Support, and Sustain 21st-Century Learners

A. Meet timelines of Facility Master Plan to build new schools and update existing schools;
B. Establish learning spaces as sustainable and natural environments;
C. Ensure spaces have robust technology infrastructure and flexibility for future growth and technological developments;
D. Build spaces and develop other programs (e.g. transportation);
E. Involve each school's staff, students, and community in the design of these new environments;
F. Secure additional sources of funds (p. 4-7).

Prior to the adoption of the strategic plan and in anticipation of the implementation process, the District Superintendent called for the formation of a district Design Team (DDT). The concept of a "design team" comes from the business solution, design thinking discussed above. Design firms and designers first used design thinking, as it applies to organizations, with other non-design based companies to promote innovation and to support business performance (Brown, 2008; Larsen, et. al., 2007; Wattanasupachoke, 2012). A more detailed description of the DDT and the original vision for the team is provided in the Settings section of Chapter 3.

Worldwide conditions like globalization, shifts in economies, and the ICT revolution are focusing a political spotlight on the strength and sustainability of this country's workforce. Therefore, reform in education is being called for once again. The 21st-Century Learning rhetoric is an attempt to talk about those skills and competencies that can prepare future workers for careers in the knowledge age. Further, with the global ICT revolution in full swing, disruptive innovations are beginning to impact the education sector. School districts in the Silicon Valley area of California are extra sensitive to this political climate and have begun reacting through reform efforts. These current global and local conditions make the study of innovative change processes in

educational organizations relevant and timely. Understanding how business solutions like design thinking can solve some of the barriers to reform efforts will only strengthen the important work of today's leaders in education. Finding ways to capture these processes is the next critical step towards an organized reform movement.

Conceptual Framework

One such mode for examining this type of work is through the concept of artifact analysis (Halverson, 2003). For the purpose of this study, artifact analysis was used to explore how one school district employed design thinking and though the use of a design team, began enacting reform efforts. Drost (2008) suggested that the investigation, the object of design, the designer or design team, the process, and the context in which the activity occurs, should all be interpreted as part of the study of design. Used as the conceptual framework for this study, artifact analysis is dynamic enough to capture the process and the context of the District Design Team (DDT) while bringing into focus the attributes of the Design Team's role as a sophisticated artifact within the district (Halverson 2003, 2006; Halverson et. al., 2004).

Halverson, Kelly, and Kimball (2004) argued that policies and programs can be understood as sophisticated artifacts intended to shape or reform existing practices in an institutional context. Leaders interested in reforming or innovating within organizations must engage in the process of deconstructing and then rebuilding a new set of artifacts to shape organizational practices (Halverson, 2003). As a primary function of the DDT is to facilitate the implementation of the district's vision for 21st-Century Learning, it can be viewed as a sophisticated artifact. Further, the actors and actions of the DDT can be followed to investigate the extent to which a new artifact or set of artifacts can shape the

district's practices toward successfully achieving the goals established by the implementation process.

According to Halverson (2006), designers build features into artifact(s) to shape practice in intended ways. Analyzing the various components of artifacts creates an opportunity to investigate how designers thought about the practices, therefore making it possible to use artifacts to trace the ways in which leaders think about, initiate, and practice reform efforts in schools (Halverson, 2003, 2006; Halverson, et. al., 2004). Sophisticated artifacts are introduced into educational organizations to alter existing practices, enhance the capacity for new understandings, and to create new or supportive organizational conditions (Halverson et. al., 2004).

In 2002, Halverson developed the *Design Cycle Analysis Model* (DCAM) shown in Figure 2. This analytic model was designed to track the creation, development, iteration, and subsequent institutionalization of artifacts. Appropriate to this study, the DCAM model seeks to understand how artifacts that result from a problem setting and solving cycle can come to serve as resources for future problem setting and artifact design. Component aspects of the DCAM model include the goals of the designers, the strategies used in the design and implementation of the artifact, the resources drawn upon in design and implementation, the situational constraints and affordances that affected the implementation and use, and the ways in which artifacts evolved over time to become resources for successive problem setting efforts (Halverson, 2003). Since artifacts open a window into how leaders think and act in practice, understanding how leaders use artifacts to develop a capacity for innovation can help to guide reform efforts (Halverson, 2006).

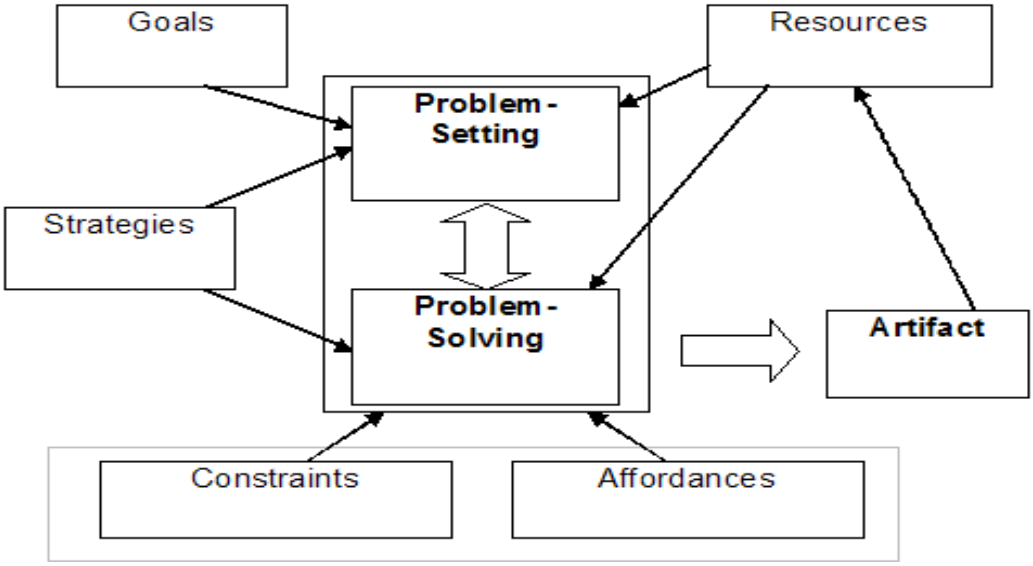

Figure 2: DCAM (Halverson, 2003)

During this study, the DCAM model was applied while following the DDT. Starting with the DDT as the artifact, how and why the DDT came to be was explored. The resources and strategies used to create the DDT, as well as the goals set for the DDT by district leadership, were investigated. After the problem setting was established, the problem-solving phase of the DDT was reviewed. This included the activities that the DDT engaged in to address the problem of implementing 21st-Century Learning within the district and to achieve the goals established for the team. The affordances and constraints that impacted the use of the DDT within the district were also examined. Through the application of the artifact analysis framework, an understanding of how the DDT set the groundwork for the successful implementation of the district's vision for 21st-Century Learning and created a space for innovation within the district becomes clear.

Research Questions

The goal of this research study was to understand how an elementary school district began an implementation process for 21st-Century Learning. More specifically, I was interested in exploring the use of the District Design Team (DDT) as a means for supporting innovation within the district. In order to begin this investigation, three research questions were designed. The questions were constructed using language from Halverson's (2003) DCAM model and design thinking (Brown, 2008).

Research Questions

1. How have the features and conditions within the school district resulted in the design of the DDT?
2. How has the DDT been managed and used to produce the intended innovations within the district?
3. How have design processes contributed to the implementation of the intended innovations?

Definition of Terms

The following terms are defined for this study. As it is possible to apply many different definitions to these terms, the ones presented below have been chosen for the purpose of this research.

1. *Affordances* are entities within the school environment that helped the school implement a school reform artifact such as a protocol, program or procedure. The affordances, perceived by local actors determine which features of the artifact are implemented (Halverson, 2003).

2. *Constraints* are perceptions of artifact features that limit or qualify behaviors (Halverson, 2003).
3. *Design Teams* are multidisciplinary teams with cross discipline viewpoints: (a) a common agenda founded on the notions of globalization, technologies, and social change on the practice of the fields, and (b) intensive collaboration through projects that results in learning from the different perspectives preset within the team (Drost, 2008).
4. *Design thinking* is a fourth-order design principal used beyond the design context, for and with people without a formal background in design. It combines designerly ways of thinking with business thinking and is used strategically to promote innovation in organizations (Buchanan, 2008; Gloppen 2009; Johansson-Skoldberg, et. al. 2013).
5. *Educational reforms* are planned efforts to change schools in order to correct perceived social and educational problems (Tyack & Cuban, 1995).
6. *Reform movements* in education refer to the economic political trends of an educational reform, usually at a national level (Laguardia & Pearl, 2009).
7. *21st-Century Learning/Skills* has been used to describe the predicted capabilities that students will need in order to be successfully employed during the 21st century and the desired outcomes for students. It has also been used as a focal point for new visions of federal reform, K-12 education, and higher education (Dede, 2007; Rutkowski et. al., 2011; Voogt & Roblin, 2012). The district's Strategic Plan included under Appendix A further defines it for the purpose of this study.

Summary

In this chapter, a need for innovative reform efforts in education due to current economic and political factors was presented. An overview of the current state of the 21st-Century Learning reform movement in this country was also offered. Further, the problem of enacting effective and innovative reform efforts in education, sensitive to the economic and political needs described above was highlighted. Business solutions, like design thinking, are being prototyped as possible approaches to moving through the barriers associated with this type of reform and ultimately permitting innovations to occur within our education system. The work of design teams, stemming from the design thinking literature, could help to capture how education leaders innovate within the current political climate.

As of right now, the literature is sparse in the following areas: the strategic application of design thinking to educational organizations, the use of design teams in education to move through barriers to innovation, a recognition or consensus from within the research community as to what skills/competencies should be included under the umbrella of 21st-Century Learning, and best practices for the successful implementation of 21st-Century Learning within schools. This study contributed to the literature in all four areas. The conceptual framework of artifact analysis (Halverson, 2003), used to view, analyze, and articulate the work of a district design team in guiding 21st-Century Learning reform efforts within the school district, was presented.

Chapter 2 contains a review of the literature in three areas: (a) current education reform movements, (b) 21st-Century Learning, and (c) design thinking. This chapter

provides the scaffolding for the entire study. Chapter 3 includes a description of the methodology that was used to conduct the research.

CHAPTER II

REVIEW OF LITERATURE

In an effort to understand how principles of design thinking may be strategically applied within a school district to implement a new vision for 21st-Century Learning and create a space for innovation, it is important to understand the current state of these concepts within the literature. To inform this dissertation study, a review of literature in the following areas within the fields of education and/or business and management were completed: current reform movements in education, 21st-Century Learning, and design thinking.

Current Trend in Education Reform

An investigation of the literature around the current education reform movement was completed. The first objective of this inquiry was to identify the type of reform movement seen in education today. The second was to identify the need for the current reform movement. A third purpose was to discover how this reform movement connects to innovation within the field of education. The articles, briefs, and reports used within this review of literature include both peer reviewed and non-peer reviewed sources. This is primarily due to the fact that peer reviewed studies and sources are limited within many of these topic areas.

In the last few decades, reforms in education have come swiftly and abundantly (Tyack & Cuban, 1995; Schoen & Fusarelli, 2008). The most current trend in education reform is not exactly like the standards-based reform effort of the mid 1990s to early 2000s, which were marked by the passage of No Child Left Behind (NCLB) in 2001; however, those institutional reforms of the earlier generations now constrain the present

trends (Cuban, Hampel, Johnson, Plank, Rativich, Tyack, 1996; Hargreaves & Goodson, 2006; Schoen & Fusarelli, 2008). In essence, the fear of ever growing achievement gaps fought through the application of standards-based curriculum and managed through accountability measures, is still present in the emergent paradigm (Zhao, 2009).

Origins of this new direction can be traced back to the 1970s, when Daniel Bell invented the term "knowledge society" and described this post-industrial world (Hargreaves, 2010, p. 333). Teacher-inspired innovations and student-centered learning was a sign of those optimistic and socially invested times (Hargreaves & Goodson, 2006). In general, this current reform represents a swing of the pendulum away from the "back-to-the basics" approach of NCLB reform toward a more dynamic one said to infuse the cognitive skills necessary for success in the 21st century and toward a more comprehensive approach towards education (Darling-Hammond, 2010; Schoen & Fusarelli, 2008). Regardless, similarities in ideologies like social disruption and inequities, political realignments in constituencies, and the fear of foreign competition are evident throughout both movements (Bellanca & Brandt, 2010; Cuban et. al., 1996; Zhao, 2009).

Another clear commonality between these types of reform movements is that they are not driven by research in the field of education nor do they begin in America's classrooms (Bellanca & Brandt, 2010; Cuban et. al., 1996; Hargreaves, 2010; Hargreaves & Goodson, 2006; Zhao, 2009). Today's reform efforts resemble business models led by policy makers, motivated by the economic and social impact of phenomena like globalization and the onslaught of the knowledge age (Hargreaves & Goodson, 2006; Schoen & Fusarelli, 2008). Independent of the differences and similarities between

administrative progressives a century ago and the contemporary neo-progressive elites of today, each generation has framed educational problems, proposed particular solutions, and sought to realize these solutions through implementation in schools (Tyack & Cuban, 1995).

Proponents for the current educational reform movement in the United States point to three primary claims illustrating the problems of education in this country: a changing world (globalization); an out-of-date and ill-adaptive school system, which has resulted in ill-prepared students struggling to compete in the knowledge age; and no clear sense of purpose or direction for securing the future of this nation (Bellanca & Brandt, 2010; Levy and Murnane, 2005; Zhao, 2009; Schoen & Fusarelli, 2008; Trilling & Hood, 1999; Peters, 2009). Basically, the shift from the industrial age to the knowledge age has created fundamental changes in the structure of our economies and this, in turn, is driving the shape and process of education in this country (Hargreaves & Goodson, 2006; Trilling & Hood, 1999; Peters, 2009).

Several large-scale reports, commissioned at a national level have played a significant role in shaping this conversation within the field of education. The seminal report conducted for the U.S. Department of Labor and sponsored by the RAND Corporation, entitled *The 21st Century At Work,* is one such report. In that document, Karoly and Panis (2004) described five drivers (globalization, ICT revolution, population trends, a shift in the type of skills needed within the workforce, and a shift in the type of jobs available in the future) that can be found at the core of the 21st-century reform movement literature in education (Bellanca & Brandt, 2010; Kay & Greenhill, 2012).

Other nationwide reports have added to this backdrop. One such example included the 2006 report to the Secretary of Education on the future of U.S. Higher Education. This report, entitled *A Test of Leadership: Charting the future of U.S. Higher Education,* was commissioned by then U.S. secretary of education, Margaret Spelling. The study was designed to recommend changes in national policy and direction regarding higher education in this country. Highlights from the report suggested that higher education "has yet to successfully confront the impact of globalization, rapidly evolving technologies, an increasingly diverse and aging population, and an evolving marketplace characterized by new needs and new paradigms" (Spellings Commission, 2006, p. xii**).** In this report, it was suggested that when surveyed, employers reported that many newly hired graduated students were not prepared to go to work. They often lacked the critical thinking, writing and problem-solving skills needed in today's workplaces. The business and government leaders were repeatedly and urgently calling for workers, at all stages of life, to continue upgrading their academic and practical skills and to become lifelong learners. As a result, it was recommended that universities and colleges in this country begin to embrace and create cultures of continuous innovation and improvement. Six recommendations were presented as a result of this research and are summarized as follows:

1. Nationwide postsecondary education.
2. Restructuring of the student financial aid system.
3. Change from a system primarily based on reputation to one based on performance.
4. Embrace a culture of continuous innovation and quality improvement.
5. The development of a national strategy for lifelong learning.
6. An increased federal investment in areas critical to our nation's global competitiveness (Spellings Commission, 2006, p. xi).

Also of significance to this reform movement in education was the 2008 report by

The National Education Association (NEA) entitled, *Great Public Schools for Every Student by 2020.* This report focused on the failed policy of NCLB and was intended to announce the arrival of this education consortium to the national conversation around the current reform movement in education. Specifically, it focused on the role that the federal government should have in K-12 education. Authors of the NEA report argued that state and local leaders are more appropriately positioned to transform education in this country. They also argued that work with teachers, students, and a study of the activities taking place in the classrooms should guide this nation's reform effort. Further, they claimed that the support of the federal government should take the shape of collaborative policies and resources that support state and local reform efforts. The NEA report offered a framework that included six recommendations to the federal government in regards to supporting reform efforts in K-12 education:

1. Support the profession of teaching as a desired and complex field of study and practice.
2. Guarantee the sustained funding of Title I and IDEA for special needs populations.
3. Equal access to educational services and supports.
4. Support state-led public school transformation through authentic accountability that is publicly transparent.
5. Establish high-quality educational research and development as essential to educational improvement.
6. Support innovation and best practices to accelerate state-based improvement efforts and to improve student learning, based on proven teaching strategies and programs grounded in sound teaching and learning research (2008, p. iv-vii).

Identified within this report are the familiar economic concerns present around job skills and the 21st-century workforce, including both the national and international achievement gaps and the reliance on the results of the Programme for International Student Assessment (PISA) as a measure for progress.

Yet another influential report was the 2010 Report to the president on K-12 Education, developed by the President's Council of Advisors on Science and Technology (PCAST). The PCAST was an advisory group made up of the nation's leading scientists and engineers, appointed by the President. The report, entitled *Prepare and Inspire: K-12 Science, Technology, Engineering, and Math (STEM) Education for America's Future,* focused on the importance of Science, Technology, Engineering, Mathematics (STEM) education in this country. The preparers of this report cited the same economic need for 21st-century skills in our workforce and the need for a focus on human capital; however, they posited that the competitive advantage of this country rests primarily with the effectiveness of STEM education in the United States. Further, the PCAST indicated that the United States now lags behind other nations in STEM education at the elementary and secondary levels, citing the national and international achievements gaps as evidence. In response, the PCAST provided seven key recommendations for supporting STEM education on a national level:

1. Provide financial and technical support for the current state-led movement for a shared set of standards in Math and Science (Common Core).
2. Recruit and train 100,000 great STEM teachers over the next decade.
3. Recognize and reward the top five percent of the nation's stem teachers.
4. Use technology to drive innovation in education.
5. Create opportunities for inspiration for STEM education outside of the classroom.
6. Create 1,000 new STEM focused schools with the next decade.
7. Ensure strong and strategic national leadership around STEM education (2010, p. x-xi).

As a result of these recommendations, the U.S. Department of Education made STEM the sole competitive priority as evidenced by the first two rounds of the Race to the Top competition. Race to the Top was the name of Obama's 2009 funding initiative created to spark innovation and reform in state and local education systems. It includes STEM

education as an absolute priority for the second round of i3 grants. President Obama has continued to prioritize STEM education further through his *Educate to Innovate Campaign* (Opportunity in Education, 2011).

Regardless of all of the national reports and studies completed by both public and private research groups, more research studies of educational policy and planning have been in high demand within and between nations to identify the prominent paradigms of education reforms (evaluation, financing, assessment, standards, professional training, curriculum), processes and impacts of globalization on education (Yan Yan, 2010). This is in a large part due to the fact that major economic changes tend to also be a source of disruption and realignment of societies (Christensen et. al., 2008)**.** As we move more fully into a globalized, knowledge-based economy, we are seeing clear signs of increased economic and social inequalities (Karoly, & Panis, 2004, National Academy of Engineering, 2004, and Microsoft Partners in Learning, 2011). Consequently, we are encountering problems that can only be addressed through innovation (Brown, 2008; Schlechty, 2009).

Education and political leaders in countries around the world have recognized that it is imperative that we prepare our young people for the 21st century by transforming educational opportunities and integrating technology into teaching and learning (Ananiadou & Claro, 2009; Bellanca & Brandt, 2010; Darling-Hammond, 2010; Dede, 2010; Kereluik, et. al., 2013; Rutkowski et. al., 2011; Trilling and Hood, 1999; Yan Yan, 2010; Zhao, 2009). Educational institutions at all levels are being called upon to embrace this shift towards a knowledge-based society and innovate. In fact, the concept of innovation in education has become a term commonly paired with this reform movement

and is intended to replace the word reform by exclaiming that "tinkering with educational reform efforts" is no longer an option for education leaders (Cuban et. al., 1996; Schlechty, 2009). Society is demanding that schools prepare students to be ready to compete in the world marketplace (Bellanca & Brandt, 2010; Schoen & Fusarelli, 2008; Williams & Johnson, 2013; Yan Yan, 2010).

In order for the United States to remain a front-runner in this newly globalized and ever changing digital world, the American education system will need to change (Darling-Hammond, 2010; Dede 2007, Jareld, 2009, McCharen et. al., 2011; Schlechty, 2009; Rutkowski, Rutkowski, & Sparks, 2011; Trilling and Hood, 1999; Zhao, 2009). The most current education reform movement in this country, often called the 21st-Century Learning or 21st-Century Skills movement, is an attempt to support this belief in the need for innovation within our educational institutions at every level (Ananiadou & Claro, 2009; Bellanca & Brandt, 2010; Darling-Hammond, 2010; Hargreaves, 2010; Voogt & Roblin, 2012). National educational policies have continuously called for student-centered pedagogical orientations that can be described as *constructionist* and *constructivist* (Rutkowski et. al., 2011). A large number of organizations and individuals have responded to this call by establishing a 21st-century knowledge framework or by attempting to identify the student knowledge/skills necessary for living and learning in the 21st century (Bellanca & Brandt, 2010; Dede, 2010; Kereluik et al., 2013; Rutkowski et. al., 2011). Further, for over a decade, research has focused on ways that ICT can assist in the transformation of teaching and learning and has emerged in policy discourse as a "21st-Century Skills" pedagogical paradigm (Dede, 2010; Rutkowski et. al., 2011).

A concurrent reform movement within education is the Common Core States Standards (CCSS) Project. Supported by the Council of Chief State School Officers; the College Board; Achieve, Inc.; and the National Governors Association Center for Best Practices, this a national effort that establishes K-12 standards for students and replaces the old standards found under the NCLB paradigm (Bellanca & Brandt, 2010). These standards are focused on information literacies and depth of knowledge in all core subject areas (i.e., Language Arts, History, Math, and Science). Considered an important step in the right direction by proponents of the 21st-Century Learning reform movement, the Common Core Standards are said to have a focus on academic knowledge development and college readiness but lack an emphasis on relevant skill building (Bellanca & Brandt, 2010). Leaders of the 21st-Century reform movement argue that educators will need to develop new methods for engaging students in skill development and assessing their progress if we are to successfully prepare students for their future in this country's workforce (Bellanca & Brandt, 2010; Partnership for 21Century Skills, 2008). As a result, the CCSS are usually viewed as a partner of the 21st-Century Learning reform movement and are often aligned to support the 21st-Century Learning reform efforts within a school or district (Partnership for 21Century Skills, 2010).

Derived from the combined efforts of stakeholders in the fields of economics, business, technology, government, psychology, anthropology and education, the term 21st-Century Learning has been used to describe the predicted capabilities that people will need in order to be successfully employed during the 21st century. It also has been used as a rallying cry for new visions of reform in K-12 education and higher education (Dede, 2007; Rutkowski et. al., 2011; Voogt & Roblin, 2012). Essentially, it is the umbrella term

used to illustrate both the need and an approach to addressing the problems of education under this current reform movement in the United States. Though no one model for 21st-Century Learning seems to encompass all of the knowledge and skills predicted as necessary for educating the workforce of this century, there are many trends and common themes among frameworks (Dede, 2007; Kereluik et al., 2013; Voogt & Roblin, 2012). Furthermore, controversy has been sparked as to whether or not this term is used to describe something new or if it is just emphasizing a specific set of known competencies that have become relevant to our society (Kereluik et al., 2013 and Voogt & Roblin, 2012).

Defining 21st-Century Learning

In an attempt to develop a better understanding for the current meaning and definition of the term 21st-Century Learning, a review of the literature using the search terms 21st Century Learning, twenty-first Century Learning, and 21st Century skills and/or competences was conducted. The Education Resource Information Center (ERIC), Education Source, PsychINFO, Library, Information, Science and Technology Abstracts (LISTA), and ProQuest Dissertation and Theses databases were explored. In addition, an Internet search using the Google search engine was conducted. Articles, books, websites, dissertations, and reports on the topic of 21st-Century Learning and Skills, spanning the last twenty years, were reviewed. As a result, over two dozen different frameworks or lists of skills, identified as or referenced as 21st-Century Learning or skills/competencies frameworks were found. Within the literature, 21st-Century Learning can refer to 21st-Century Skills, competences, competencies, or literacies. For the purpose of this review, the term 21st-Century Learning will be used. Table 2 (Appendix B) includes a summary

of the different frameworks, their authors or developers, and where they were cited as a 21st -Century framework within the literature.

A review and discussion of three analyses, conducted on some of the more notable 21st-Century Learning frameworks, reveal the gaps in the literature around defining 21st-Century Learning. Regardless, these papers and a book chapter begin the important work of identifying common trends and themes within the 21st-Century Learning Frameworks. Kereluik et al. (2013), suggest that understanding and defining what 21st- Century Learning has become crucial because it will aid us in determining how we teach our students and how we train and prepare teachers to do so. The current lack of consensus around a definition is of growing concern for the academic community as it is seen as a barrier to implementation of 21st-Century Learning and Skills within our county's education system (Ananiadou & Claro, 2009, Bellanca & Brandt, 2010; Dede, 2010; Jerald, 2009; Kereluik et al., 2013; Silva, 2008; Voogt & Roblin, 2012). Currently, the ambiguous term is still used to encompass all of the knowledge, skills, and dispositions that students should have in order to be successful, future workers in a knowledge-based economy (Rutkowski et. al., 2011). To make matters worse, critics argue that the 21st-Century Skills agenda is often in danger of leaving out knowledge, skills, and ideas that are beyond the world of business (Hargreaves, 2010; Voogt & Roblin, 2012).

Fourteen years into the 21st century, we are still in need of a coordinated approach to this reform movement; however, some frameworks are finally starting to surface more often than others within the literature. Table 3 identifies the three most cited frameworks for 21st-Century Learning found within the literature reviewed. Among them is the P21

framework for 21st-Century Skills. Regarded as one of the most vetted frameworks, including over a decade of research and expert endorsements invested in its design, "Framework for 21st Century Learning*"* has become one of the most articulated models for describing 21st-Century Learning within the field of education (Bellanca & Brandt, 2010). Though many schools and districts across the United States are turning to the expertise of P21 in order to begin implementing 21st-Century Learning into their organizations, the reform movement is still within the nascent stages.

Comparing 21st-Century Learning Frameworks

Looking through the twenty-five frameworks included in Table 2 and the three commonly cited examples abbreviated in Table 3, it becomes clear that they range from theories of mind, to lists of skills, to frameworks for approaching instruction and learning. Of note is the scope of some of the international frameworks. Many of them are designed as national frameworks for 21st-Century Learning that can unite schools under a common vision. Also of interest is the large amount of private and corporate involvement in the defining of 21st-Century Learning. Of concern is the minimal involvement of academic and education groups in the design of many of these frameworks. Only seven of the 25 frameworks were published in academic journals with clear roots to prior research within the field of education. Finally, many skills, themes, and concepts overlap within the different models. In the last two years, a few researchers have taken on the challenge of sifting through the more prominent frameworks to look at commonalities and differences in the hopes that a common definition or overarching framework can be decided (Dede, 2010; Kereluik et al., 2013; Voogt & Roblin, 2012). Unfortunately, even between these researchers, there does not seem to be strong consensus.

Table 3

Most Commonly Cited 21st-Century Learning Frameworks

Author(s)	Framework	Cited as a Framework for 21st-Century Learning
Framework for 21st Century Learning: Developed by The Partnership for 21st Century Skills (2007)	*Framework for 21st Century Learning:* Learning and Innovation Skills Digital Literacy Skills Career and Life Skills	Bellanca & Brandt, 2010; Dede, 2007; Dede, 2010**;** Jerald, 2009; Kereluik et al., 2013; Leh, Kouba, & Davis, 2005; Silva, 2008; Snape & Fox-Turnbull, 2011; Voogt & Roblin, 2012
enGauge 21st Century Skills model: Developed by The North Central Regional Educational Laboratory (NCREL) and the Metiri Group (2003)	*enGauge 21st Century Skills model:* Effective Communication High Productivity Inventive Thinking Digital Literacy	Dede, 2007; Dede, 2010; Kereluik et al., 2013; Silva, 2008; Voogt & Roblin, 2012
OECD Framework: Developed by The Organization for Economic Cooperation and Development or OECD (2005)	*OECD Framework:* Information; Information as source Information as product Communication; Effective communication Collaboration and virtual interaction Ethics and Social Impact Social Responsibility Social Impact	Ananiadou & Claro, 2009; Dede, 2010; Jerald 2009; Silva 2008; Kereluik et al., 2013; Voogt & Roblin, 2012

Voogt and Roblin (2012) conducted a comprehensive search for information about 21st-Century Skills available across official websites, selected frameworks, and international organizations in 2010. A total of 59 documents on the topic of 21st-Century Learning and Skills were reviewed. They indicated that several international organizations and scholars have attempted to promote the integration of 21st-Century

Learning Skills into national curriculum and policy by providing description of those competences regarded as important for a "knowledge society." They looked at eight such frameworks:

1. The Partnership for 21st-Century Skills (P21), developed in the US with the goal of positioning 21st century competences at the center of K-12 education. P21 is a national organization formed in 2001 with the sponsorship of the US government and several organizations from the private sector.
2. enGauge 21st-Century Skills, developed by the NCREL and Metiri Group and the Learning Point Associates with the purpose of fostering 21st century competences in students, teachers, and administrators (Lemke et al., 2003; NCREL Metiri, 2003).
3. Assessment and Teaching of 21st-Century Skills (ATCS), developed as part of an international project sponsored by Cisco, Intel and Microsoft.
4. National Educational Technology Standards (NETS), developed by the International Society for Technology in Education (ISTE).
5. The Technological Literacy Framework for the 2012 National Assessment of Educational Progress (NAEP), developed by WestEd at request of the National Assessment Governing Board of the US.
6. The 21st-Century Skills and competences for new millennium learners, an initiative undertaken by the Organization for Economic Co-operation and Development (OECD).
7. The Key competences for lifelong learning, a European reference framework developed within the Education and Training 2010 work programme and approved by the Council and European Parliament in 2006.
8. Information Communication Technology (ICT) competency framework for teachers, a UNESCO initiative that aims at identifying a common set of qualifications needed for the integration of ICT in teaching and learning (Voogt & Roblin, 2012).

The researchers pointed out that three of the frameworks have been developed under the initiative of international organizations (EU, OECD, UNESCO), and the remaining five were developed with the support of private organizations. A major concern expressed by Voogt and Roblin (2012) was that the education sector, does not seem to be actively involved in these 21st-Century Learning initiatives or the debate as to which skills matter most.

Results from their analysis indicated that those skills deemed as important do vary across the frameworks; however, the analysis also demonstrated that there are solid agreements on the need for skills in the areas of communication, collaboration, ICT related competences, and social and/or cultural awareness. Creativity, critical thinking, problem-solving, and the capacity to develop relevant and high quality products are also regarded as important skills in the 21st century by most frameworks (Voogt & Roblin, 2012, p. 307-308). Fundamental differences were reported in how the skills were categorized and arranged. Also, the researchers identified that a main difference involved skills related to the core subjects. References to "core subjects" or the "core curriculum" were only found in three of the eight frameworks (P21, the ATCS, and the EU framework).

Not surprisingly, ICT education was found to be at the core of each of the frameworks. ICT is also associated with a whole new set of skills about how to effectively use, manage, evaluate, and produce information across different types of media. While some frameworks emphasize ICT-related competences as separate domains (P21, ATCS), others called attention to more integrative approaches in which the development of ICT skills are embedded within other 21st-Century Skills, such as critical thinking, problem-solving, communication, and collaboration (Voogt & Roblin, 2012). Further, the researchers identified differences between technology literacy and ICT literacy. Technological literacy emphasized the inter-play between technology and society, as well as the importance of understanding the technological principles needed to solve complex problems and face the challenges of a knowledge society. Conversely, ICT

literacy seemed to focus mainly on how to make an effective and efficient use of digital technologies.

Voogt and Roblin, (2012), recognized that all eight of the frameworks suggest that 21st-Century Skills demand significant changes in curriculum. Further, they identified that in order to make room for 21st-Century Skills, there is a need for new teaching methods and assessment procedures. Based on their analysis, the researchers suggested three significant implications. First, an operational definition for each of the 21st-Century Skills is required in order to determine what should be expected from students at different age levels in terms of knowledge, skills, and attitudes. Second, ICT literacy competences (i.e. information literacy, ICT skills, and technological literacy) should be embedded within and across the other 21st-Century Skills and core subjects. And finally, they advocate that a national framework, containing clear-cut definitions of 21st-Century Skills and addressing strategies to support and regulate its implementation and assessment, is needed.

Looking deeper into the definition of 21st-Century Learning reform, Kereluik, Mishra, Fahnoe, and Terry (2013), conducted an meta-analysis of 15 different frameworks with one goal in mind: "to identify common recommendations and elements of 21st century frameworks in order to understand what types of knowledge are claimed to be integral to a 21st- century approach" (p. 129). The outcomes of this analysis were intended to help teachers and educators make sense of the literature. The researchers focused on independent, high-visibility frameworks across education and economic organizations.

The 15 frameworks chosen for analysis included reports from educational organizations such as the American Association of Colleges and Universities, the Educational Testing Service, the Center for Public Education, the International Society for Technology in Education, WestEd, The Partnership for 21st Century Skills, the MacArthur Foundation, Center for Public Education, and the National Academy of Engineering; corporations such as Cisco, Microsoft, and Intel; international bodies such as the European Union; business interests such as the Organization for Economic Cooperation and Development & the Metiri Group; individual scholars such as Howard Gardner and Yong Zhao; and popular writers such as Daniel Pink. Relevant documents describing these frameworks were reviewed in order to recognize patterns and themes that emerged from the data. The researchers horizontalized the data and broke the frameworks into individual elements, creating units of analysis for coding. Emergent themes were then identified. The first two authors also engaged in a process of "constant comparison." This was done to ensure that the categorization was consistent. This process was repeated until all elements were sorted into categories.

The analysis of the frameworks led to the identification of three broad categories and three subcategories. The three broad categories are Foundational Knowledge, Meta Knowledge, and Humanistic Knowledge:

1. Foundational Knowledge: The frameworks reviewed illustrated this in terms of three key subcategories: Core Content Knowledge, Digital Literacy, and Cross-Disciplinary Knowledge.

2. Meta Knowledge: Contained three subcategories including Problem Solving and Critical Thinking, Communication and Collaboration, and Creativity and Innovation.
3. Humanistic Knowledge: The three main subcategories that emerge under this broader rubric are Life/Job Skills/Leadership, Cultural Competence, and Ethical/Emotional Awareness (Kereluik et al., 2013).

An important finding in this analysis was that knowledge of technology was evident in just one subcategory, Digital and Information Literacy. This is in sharp contrast to most rhetoric typically heard. The researchers argued that the finding indicated a paradox. Kereluik et al. (2013) stated that nothing being offered in these frameworks is really new to education; however, due to the current social and economic settings, the skills can look new. Many skills are renewed or expanded by the fact the technology and other advancements allow them to be seen as such. The researchers also made the point that the results of their study did not support some of the claims being made around 21st-Century Learning, especially when it comes to a demand for new ways of teaching to support technology in the classroom. Finally, they deemed the pursuit of common themes and an understanding of 21st-Century Learning to be a worthy endeavor. The previously mentioned categories, derived from their analysis, are an attempt to get the conversation started.

Chris Dede (2010), a prominent professor at the Harvard Graduate School of Education, published a chapter in a book entitled "*21st Century Skills: Rethinking How Students Learn".* In his chapter, he compares some of the most well-known 21st-Century Skill lists. Dede also noted that a lack of clarity about the nature of 21st-Century Skills could prove problematic for reform efforts (Bellanca & Brandt, 2010, p. 4). In his analysis, Dede compared the P21 Framework for 21st Century Learning with, the enGauge, OECD, LEAP, ISTE, ETS, and Participatory Cultures (Jerkins' digital

literacies) Frameworks. It is important to note that he used P21's Framework for 21st Century Learning as a context for this analysis. Further, no clear procedure for conducting the analysis was offered. This challenges the quality of the research conducted; however, as Dede is an expert in the field of education, his insights are worth noting.

Dede offered three important observations or considerations for reformers based on his comparisons. First, he suggested that the Frameworks reviewed are "generally consistent with each other" (Dede, 2010, p. 67). His second observation was that what the alternative frameworks bring to the table is a set of subs skills (i.e. technical proficiency and troubleshooting) and areas that are underemphasized (i.e. student autonomy and risk taking) within P21's Framework for 21st Century Learning. He warned educators and reformers that these are the important skills to consider, as they could be the ones most easily over looked during an implementation process. Dede concluded his analysis by stating that the barriers to implementing 21st-Century Learning into U.S. schools are no longer conceptual. He claimed it is a commitment by our society to actualize the vision that will determine the success of this reform movement in education (Dede, 2010, p. 68).

Based on these three analyses and the information presented during this review of the literature comparing 21st-Century Learning frameworks, it becomes clear that leaders in education need to be careful to establish clear definitions and visions of 21st-Century Learning within their organizations. This includes the identification of those skills deemed as important to that vision. Without doing so, the lack of clarity could act as a barrier to implementation. Jerald (2009) stated that

> In order to teach something well, let alone consistently well across classrooms and schools, you need to define what the "it" is --the specific knowledge or skill

> that you want students to learn- or teachers will be working at cross purposes and it will be impossible to measure whether students are actually acquiring them. (p. 70)

Currently, there is a gap between the needs of the new knowledge-based society, expressed by advocates of 21st-Century Learning, and the way in which these skills are being addressed within national and school curricula (Bellanca & Brandt, 2010; Dede, 2010; Kereluik et al., 2013; Voogt & Roblin, 2012). Furthermore, best practices for the implementation of 21st-Century Learning frameworks and the identification of those indicators or assessments that can be used to measure the success of this reform movement have yet to be discussed at length within the academic literature.

Implementing 21st Century Learning in Schools

Although little empirical research is available on the implementation of 21st-Century Learning in schools, several recent dissertations have used the Partners for 21st Century Learning framework to study the implementation of 21st-Century Learning at individual school sites. Using the P21 Framework as a lens, the researchers tried to capture those practices and programs that indicated that 21st-Century Learning was occurring within the schools (Ellis, 2012; Estevez, 2011; Kassabian, 2011; McLachlan, 2012). Interestingly, these projects assumed that the P21 Framework adequately defines 21st-Century Learning for that organization in the first place. Of notable relevance here is that findings from these studies indicate that well-communicated and defined ideas of 21st-Century Learning between school personnel are necessary for establishing 21st-Century Learning practice and programs in schools.

Schwartz (2010) completed a dissertation project that followed the work of a district as it attempted to implement 21st-Century Skills into the culture of standards-

based reform. The purpose of the study was to determine how a framework for teaching 21st-Century Skills as the pedagogy to deliver standards-based academic content knowledge affected student achievement in a diverse urban school district. Findings indicated that the relationship between academic content standards and 21s-Century Skills is strong. One question that arose from this work was "Does explicitly labeling 21st-Century skills impact how well the skills are understood and used by administrators and teachers" (Schwartz, 2010, p. 113)? This leads back to the gap in the literature around defining 21st-Century Learning and implementing the definition within an educational organization. Many reform movements have failed as a result of people using the same terminology to mean very different things (Dede, 2010). A study that observes and documents a school district's attempt to implement a definition or vision for 21st-Century Learning and the process or program used to aid the district leadership in the endeavor will help to add to the slim body of research in this area. The question then becomes, how can the district leadership use this program or process throughout the district to ensure that the definition is implemented consistently? School districts and educational leaders, at the forefront of this reform movement, have begun this process by developing a vision for 21st-Century Learning within their organizations and district-wide strategic plans (Bellanca & Brandt, 2010; Kay & Greenhill, 2012).

21st-Century Learning Reform and Innovation

Before investigating the literature around how reform movement initiatives like 21st-Century Learning can be implemented within an educational organization, it is important that the concept of innovation in education be defined further. In our current economic climate, an organization's ability to innovate or to adopt innovations is a type

of dynamic capability that contributes to the organization's competitive advantage (Crossan & Apaydin, 2010). Innovation is often seen as a process of finding solutions necessary to introduce a new thing. These new things can take on a variety of forms such as a product, behavior, system, process, organization, or business model (Crossan & Apaydin, 2010; Gloppen, 2009; Wylant, 2008). Examples of problems that will not be solved without innovation include

> Unaffordable or unavailable health care, billions of people trying to live on just a few dollars a day, energy usage that outpaces the planet's ability to support it, education systems that fail many students, companies whose traditional markets are disrupted by new technologies or demographic shifts. These problems all have people at their heart. (Brown, 2008, p. 92)

The 21st-Century Learning reform movement in education is demanding that educational organizations become more responsive to societal changes and provide educational services that can make the contributions needed to sustain our economic position in the world. While the nation is calling for real change within the education system, true innovation could prove to be a challenge.

In education, organizational innovation can be defined as those processes and product improvements that can lead a school's system in developing work process innovations and in improving the quality of education and policy (McCharen et. al., 2011, p. 677). According to Christensen et. al. (2008), there are two kinds of innovations that occur within organizations: sustaining and disruptive. Historically, educational institutions have innovated using systematic innovative processes, which are incremental and increase capacity for change over time (Christensen et. al., 2008; Norris et. al., 2012). Our current economic paradigm is requiring leaders in education to consider processes that can result in the type of innovation known as disruptive innovation.

In the business world, disruptive innovation rarely results in an abrupt shift in reality but over time, it almost always results in a new market or a new way of doing business (Christensen et. al., 2008; Finn & Horn, 2013). Up until this point, the business of education in this country could be regarded as a type of value-chain business (Christensen et. al., 2008). The introduction of products and services into the school setting resulted in the dissemination of the products and services to teachers who then imparted the information or knowledge to their students. The shift toward 21st-Century Learning and the student-centric learning models, brought about by the disruptive innovations in the technology world, are already changing this model. An illustration of this can be seen through the recent ICT explosion and how it is challenging old assumptions within the current system (Finn & Horn, 2013). For example, Christensen et. al. (2008) prophesized that the first stage of this disruptive innovation in schools involves the augmentation of textbooks and adopted curriculum with computer-based tutorial programs and curriculums. The second stage will involve the creation of entire courses designed for each type of learner.

This next generation of technology-enabled learning is already being developed through the U.S. Advanced Distributed Learning (ADL) Initiative (Karoly & Panis 2004). Students will begin accessing these courses from sites all over the world at all different times of day and night. This will significantly challenge the importance of long held assumptions like "seat time" within our current system (Christensen et. al., 2008; Finn & Horn, 2013). Administrators, teachers, and school committees will come to realize, in time, that student-centric learning was mainstreamed without ever having made the decision to embrace it. Further, one of the most interesting features of disruptive

innovations is that they do not result in a fight or incur resistance from those who remain in the old view (Finn & Horn, 2013). This is because members of the old simply become a part of the new when they are ready. An entirely new market system is created over time (Christensen et. al., 2008; Finn & Horn, 2013). Disruptive innovations usually go beyond the capacity of the organization and are, therefore, introduced along side of systemic changes through leaders who understand the nature of such change (Duffy et al., 2006; Schlechty, 2009).

Strategic and systemic change processes are necessary to support any real shift within our educational organizations (Duffy et al., 2006; Hargreaves & Goodson, 2006; Joseph & Reigeluth, 2010; Schlechty, 2009). Only those leaders who understand systemic change and systems theory will be successful in introducing them. These leaders will need the courage and the drive to bring about changes within the inflexible structures and engrained cultures of schools if there is to be any possibility of success (Duffy et al., 2006; Schlechty, 2009). In order to accomplish systemic change, nothing short of a shift in the mental models of all stakeholders is required (Christensen et. al., 2008; Duffy, 2003; Duffy et al., 2006).

Creating sustainable reform efforts that result in a permanent, systemic impact is one of the greatest challenges in the field of education today (Hargreaves & Goodson, 2006; McCharen et. al., 2011). For this reason, more and more researchers are focusing on notions of creative innovations within the education leadership and management literature (Chance, 2010; Christensen et. al., Duffy et al., 2006; 2008; Finn & Horn, 2013; Fullan, 2006; Hargreaves & Goodson, 2006; McCharen et. al., 2011; Rice, 2011; Schlechty, 2009). According to the *Encyclopedia of Educational Leadership and*

Administration (2006), innovations in educational leadership may involve governance, school management or organization, whole school reform, curricular or instructional strategies and delivery systems (p. 3). If an innovation is to make an on-going difference, it must address capacity building and sustainability within the entire educational system (Fullan, 2001).

Schlechty (2009) argued that the innovations most likely to impact learning are often intimately connected to the directional system, the knowledge development system, and the recruitment and induction system. Social systems that determine flexibility and adaptability of the school organization include the power and authority system, the evaluation systems, and the boundary systems. As a result, Schlechty concluded that innovations, which threaten the way power and authority are arranged, the way value is assigned, and the way boundaries are defined can limit the odds of the innovation succeeding (p. 31). Therefore, the problem that must be confronted to allow for true innovation to occur is the lack of flexibility inherent in the bureaucratic structure of our current school systems (Chance, 2010; Duffy, 2003; Duffy et al., 2006; Joseph and Reigeluth, 2010; McCharen et. al., 2011; Schoen & Fusarelli, 2008; Schlechty, 2009). A contrasting idea to the old notions of managing educational organizations is that of the learning organization. Originally coined by Peter Senge in the 1990s, the concept of a learning organization provides a way to describe a more flexible and creative mode of organization, where working with and on knowledge is an iterative and continuous endeavor (Crossan & Apaydin, 2010; Duffy et al., 2006; Fullan, 2001; McCharen et. al., 2011; Schlechty, 2009). According to Fullan (2001), knowledge sharing and the creation of a collective identity are powerful forces for positive change, and they form a core

component of change knowledge and the change process theory. In order to build a learning organization, all stakeholders should have a deep understanding of this systemic change process as such an understanding is the bridge to educational transformation. (Duffy, 2003; Duffy et al., 2006; Fullan, 2001; Hargreaves & Goodson, 2006; Joseph & Reigeluth, 2010; Schlechty, 2009).

A central component, at the core of all of these theories, is the human capital aspect. Building capacity and developing a shared vision for change within an educational organization will depend on the capacity and vision of the employees and other stakeholders who function within that system (Duffy, 2003; Duffy et al., 2006; Fullan, 2001; Joseph & Reigeluth, 2010; McCharen et. al., 2011; Schlechty, 2009). This includes the capacity and vision of leadership within the organization at every level. If implementation is delayed, badly managed, or dropped, the innovation will fail to deliver the results expected (Crossen & Apaydin, 2010). In this light, barriers to innovation within educational organizations can be considered human-centered problems. They will therefore require a human-centered, creative, flexible, consistent, and practical approach to dissolving them. Consequently, new approaches to innovation, entrepreneurship, reinvention, and commercialization that have addressed some of these same barriers within the business world are being prototyped within many educational settings (Chance, 2011; Norris et. al., 2012; Rice, 2011). Design thinking is one such example. Through the use of design thinking, we can grasp the potential within the complex systems we have created and in which we compete, and then drive for innovations that help our organizations thrive, grow, and most importantly, survive (Hackett, 2009, p. 87).

Summary

Creating opportunities for innovation to occur within educational organizations is critical work for today's education leaders (Fullan, 2001, Schlechty, 2009). School districts are faced with developing new strategies to address the rapid changes and initiatives like 21st-Century Learning while simultaneously continuing to meet every day demands (Bellanca & Brandt, 2010; Schlechty, 2009; Schoen & Fusarelli, 2008). School districts and states have engaged in designing visions for 21st-Century Learning within their educational organizations and are formulating strategic plans in order to become acclimated to this ever changing terrain (Bellanca & Brandt, 2010; Lane, Bishop, & Wilson-Jones, 2005). Further, as the barriers to innovation in educational organizations can be considered human-centered problems they require a human-centered approach in order to find the best solutions. Design thinking is an example of this type of approach (Brown, 2008; Peters, 2009; Thompson & Kritsonis, 2009). The next section of the review of the literature explores the current thinking within the fields of education, management, and business around the strategic use of design thinking to create a mechanism for innovation within educational organizations.

Application of Design Thinking within Educational Organizations

As the central purpose for this study was to investigate how design thinking can lead to the implementation of 21st-Century Learning within a school district, it is important to understand what the literature says in regards to how new visions and or initiatives are commonly introduced within educational organizations. Furthermore, as the district studied recently went through a strategic planning process in order to define 21st-Century Learning for the school community, an investigation into the strategic

planning literature and how it connects to design thinking becomes the appropriate lens for contextualizing this work further. To that end, four questions within the strategic planning literature and three areas within the design and design thinking literature were investigated. The four questions examined within the strategic planning literature included 1) why is strategic planning used in education if at all, 2) what does the process look like, 3) what are the benefits and barriers to strategic planning and, 4) and how do business solutions, like design thinking, align to educational processes like strategic planning. In terms of the design thinking literature, the following areas were investigated: 1) the origins of design in the business world, 2) how design thinking is connected to innovation within organizations, and 3) the call for the application of design as a strategic approach in education, including a look at the use of multidisciplinary teams or design teams. This inquiry was necessary for understanding how and why design thinking principals can be used in education, if at all. It also provided context for how the employment of the District Design Team (DDT) is tied to the strategic implementation process of the district's new vision for 21st-Century Learning.

A Brief History of Strategic Planning

The concept of strategic planning is as old as civilization and has been documented as used for military planning purposes since the sixth century (Snowden, 2002). This planning process involved analyzing various situations and deciding in which direction the organization would move. Overtime, strategic planning has come to be understood as a way in which any complex bureaucracy (government, military, church, etc.) can plan for and manage its own development and progress as an organization (Lane, et. al., 2005; Snowden, 2002). Strategic planning was well documented and

celebrated within the field of business and management during the 1960s and as a result the idea of using a strategic planning process as an organizational strategy became widespread within both the private and public sectors (Hoskisson, Hitt, Yiu, & Yin, 1999; Mintzberg, 1994). Today, strategic planning is a commonly used management process in business and it is employed by managers in both the private and public sector to determine the allocation of resources in order to develop financial and strategic performance. A survey of U.S. and European companies by Bain and Company (2003) indicated that strategic planning was used by eighty nine percent of the companies sampled (Jennings & Disney, 2006).

Around the same time, universities and community colleges, influenced by business initiatives, the development of scientific research programs and federal mandates also began implementing strategic planning processes into their cultures (Snowden, 2002). Further, a demand for accountability and cost-effective management in public schools also resulted in a revival of strategic planning processes and other business type management and budgeting techniques within education (Tyack & Cuban, 1995). Although, it was not until the business-oriented reform movements of the 1990s that the most recent push for integrating strategic planning and other business management strategies reemerged in the education and management literature (Snowden, 2002).

Higher Education

Though higher education has been attempting to apply strategic management techniques in decision-making and planning since the 1960s, it was not until the 1980s that strategic planning was used consistently (Hinton, 2012; Snowden 2002). Strategic planning in post-secondary education began as a tool for articulating institutional

missions and visions, prioritizing resources, and promoting organizational focus. Consequently, many of the early strategic planning efforts produced documents that described the institution, but did little to motivate a process. Those who participated in the process often spent long hours on the plan's development and then saw relatively little implementation (Hinton, 2012; Snowden, 2002).

While businesses have relied on three dimensions within their planning models (linear, adaptive, and interpretive) higher education has relied almost exclusively on linear models (Chance 2010; Chaffee 1985). According to Chance (2010), the discontent that university-level planning has suffered from is a result of the singular use of a linear thinking process. This observation is especially concerning because of the notable potential of well-developed strategic plans to assist in the innovation of educational organizations. Strategic planning should be able to deal with an array of factors including the changing external environment, competitive conditions, the strengths and weaknesses of an organization, and opportunities for growth (Keller, 1983). This suggests that strategic management in higher education may benefit from an iterative problem solving approach like design thinking in order to better promote and sustain the development of effective strategic plans.

K-12 Education

As indicated earlier, strategic planning exists in K-12 education as well as in higher education (Hambright and Diamantes, 2004a; Hambright and Diamantes, 2004b;). The processes found also mimic those described in the business world. In 2004, Hambright and Diamantes conducted a content analysis of the educational strategic planning literature in the US. They looked at the critical attributes of planning models

designed specifically for K-12 educational organizations. The researchers used a purposive sampling of selected literature sources. These sources, which included articles, books, research presentations, the ERIC database, and doctoral dissertations were put through a document analysis and constant comparative approach. The body of research studies available on the topic of a strategic planning approach in education was found by the researchers to be limited. Further, little could be understood about the implementation and therefore the impact or effect that strategic plans have had on schools. As Hambright and Diamantes pointed out, "Unfortunately, school district personnel desiring to implement strategic planning processes within their organization will find few samples of strategic or action plans from the field" (2004b, p. 237). This indicates a gap in the literature.

While Hambright and Diamante's (2004a) analysis of the literature verified that the strategic planning process does exist in K-12 education planning, due to the broad range of institutional missions explored, processes varied widely. In the end, many of the models found in the literature mirrored that of the corporate business world and followed 8 common steps. The steps involved included a) planning to plan (pre-planning), b) developing vision and/or mission statements, c) determining guiding principles or core beliefs, d) conducting environmental scans (external and internal), e) identifying strategic issues, f) prioritizing strategic issues, g) developing strategic issue resolutions, and h) authoring compelling guidelines. It is not clear if aspects of the strategic planning process really emerged as claimed or if they were categorized into a pre existing model. This question arose due to the lack of transparency around the process for coding and categorizing the different steps of the strategic planning process during this study. The

research procedures were referenced but not explained in detail. Regardless, this significant research piece provides the most recognizable starting point for determining a common definition and model of the strategic planning process in education. At the same time, it showcases a gap in the literature indicating that future research is needed to develop a framework for strategic planning in education.

Defining Strategic Planning within Education Further

Although research has shown that strategic planning can be defined in a variety of ways, the literature did offer examples and glimpses of what strategic planning is and is not within the field of education. Beginning in the 1980s, strategic planning in both higher education and K-12 education shifted from long range planning to strategic planning (Hambright & Diamantes, 2004; Hinton, 2012). In their analysis of the literature on strategic planning in education, Hambright and Diamantes (2004) discovered the difference between strategic planning and other planning approaches:

> Strategic planning on the other hand, assumes an open system in which organizations are dynamic and constantly changing as they integrate information from shifting environmental factors. The focus is on the process of planning. Decisions are made today, based on a projection of critical external variables five years from now. It also focuses on the external environment, on qualitative information and intuitive decisions regarding resource commitments, and on integrated, participatory involvement. Strategic planning uses current and future trends to make current, not future, decisions. Further, it emphasizes creativity, innovativeness, and intuition—the *art* of planning, management, and decision making. (p. 235)

This description showcases the potential of strategic planning to respond to creative, iterative, and responsive (forward thinking) types of processes that can result in innovation within the educational organization. Further, in their definition of strategic planning in K-12 education, Lane, Bishop, and Wilson-Jones (2005), suggested that

> A strategic plan establishes a vision, mission and beliefs for the school district; establishes the path to accomplish its desired future; the plan provides a path which allows the community to work together to accomplish the goals, objectives, and activities that constitute the strategic plan; it allows for an understanding of how a school district works, how finances are spent, and identifies the needs of the school district; and allows the school district to set specific data-driven priorities. (p. 198)

This definition not only connects strategic planning to the day-to-day processes of managing an educational organization but it calls out the importance of planning processes that include and embrace the community in the planning process in order to accomplish the desired change. It also reinforces the need for forward thinking and responsive planning processes. Many of the key elements in these definitions are compatible with elements found in design thinking and other iterative problem-solving approaches.

Learning From the Business Sector

When we look at strategic planning as a process for management of schools, it is difficult to ignore the connection this highlights between the business world and education. As stated earlier, many of the models explored in the literature resemble strategic planning process used in the corporate world and include steps or activities that when applied, can result in innovations (Hambright & Diamantes, 2004a; Hambright & Diamantes, 2004; Lane, et. al., 2005; Stollar, Poth, Curtis, & Cohen, 2006). Further, the particular climate for today's reforms have direct ties to the business world. Michael Fullan (2001) observed,

> Leadership in business and in education increasingly have more in common. As we shall see, businesses are realizing more and more that having moral purpose is critical for sustaining success. Schools are beginning to discover that new ideas, knowledge creation, and sharing are essential to solving learning problems in a rapidly changing society.

> Schools can learn from how the best companies innovate and get results. (p. XL)

Exploring along these lines, an empirical study by Zandi, Sulaiman, Atiyat & Naysary (2013) looked at the strategic planning process and best practices suggested by the business literature. These findings were then applied and a comparative qualitative case study methodology was used to investigate two prominent companies operating in Malaysia. The framework identified by the researchers as the approach currently used by most strategic planners in the business world contains the following main phases: analysis, formulation, implementation, evaluation, and control. Using this framework and a grounded theory analysis approach, Zandi et. al. (2013) identified commonalities between the two firms that served as the focus for the case studies. They also identified underlying theories that emerged, which they argued to be worth considering in the process of strategic planning for any organization. The best practices for strategic planning and implementation observed by the researchers showcased the need for iterative and continuous problem-solving approaches that embrace input from members at all levels of the organization in order to promote effective change. These themes reiterate the commonalities that strategic planning in education and strategic planning in the business world share.

Benefits of Strategic Planning

Though some of the benefits to strategic planning have been touched on in earlier sections, it is important to explore what the literature says in terms of the potential benefits from a well-developed strategic plan in education. According to Hambright, and Diamantes (2004b), the literature was sparse when it came to identifying explicit, long-term benefits to strategic planning in education. This determination could have been due

to the fact that they found a lack of consensus around a framework for developing strategic plans and or a limited amount of research available on implementation of those plans. Regardless, many researchers in the field have identified strengths and potential benefits that validate strategic planning as a valuable process for education organizations to invest in (Hambright, & Diamantes, 2004b; Lane, et. al., 2005; Keller, 1983; Thompson & Kritsonis, 2009; Snowden, 2002; Stollar et.al., 2006). Table 4 lists some of the benefits offered in the literature on the use of strategic planning in education.

Table 4

The Benefits of Strategic Planning in Education

Author(s)	Benefits
Hambright, and Diamantes, (2004b)	Strategic Plans (SP) can (a) emphasizes creativity, innovativeness, and intuition-the *art* of planning, management, and decision making; (b) participatory forms of management are compatible and viable with the SP planning approach; and (c) SPs can harness the best of top-down and bottom-up management.
Thompson and Kritsonis (2009)	Skilled strategic planning builds commitment, and serves as the guiding document for the educational organization, and it provides a framework to support high-quality, student-focused education.
Stollar et.al. (2006)	Strategic plans consist of components that can create school environments that will support and sustain innovations.
Lane, et. al. (2005)	The strategic planning process allows the leaders of the organization to act in response to a changing state of affairs and to also generate decisions and actions that will lead and shape the organizations future.
Snowden (2002)	Strategic planning provides an opportunity for leaders in organizations to bring about change, using a systematic, inclusive planning process.

Perusing the concepts from these purported benefits, we see that strategic planning processes in education have the potential to provide a shared vision for both the present as well as the future, allow for organizations to “change” or “innovate”, promote

the best of management processes, and be inclusive of the whole school community. Unfortunately, barriers to successful strategic planning can impede the process and prevent success (Hambright, and Diamantes, 2004b). In order to understand this struggle more fully, it is critical that the barriers to effective strategic planning in education be considered.

Barriers to Effective Strategic Planning

Though the constant pressures and challenges in education can be guided by a strong strategic plan, barriers to implementing the plan can result in the stalling of innovation (Braganza & Ward, 2001; Snowden, 2002; Thompson & Kritsonis, 2009). Some of the specific barriers that have been identified in the literature are listed in Table 5. The primary impediments that can be discerned from the discourse include concerns and or limitations around leadership style or approach taken by management, weak implementation plans, the lack of buy-in from stakeholders, the lack of resources, and culture constraints within the organization due to a low or underdeveloped capacity for change.

Cited most often as a barrier to the strategic planning process is the lack of successful implementation plans (Hambright & Diamantes, 2004a; Hambright & Diamantes, 2004b). While several works within the literature have attempted to identify specific frameworks or steps that illustrate a strategic planning process in education very few of the frameworks described have been implemented and then monitored for effectiveness (Hambright and Diamantes 2004b; Lane et. al., 2005; Thompson and Kritsonis, 2009; Snowden 2002; and Stollar, Poth, Curtis, & Cohen, 2006). According to the literature, part of what makes a strategic plan effective is the ability for the plan to be

implemented and for the organization to achieve the goals established during the planning process within a set period of time (Zandi, Sulaiman, Atiyat & Naysary, 2013). Further, "strategic plans have to be specific enough to provide strong direction, but must be flexible enough to be adapted to turbulence, or rapid change, because no one can predict exactly what the future will be" (Williams & Johnson, 2013, p. 355). Within the field of education, more research is needed to determine what constitutes the successful development and implementation of a strategic plan within K-12 educational organizations.

Table 5

The Barriers to Successful Strategic Planning in Education

Author(s)	Barriers
Hambright, and Diamantes, (2004b)	Strategic Plans: (a) models tended to be weak in terms of evaluating implementation plans, (b) inadequate funding, (c) the level of commitment to strategic planning and its subsequent action plan for implementation, (d) Inflexibility, (e) the different stakeholder groups were absent from strategic planning committees, (f) a lack of prerequisite condition for system reform, and (g) the perception that the old bureaucratic system is being replaced with another top-down process.
(Hambright & Diamantes, 2004a; Hambright & Diamantes, 2004b)	Due to the diversity of educational organizations represented in the literature and the sparse offerings of documented planning processes that follow all the way through the implementation phase, there is a need to define and conceptualize strategic planning processes further.
(Braganza & Ward, 2001; Snowden, 2002; Thompson & Kritsonis, 2009)	Inadequately or inappropriately managed employees, inadequate resources, lack of buy-in from stakeholder groups, and organizational culture, result in the stalling of innovation.
Snowden (2002)	Institutional transformation in education requires leadership that can develop strategies to manage cultural changes and develop strategic thinking within the institution.

Although there are more similarities between the barriers found within the strategic planning process in education and business than not, some fundamental differences between them also exist (Snowden, 2002). Research indicates that it may be difficult to impose all corporate planning strategies in a collegial, public educational environment, given that many corporate environments are highly structured and driven by profit incentives (Snowden, 2002). Educational institutions tend to be loosely coupled and not highly structured. Further most educational organizations, especially at the K-12 level, are not driven by profit margins at the same intensity that many corporations are. This illustrates two additional barriers that must be considered during the development and implementation of a strategic plan if educational organizations are going to be able to foster and sustain cultures of innovation.

Overall, the literature suggested that the constant challenges in education and pressures of student achievement will be guided by a well-developed strategic plan that serves as an integral part of day-to-day leadership and that strategic planning is needed to create new opportunities in the 21st-century (Snowden, 2002; Thompson & Kritsonis, 2009). The focus for leaders must be on how to overcome the barriers associated with developing and implementing strategic plans to allow for this innovation to occur. Discourse on design thinking as it applies to organizational problem solving and strategic management seems to offer promise.

A Brief History of Design and Design Thinking

While humans have been participating in design for thousands of years, the discipline of design and design-based research has only existed in the literature for a few decades (Brown, 2008; Gloppen, 2011; Martin, 2010; Norton, 2012; Vogel, 2009;

Wetzler, 2013). Furthermore, the concept of "design thinking" has only come into popularity, especially in the world of business, over the past 10 years (Brown, 2008; Wetzler, 2013). The roots of design thinking can be traced back to the field of product development and design (Gloppen, 2011; Vogel, 2009). According to Vogel (2009), two different schools of thought with very different views on design for products, graphics, and architecture existed by the end of the 19th century. One camp valued the standardized, quantitatively driven management and cost approaches used by industrialists. The other side practiced the revival of the arts and crafts movement, which emphasized the quality of the product and experience created for consumers. Although, it was not until Herbert Simon's (1969) *The Sciences of the Artificial,* a foundational work about the nature of design that the literature on the discipline of design really started to take shape (Johansson-Skoldberg, Woodilla, & Cetinkaya, 2013). In the 1980s, the Design theorists' publications began appearing within the literature and reached a high point in 2009 (Johansson-Skoldberg, et. al., 2013). Even today, literature on design thinking continues to surface.

Well into the 20th century, opportunities for designers centered around filling the gap between incentive driven mass production and the refinement of human-scale production and local distribution of goods and services (Vogel, 2009). Historically, design and designers have not played a role in the substantive work of innovation, but were expected to come along later on in the process to beautify and market an idea (Brown, 2008). Furthermore, it was not until the late 70s and early 80s, that design and design thinking were promoted as a promising tool for environmental and social improvement (Vogel, 2009; Johansson-Skoldberg, et. al., 2013). As a result, the role of

the designer within the 21st century has been to bridge the gap between both schools of thought and to use the most current theory of human-centered design (Brown, 2008; Vogel, 2009). The designer's once limited role as "form giver" has now shifted to include areas like public communications, human interactions, systems and product platforms, strategies, processes, services, and experiences (Brown, 2008; Buchanan, 2008; Gloppen, 2011; Norton, 2012). The former role of a designer can be seen as tactical, while the current role is strategic, and can lead to dramatic new forms of value (Brown, 2008; Brown & Katz, 2011; Gloppen, 2011). This includes the application of design thinking as a management strategy in organizations (Brown, 2008; Johansson-Skoldberg, et. al., 2013; Wetzler, 2013). This type of design thinking is often referred to as fourth-order design (Buchanan, 2008; Johansson-Skoldberg, et. al.).

The current research in this area has focused on the benefits and value that design and design companies can offer businesses (Brown, 2008; Norton, 2012). In addition, a number of studies have now looked at strategic factors in the design thinking process and how they impact business performance and innovation (Brown, 2008; Larsen, et. al., 2007; Wattanasupachoke, 2012). Currently, the majority of the studies found in the literature around the strategic use of design thinking are conceptual and or qualitative case studies (Acklin, 2010; Brown, 2008; Johansson-Skoldberg, et. al.). This is an important limitation that must be acknowledged about the type of literature available for review.

Also of notable importance, at this juncture, is the difference between the academic-based "designerly thinking" discourse and that of "design thinking" within the literature. In their recent review of the literature on design thinking, Johansson-

Skoldberg, et. al. (2013) recognized that designerly thinking refers to the academic construction of the professional designer's practice and theoretical foundations of a designer's skills and competences, while design thinking is used beyond the design context, for and with people without a formal background in design. According to Gloppen (2009), "this new way of thinking combines designerly ways of thinking with business thinking" (p. 46). Expert in the field and CEO and president of the global design firm IDEO, Tim Brown (2008), claimed that the term "design thinking" was actually coined by IDEO founder David Kelley in 2001. Kelley, also the founder of Stanford University's Hasso Plattner Institute of Design (dSchool), needed a way to talk about this new type of design work that was being done with organizations.

Critics like Professor Bruce Nussbaum of Parsons-The New School of Design as well as Professor Fred Collopy of Case Western Reserve University argued that this seemingly divorced concept of design principles from the academic field of design and design-based research is resulting in a wildly attractive, yet unsustainable, fad within the organizational leadership and management discourse (Johansson-Skoldberg, et. al., 2013). While the future of design thinking may not be secure, the literature in this area continues to grow rapidly. Examples of case studies and conceptual frameworks, indicating the potential for the integration of design thinking into the strategic management process of organizations, are available.

Much of design thinking discourse began with the strategic use of designers and design companies to partner with organizations in order to create innovative practices. Most recently, the literature on design thinking has focused on the nature of design problems and the design process commonly found within the context of organizational

innovation (Brown, 2008; Buchanan, 2008; Gloppen, 2011; Johansson-Skoldberg, et. al., 2013; Martin, 2010; Rylander, 2009). A third offshoot that has emerged includes design thinking as part of management theory (Boland, Collopy, Lyytinen, & Yoo, 2008; Gloppen, 2009; Johansson-Skoldberg, et. al., 2013; Rylander, 2009). Brown (2008) argued that "as economies in the developed world shift from industrial manufacturing to knowledge work and service delivery, innovation's terrain is expanding thus resulting in the need for the strategic use of design thinking" (p. 86). This leads to the important questions of what exactly is design thinking and how is it used strategically within an organization?

Design Thinking and Organizational Innovation

When talking about design companies like the IDEO and a designer's work with organizations, expert Tim Brown's definition of design thinking is most often used (Johansson-Skoldberg, et. al., 2013). According to Brown (2008) "design thinking is a methodology that imbues the full spectrum of innovation activities with a human-centered design ethos" (p. 86). He went on to state that, "the design process is best described metaphorically as a system of spaces rather than a pre-defined series of orderly steps" (p. 88). He acknowledged three spaces in particular: *inspiration*, *ideation*, and *implementation*. Brown (2008) said to "think of *inspiration* as the problem or opportunity that motivates the search for solutions; *ideation* as the process of generating, developing, and testing ideas; and *implementation* as the path that leads from the project stage into people's lives" (Brown, 2008, p. 88; Brown & Katz, 2011; Brown & Wyatt, 2010 p.33). More specifically, design thinking can be considered a human-centered approach to innovation that draws from the designer's toolkit to integrate the needs of people, the

possibilities of technology, and the requirements for success. Elements in the "toolkit," unique to design thinking, include user-centered empathy-building, ideation techniques, prototyping methodologies, and rapid iteration (Brown, 2008; Wetzler 2013). A key capacity of design is the sensing of the deep orders and patterns of nested systems within apparent chaos and involvement of the design thinking process, which can ultimately result in the achievement of new directions for the participants involved (Brown 2008, Norton, 2012). This is the point at which innovation can occur.

In Brown's (2008) article "Design Thinking," he provided four case studies that showcase the use of designers and design thinking to create innovations in businesses. The first example he cited is a reform effort implemented by Kaiser Permanente. By teaching design thinking techniques to nurses, doctors, and administrators, Kaiser was able to inspire its practitioners to contribute new ideas. By applying a human-centered design methodology, they were able to create a process innovation around documenting internal shift changes. This small change in process produced a noticeable impact on the organization.

Next, Brown reported that in 2004 Shimano, a Japanese manufacturer of bicycle components, faced flattening growth rates in high-end road racing and mountain-bike lines sold in the United States. Using a design team to engage human-centered exploration, the company realized that a whole new category of bicycling might be able to reconnect American consumers to their childhood love of bikes while also dealing with the root causes of their feelings of hesitation. This revealed a largely untapped market. Brown went on to suggest that sometimes innovation has to account for vast differences

in cultural and socioeconomic conditions, noting that in such cases design thinking can suggest creative alternatives to the assumptions made in developed societies.

The third case study illustrated how Aravind, an eye care organization in India, has developed a system of care by consistently exhibiting many characteristics of design thinking. It has been successful in overcoming two major constraints: the poverty and remoteness of its clientele and its own lack of access to expensive solutions. Finally, Brown cited Bank of America and the launch of a new savings account service called *Keep the Change*. In less than a year, the program had attracted 2.5 million customers. It is credited with 700,000 new checking accounts and a million new savings accounts. According to Brown, Keep the Change demonstrates that design thinking can identify an aspect of human behavior and then convert it into both a customer benefit and a business value.

Though design thinking has been recognized as a driver of innovation within product design for a long time, it has only recently been acknowledged as having the potential to be an effective approach for creating systematic change and design services (Gloppen, 2009; Gloppen, 2011; Rice, 2011). Gloppen (2011) conducted an exploratory qualitative study using a mixed methods approach for data analysis. The main research question investigated was "How service design may be implemented at the level of strategy to support leaders of service-oriented organizations to shape innovative services" (p.3). This study was set in the context of a project called the AT-ONE project. The project developed a service design method aimed at improving the early stages of service innovation through the integration of design into a structured innovation process. Workshops introduced five "lenses" through which multi-disciplinary teams worked at

the front end of the AT-ONE service innovation process. The lenses were as follows: actors, touch-points, offerings, need, and expertise.

Gloppen (2011) suggested that four key areas emerged as common themes among the interviewed industry partners, in relation to the strategic use of service design in a collaborative process of shaping innovative services: (a) multidisciplinary collaboration and cross-departmental perspectives may facilitate user-centric service innovations; (b) visualization allows for a common understanding of ideas and helps in getting the ideas across to decision makers; (c) working with design professionals may influence clients' attitude towards seeing their service offering as a holistic service journey with a number of related touch-points rather than as a "single product"; and (d) service design may be understood, strategically, by leaders of service-oriented organizations through collaboration with designers. This work showcases the effectiveness of design thinking in breaking down some of the traditional barriers found in organizational change work.

The reported use of design thinking, by designers and design companies, to successfully identify and stimulate innovative approaches to solving problems or barriers to growth within organizations has fueled a deeper discussion of the strategic potential of design thinking. Applied strategically, design thinking, aims to implement systemic change within an organization through innovation, with particular emphasis on new mindsets and problem-solving approaches (Johansson-Skoldberg, et. al., 2013).

Design Thinking as an Approach to Organizational Problem Solving

The academic fields of organizational development, organization studies, and information systems are now embracing design methodologies as having the potential to improve these disciplines, particularly in regards to their knowledge of problems of

practice; however, this field is less mature and has a very limited source of empirical studies to draw from (Gloppen, 2011; Johansson-Skoldberg, et. al., 2013; Rylander, 2009; Wetzler, 2013). According to the existing literature, the purpose of design thinking as an approach to problem solving is to support an organizational interest in including non-designers in the design process in order to expand the organization's capacity for innovation (Brown, 2008; Leavy, 2010; Martin, 2010; Gloppen, 2009, Rosensweig, 2011.) It emphasizes the development of an organizational culture capable of empathy, celebrating new ways of thinking about problems or issues, using iterative processes based on trial and error to work through barriers, and making a commitment to changing systems of practices and policies (Rice, 2011). In this form, design thinking is regarded as most effective when it successfully connects to the strategic planning process of an organization resulting in the execution of products, services, and communication (Rice, 2011; Vogel, 2009).

To better understand how design thinking has been integrated into strategic planning processes and management approaches to create innovative solutions, it is important to understand what type of thought process is used. Roger Martin (2010), accredited as being one of the experts in this young field, talked about the ‘‘knowledge funnel" concept. The funnel is composed of a mystery to be solved, a rule of thumb (heuristic), and the conversion of the heuristic into an algorithm. Martin also asserted that there are two types of thinking that are required to push through the knowledge funnel. In the current business model, the basis of thought is analytical thinking and the goal is mastery through rigorous, continuously repeated analytical processes. The opposing school of thought is centered on the importance of creativity and innovation. Though

Martin agreed that through determined leadership, organizations can develop the skills, structures, and processes necessary to generate value from insights gained via the knowledge funnel, he also discussed the need for design thinking. He claimed that design thinking is what helps a company "hone and refine within the existing knowledge stage and then generate the leap from stage to stage, continuously" (p.40).

Abductive reasoning, a concept developed by philosopher Charles Sanders Peirce and advanced as a third form of reasoning alongside deduction and induction is used to describe a line of reasoning between the data-driven world of analytical thinking and the world of intuition. According to Martin, this allows a design thinker to add abductive logic to the reasoning repertoire and to lead the organization through the knowledge funnel, thus improving the flow of ideas through the funnel process. Martin's final claim was that "the velocity of movement through the knowledge funnel, powered by design thinking, is the most powerful formula for competitive advantage in the twenty-first century"(p. 41). Martin's argument explained why design thinking is being promoted as an innovation strategy within the business world. Further, he illustrated how design thinking can be applied to organizational planning and management and how strategic planning and design thinking can lead to innovation. Since innovation is a product of the design thinking process, an organization can expand its innovative capabilities by strategically engaging in a design thinking process (Leavy, 2010; Rosensweig, 2011; Gloppen, 2011; Wylant (2008); Brown, 2008).

Larsen, Tonge, & Lewis (2007) looked into strategic planning and design in the service sector. Questionnaires were mailed to the Managing Director (MD) or Chief Executive Officer (CEO) of each of the medium-sized sector enterprises in the UK.

While three hundred and sixty-five service sector companies were surveyed, a response rate of 21 percent was achieved. Findings indicated that in terms of strategic uses, design was favored to induce service innovation (65% of the organizations surveyed), followed by of equal importance in establishing organizational control (59%) and acquisition (59%). Of the organizations surveyed 95 percent said that service innovation was also the most favored strategic area for the future. The findings of this study continue to shed light on the importance of design as well as some of the benefits of design in the service sector.

Skeptics, like Larsen, et. al. (2007), have argued that little attention has been paid to the relationship between design as a business strategy and performance. As if in reply to this criticism, Wattanasupachoke (2012) conducted a study on the conceptualization and the application of design thinking and innovativeness concepts used in organization management strategies. This study added to the research on the integration of design thinking and business strategy to enhance the performance of companies, particularly in Asia. Five hundred and twenty-five Thai business enterprises listed on the SET (Stock Exchange of Thailand) were used as the population for this study. Questionnaires were employed as the main technique for data collection and sent to the CEOs of each of the 525 companies. In the end, an acceptable response rate of 21.7% (114 out of 525) was achieved.

According to the results of the research, there are significant, positive correlations that exist among design thinking and innovativeness ($r= 0.253$, $n=114$, $p< 0.01$), as well as innovativeness and performance ($r= 0.062$, $n=114$, $p< 0.01$). Notably, the researcher reports that design thinking does not significantly correlate with performance.

Regardless, design thinking was reported as having a significant impact on a company's innovativeness ($r=0.366$, $n=114$, $p< 0.01$). Wattanasupachoke found that design thinking directly influences business operation from both financial and customer aspects. Finally, the analysis showed that while design thinking does not have a direct and significant impact on business performance the greater the innovativeness of the firm, the better the firm's performance was found to be. Wattanasupachoke concluded, that the application of design thinking strategy to business operation can stimulate and increase the company's innovativeness.

Wattanasupachoke was careful to include a discussion of the limitations to his study. For example, he pointed out that the research focused on samples in Thailand so generalizability is a concern. Secondly, he recognized that questionnaire responses are subject to the perceptions of individual executives in each firm, and that this results in some level of bias. Finally, he identified that the relationships explored in this study were analyzed based upon a specific timeframe. Wattanasupachoke recognized that participants' responses to the questionnaire over time could shift. Wattanasupachoke concluded with suggestions for future research, which include a look at the external factors influencing the design thinking processes and deeper examination of how to apply design thinking to competitive strategies.

According to Acklin (2010), external factors have been found to influence the integration of design thinking into organizations. Acklin looked at two applied research projects in central Switzerland, aimed at introducing design and design management to 11 small to medium sized enterprises (SMEs) with little or no design experience. The goal was to assess the current use of design in each of the SMEs while introducing them

to the potential benefits of design. In order to accomplish this, the researchers worked with the companies' project teams to develop specific design strategies and innovation projects.

From this work, Acklin reported three phases that needed to occur at each company in order for design thinking to be successfully introduced into the culture. First, a basic understanding and acceptance of design and design management needed to be established within a company (sensitization); second, design methods needed to be introduced and practiced within a specific problem area or pilot project (application); and third, design management had to be implemented in a sustainable way into the processes of the company (implementation). In the end, Acklin indicated that most of these companies lacked adequate resources (space, time, people, money) for innovation. The capability to carry an idea or an innovation project through to completion and to commercialization intending to achieve market success was often missing. Pressure from daily business and, more recently, concerns because of the financial crisis were pushing innovation projects into the background. This was magnified by the lack of a culture that sustained a climate for innovation. This research looked at some of the barriers to innovation that organizations can face. These are important considerations for those interested in integrating design thinking into their organization. The literature in this area suggested that while design thinking has the potential to be merged with the strategic management process of an organization (including a strategic planning process) specific conditions need to be present for innovation to occur. This indicates the need for a manager or partner in management that understands how to create a culture that can sustain innovation.

Design Thinking and Management

Currently, more and more research is surfacing that considers design thinking as a strategic approach to planning and management through a leadership lens (Acklin, 2010; Gloppen, 2009; Gloppen, 2011; Boland, et. al., 2008; Rice, 2011; Rosensweig, 2011). For example, Boland, et. al., (2008) looked at emerging management theories and practices that can offer concrete possibilities for the use of design thinking as a process of management. Using a case study of design expert Frank Gehry's practice of design, Boland, et. al. proposed that successful managers are those who constantly engage in design and redesign. They argue that an organizational leader that possesses a design attitude views each project as an opportunity for innovation, one that includes a questioning of basic assumptions and a conviction that it is our responsibility to leave this world in a better state than it is currently in (Gloppen, 2009; Boland, et. al., 2008). These leaders use a design vocabulary, understand the functionality of the organization, and use multiple models to express the many emotions/expressions of the heart of the organization. Through a type of design management process the culture of the organization is then transformed into strategic capital-innovations that benefit business, culture, and society (Gloppen, 2009).

Through an analysis of organizational strategy and design, Rosensweig (2011) proposed a theoretical model that identifies how design becomes a dynamic capability for any organization when its promotion and support shifts from a person to a function. The model proposed includes three primary components: (a) the interaction of the design process within the organization, (b) the role of the design management function to both integrate with the design process and establish its value outside, and (c) the actions of the

design management function to capitalize on design as a dynamic capability to both protect against competition and support organizational assets to create a sustained competitive advantage in the marketplace. The intention of the model is to help to build comprehension around how design and business practices interact within organizations. Rosensweig stated that through the proposed model and a look at the work of two design managers, Dan Harden, chief executive officer for Whipsaw Inc., and Sam Lucente, global vice president of design for Hewlett-Packard, design can be seen as more than simply the creative expression of an innovative idea. He argued that by elevating design strategically, an organization can exceed the expectations of its stakeholders and advance its assets. Rosensweig concluded by identifying a need for more research that will examine how design and business practices interact within organizations and design as a function can become a capability for any organization.

To promote and sustain ongoing innovation within a company or a service organization, design thinking is now used as a strategic approach (Larsen, Tonge, & Lewis, 2007; Rylander 2009; Wattanasupachok, 2012). Design thinking also has been identified as offering valuable means to achieve strategic goals and objectives (Gloppen, 2009). Further, design leadership helps to envision the future; manifest strategy; and shape customer experience and, through that, the reputation of the organization; moreover, it can create and sustain an environment for innovation by breaking down traditional barriers identified in change work (Gloppen, 2009). Overall, design thinking is a very young but popular and promising solution within the business sector.

The Strategic Use of Design Thinking in Education

As indicated earlier, schools can learn from how the best companies innovate. Further, many of the strategic management processes used in education resemble the strategic planning processes used in the corporate world (Hambright & Diamantes, 2004; Hambright & Diamantes, 2004; Lane, et. al., 2005; Stolla, et. al., 2006). As a result, the application of design thinking to strategic management and planning in education can be similar to that of business organizations. In fact, due to the call for system-wide innovation in education, experts have initiated a discourse around the strategic use of design thinking in educational organizations in order to promote innovation and change (Chance, 2010; Rice 2011). Educational organizations need to develop planning processes that anticipate future trends. Plans that respond to these trends have to be built around an articulated vision that is developed, fostered, and embraced by the stakeholders in the school. Strategic plans have to give direction, but must be flexible enough to be adapted to turbulence and rapid change (Williams & Johnson, 2013). Using an iterative thinking process, such as design thinking allows problems to be defined over time and to be paired with appropriate solutions (Dorst 2008; Chance, 2010). Design thinking also allows for flexibility and adaptability in planning as well as the integration of viewpoints from all stakeholders. Educational organizations can respond to unforeseen challenges in creative ways when they define a collective vision through a truly strategic and ongoing planning process (Chance 2010). Moreover, Rice (2011), asserted that design thinking has already been embraced as strategy for educational reform efforts in K-12 education:

> Strategic planning requires defining a comprehensive vision that guides decision making. To support this alignment and nurture a culture of innovation, district leadership should thoughtfully integrate design thinking into already-existing

> appropriate structures including strategic planning forums, curriculum development sessions, and teacher and principal leadership development. (p. 4)

Although these claims are promising and alluring, very little research is available that illustrates the integration of design thinking into the strategic planning and management of educational organizations. A case study, described by Rice (2011) in a knowledge brief from the Stanford Center for Opportunity Policy in Education, provides one of the only examples available within the literature.

According to Rice (2011), as part of a summer institute, 10 district leadership teams from the California Linked Learning District Initiative learned and practiced how design thinking can be applied to district reform using elements from the design thinking process. A framework of *Design Thinking In Action* was applied to the work with the district leadership teams. Rice reported that the districts as a whole required an internal capacity to support the essential conditions for innovation and for design thinking to flourish. In addition, he argued that, as practiced by the 10 California districts, design thinking helped to diminish the very conditions in districts that seem to stifle innovation. Part of this culture shift occurred when central office teams modeled practices that broke down bureaucratic barriers and encouraged innovation, collaboration and accountability across stakeholder groups (Rice, 2011). As this case study was presented in a knowledge brief, it is difficult to determine the academic integrity and therefore the validity of these claims. More research is needed in this area to determine if design thinking paired with strategic management and planning can produce innovation within a school district.

Design Teams As a Strategic Use of Design Thinking in Education

Stemming from the aforementioned gap in the literature and appropriate to this study, is a deeper look at the concept of Design Teams. As mentioned in the *Brief History*

of Design section of this literature review, design thinking, as a strategic approach to developing and managing organizations, originated from the work of designers and design teams (Johansson-Skoldberg, et. al., 2013). Drost (2008), faculty member at Eindhoven University of Technology in the Department of Industrial Design, suggested that the investigation the object of design, the designer or design team, the process, and the context in which the activity occurs, should all be interpreted as part of the study of design. He also recommended the following conditions for design teams: (a) the use of multidisciplinary teams with cross discipline viewpoints; (b) a common agenda founded on the notions of globalization, technologies, and social change on the practice of the fields; and (c) intensive collaboration through projects that results in learning from the different perspectives preset within the team.

In Rice's (2011) knowledge brief discussed above, the use of design teams was a part of the case study model. In his brief, Rice (2011) referred to the design teams as "district teams"; however, the protocol used and included on page three of the brief referred to them as design teams. During the California Linked Learning District Initiative, ten district leadership teams practiced design thinking processes and were able to address "high priority central" questions as a result. Whereas Rice's (2011) work may showcase design thinking methods as having the potential to promote innovation with educational organizations, it also brings to the surface the need to understand the role that design teams can play in the educational reform process. Further, as organizations, of all types, adopt design thinking methods in areas where people may not have prior experience with them, understanding how novice design teams make use of design

methods is of great importance (Seidel & Fixson, 2013). Unfortunately, little empirical research is currently available in this area.

Seidel and Fixson (2013) conducted a case study in which they examined the work of 14 novice design teams. All of the teams selected for this study had the following composition: (1) multidisciplinary, (2) had members engaged in design thinking activities for the first time, (3) were comparable with other teams, and (4) could be studied longitudinally. Two main phases of each team's work were studied, concept generation and concept selection. In addition three methods, commonly cited within a design thinking approaches were assessed: (1) needfinding, the definition of a problem or opportunity; (2) brain-storming, a formal framework for ideation; and (3) prototyping, building models to facilitate the development and selection of concepts. Qualitative and quantitative data was gathered through interviews, observations, and questionnaires.

According to Seidel and Fixson (2013), high-performing novice teams were able to agree on the clarity of user needs across both phases of the project. Lower performing teams were still working on a list of needs during the selection phase. High-performing novice teams used prototyping during both phases and used it more than low-performing teams did. Additionally, during concept generation, high-performing teams considered brainstorming a more important source of ideas than the lower performing teams. Furthermore, high-performing teams held more brainstorming sessions during concept selection than the low-performing teams. The research suggested that when taken together, the methods of design thinking do not always result in a positive effect for novice teams. Seidel and Fixson (2013) reported that limitations were found within the method of brainstorming. They also observed group reflexivity (the extent to which the

team used a reflexive approach during concept generation by working across all three areas: objectives, strategies, and process) to be a hindrance to the teams as they attempted to move through the phases. These are important considerations for organizations interested in using novice design teams. The researchers warned that if design thinking methodologies are not well understood by members of the team, the team and in time the organization may become frustrated and abandon design thinking as a mechanism for generating innovative ideas. Seidel and Fixson (2013) went on to suggest that more research in the field of design is needed to assess this. They hypothesized that a lack of success for novice design teams could contribute to the reality of design thinking in management becoming a fad and not a true solution for innovations within organizations.

Overall, it is important to note that currently, no tested theory of design thinking methodologies used by novices and novice teams exists in the field of design science or design research at this time. It also is important to consider the impact that this has on the validity of the research findings. Additional work is needed in this area in order to determine if the findings are applicable to other novice teams using design thinking processes.

Closely related to the design team concept is the idea of the Design Studio. This is because design teams function within the context of a design studio (Chance, 2010; Drost, 2008). Traditionally, designers have created the spaces that they work within by choosing their environments and approaches; their communication with stakeholders; the role they take within the project; and the partnerships they form, including the formation of the design teams they work within (Drost, 2008). Studying the context in which design teams function is necessary because it is critical for understanding how to deal with

changing parameters and creating new environments within organizations (Chance, 2010).

Chance (2010) proposed a theoretical design studio model that can be applied to educational organizations in order to improve strategic planning processes and foster adaptive learning among stakeholders. Chance (2010) argued that a "strategic planning studio could be part of an integrated and collaborative institutional advancement studio. "The strategic planning studio could involve strategy formation, master planning, architecture, and institutional research" (p. 51). Currently, no field research is available that looks at the use of design teams to improve strategic planning processes in education. This illustrates yet another call to examine the work of design teams with connections to both design and management as an approach to achieving innovations within an educational organizations (Chance, 2010; Johansson-Skoldberg, et. al., 2013; Rice, 2011; Seidel & Fixson, 2013).

Areas of Future Research

Regardless of the limitations found in the quality of literature, it is an exciting time to be researching design thinking and how it can be applied strategically to create innovation in educational organizations. Educational organizations require that leaders develop cultural changes and strategic thinking within their institutions. And although it is a young field in organizational and management studies, design thinking is being toted as an effective approach to accomplishing just that. Of course, the limited sources of empirical studies and academic materials suggest a significant gap in the literature (Vogel, 2009; Gloppen , 2011; Rylander, 2009).

The literature is sparse in terms of identifying and reporting case studies of the successful implementation of strategic plans in education; however, clear barriers to a successful implementation have been identified. Therefore, it is important to assess if design thinking can allow for movement through these barriers in order for organizational innovation to occur. Further, it would be beneficial to determine if Rice's (2011) statement is true in that school districts can successfully reform using design thinking as the strategic approach. In their recent review of the literature, Johansson-Skoldberg, et. al. (2013) suggested two future areas of research in the design thinking discourse that also are relevant to the application of design thinking within educational organizations. First, they called for ethnographic research that explores a manager's ability to use design thinking as a strategic approach to planning would be valuable. Secondly, they indicated that it is important to consider the work of multi-disciplinary teams with connections to both design and management as an approach to achieving innovations within an educational organization. The latter correlates with Seidel and Fixson's (2013) call for more research in the area of novice design teams and the application of design thinking processes to organizational management strategies. Somewhat related is Chance's (2010) theory that creating a design studio and using design teams can improve strategic planning processes. This is a very interesting theory that requires validation from the research community. Finally, the concept of design leadership and the approach followed by design leaders has become a focus of interest within the management literature and is considered an area for future research (Gloppen, 2011; Vogel, 2009). At this point in time, the landscape seems wideopen.

Summary

We are at a point in history when to reform education is not enough and it has become imperative that educational leaders begin to innovate within their organizations (Bellanca & Brandt, 2010; Christensen et. al., 2008; Cuban et. al., 1996; Schlechty, 2009). As a result, new visions and new approaches to implementing those visions are necessary to create a space for innovation within educational organizations at every level (Schlechty, 2009; Thompson & Kritsonis, 2009). Barriers to implementing effective strategic initiatives have traditionally included inadequately or inappropriately managed employees, inadequate resources, lack of buy-in from stakeholder groups, and incompatible organizational culture, result in the stalling of innovation (Braganza & Ward, 2001; Snowden, 2002; and Thompson & Kritsonis, 2009). Further, the shift toward 21st-Century Learning and the student-centric learning models, brought about by the disruptive innovations in the technology world, are continuing to challenging the way educators conduct their reform efforts (Christensen et. al., 2008; Schlechty, 2009).

The literature available on 21st-Century Learning suggested that a critical focal point for this movement revolves around an educational organization's ability to design a vision for 21st-Century Learning within that community and then implement it (Bellanca & Brandt, 2010; Dede, 2010; Kereluik et al., 2013; Voogt & Roblin, 2012). Many school districts have attempted to do just that, by pairing their vision with a strategic plan (Bellanca & Brandt, 2010). This includes the approach taken by the school district under study in this project.

While modern educational theory on student and school success is based upon the fundamentals of strategic leadership and planning, the bureaucratic models of the 20th

century school system are impeding the development of adaptive and flexible 21st century systems (Williams & Johnson, 2013; Schlechty, 2009). Research suggested that the constant challenges and barriers to innovation as well as the pressures of student achievement can be navigated by a well-implemented strategic plan that serves as an integral part of day-to-day leadership and future aspirations in educational organizations (Hambright & Diamantes, 2004b; Jennings & Disney, 2006; Lane, et. al., 2005; Snowden, 2002; Thompson & Kritsonis, 2009). Research also identified that in order to move through the traditional barriers, a flexible, human-centered, problem-solving approach that results in innovation is appropriate to integrate within a strategic planning process. This is attributed to the fact that many of the barriers to the implementation of strategic plans are centered on the people involved in the planning and implementation process. Design thinking, which has become a popular source for innovation and sustainable competitive advantage in the business world within the last decade, is one such approach (Buchanan, 2008; Larsen, et. al, 2007; Martin, 2010; Wetzler, 2013).

According to the literature, non-linear problem-solving approaches, like design thinking, are applicable to education planning and other forms of strategic management and can result in a "best fit" for an organization in terms of the successful pairing of decision-making practices and appropriate solutions (Wetzler, 2013; Acklin, 2010; Chance, 2010; Drost, 2008). Design thinking applied to strategic leadership and planning and tied to products, services, communication, and outcomes can result in the implementation of creative, radical changes, which enables the organization to truly innovate (Braganza & Ward, 2001; Rylander, 2009; Snowden, 2002; Vogel, 2009). Moreover, the application of design thinking to organizational problem solving and

strategic management process in education is already occurring (Chance, 2011; Rice 2010). Understanding design teams and the context in which they work may be instrumental in allowing for the successful innovation of our educational organizations. (Chance, 2010; Drost, 2008; Johansson-Skoldberg, et. al., 2013).

The current discourse in the literature suggests that the strategic use of design thinking within educational organizations could become one of the 21st century's most powerful mechanisms for innovation at all levels of our education system (Drost, 2008; Chance; 2010; Martin, 2010; Rice, 2011; Vogel, 2009). Of course, the gaps identified in the literature and discussed above indicate the need for more research in order to validate this claim. This study was designed with this purpose in mind.

CHAPTER III

METHODOLOGY

The purpose of this undertaking was to document an example of how one San Francisco Bay Area school district set out to innovate. This project examined how district leadership attempted to introduce a vision for 21st-Century Learning into the organization using principles of design thinking. A critical function of the district's process, the strategic use of a District Design Team (DDT), was explored. This chapter describes how this phenomena was captured.

This chapter contains a review of the research questions, an overview of the research design, general descriptions of the population, and the setting for this study. The timeline for conducting the study, general procedures for conducting the study, and a section on human subject considerations are also included. Finally, the instrumentation, an analysis of the validity and reliability of the instrumentation as well as the proposed data analysis procedures and limitations to the study can be found below.

Research Questions

1. How have the features and conditions within the school district resulted in the design of the DDT?
2. How has the DDT been managed and used to produce the intended innovations within the district?
3. How have design processes contributed to the implementation of the intended innovations?

Research Design

The research design involved a qualitative single case study approach to studying the implementation of 21st-Century Learning in a local, Bay Area school district. Careful considerations were given to the research design. Case study research is often used to contribute knowledge to our understanding of individual, group, and organizational, political, social, and related phenomena (Yin, 2014, p. 4). Case studies allow researchers to maintain a real world, holistic perspective while investigating small group behaviors and organizational processes (Yin, 2014). Appropriately, an opportunistic, single case study was designed to focus on how the implementation of 21st-Century Learning led to the particular phenomenon of innovation within the district (Merriam, 2009). Consequently, it is also a critical case that contributed to the conformation, challenge, and or extension of theory (Yin, 2014). As a result of both of these rationales, a single case study methodology was fitting (Merriam, 2009; Yin, 2014). Furthermore, since the primary goal of this study was to understand the role of the District Design Team (DDT) and the relationship it has with the implementation of 21st-Century Learning within the district, an embedded design was chosen. By avoiding the use of a holistic design, the possibility of becoming distracted from the specific phenomena under observation and presenting findings from this research that can be regarded as too abstract was minimized (Yin, 2014).

This study made use of qualitative data collection techniques (semi-structured interviews, observations, and document analysis) in order to evaluate the research questions proposed. Data was collected using researcher-designed interview and observation protocols, as well as through the review of relevant documentation.

Triangulation or the cross-referencing of the data collected allowed for the consistency of findings to be evaluated (Merriam, 2009). The goal of studying the DDT was to understand how the strategic application of design thinking, by district leadership, shaped the implementation of a vision for 21st-Century Learning and resulted in innovation within the organization.

In order to interpret the function of the DDT, the artifact analysis model (Halverson, 2003) was used as the conceptual framework for this study. A description of the framework can be found in Chapter 1 and is further illustrated by the Design Cycle Analysis Model (DCAM) in Figure 2. The process began with an investigation into how the District Design Team came to be, including the goals that led to the problem setting. Next, the resources and the strategies used to implement the DDT were explored. The problem solving, made possible by the existence of the Design Team, was captured. Finally, the constraints and the affordances were evaluated. The data was analyzed using qualitative reporting procedures.

Population

The overall study population included 14 teachers from one Northern California school district located in the San Francisco Bay Area. This teacher population included six teachers working at the middle-school level (teaching grades fifth-eighth), seven teachers currently teaching at the elementary level (K-4), and one teacher on special assignment (TOSA). Three district level administrators and two site administrators who also were team leads for the DDT are included, as well as two additional site administrators who became team leads for the DDT during this study.

All members of this population were directly involved in the innovative change process taking place within the district. All of the teachers and the leaders selected to participate in the study were directly involved in the implementation of the new vision for 21st-Century Learning on some level. Further, all were either a part of the DDT or have some direct oversight of the DDT. Table 6 offers some basic demographics, which illustrate several of the characteristics shared by members of the DDT. All fourteen teachers and the seven administrators associated with the DDT were invited to participate in individual interviews.

Table 6

Demographics of the 2013-14 District Design Team

District Affiliation	Number	Gender Male/ Female	Range of Years Within District
Teachers/TOSA	14	0/14	3-18
District Level Administrators	3	2/1	3-7
Site Administrators/DDT Leads	4	2/2	1-19

Sample

The actual sample for this study included 18 professionals from one Northern Californian School district located in the Bay Area, and all purposefully selected to participate in the study. This sample was made up of 11 elementary and middle school teachers, as well as one TOSA, working as members of the District's Design Team (DDT). Also included in this sample, were three district level administrators and four site/district administrators who were DDT Leads. All 18 participants were sampled from the population described above. Participation in this study was voluntary for members of the DDT and supported by the district's Superintendent. Three DDT teachers declined to participate in this study. Table 7 describes the final interview participants for this study.

Table 7

Description of the Final Interview Participants

District Affiliation	Number	Gender Male/ Female	Range of Years In District	Range of Years In Education
Teachers/TOSA	11	0/11	3-18	10-19
District Level Administrators	3	2/1	3-7	28-43
Site Administrators/DDT Leads	4	2/2	1-19	19-27
Totals	18	4/14	1-19	10-43

Setting

This study took place over a seven-month period of time during the 2013-14 and 2014-15 school year. The timeline for this project was designed to capture the relevant components of year one and year two implementation processes used by one Bay Area school district in Northern California to articulate a vision for 21st-Century Learning throughout the system. Specifically, this research project followed the DDT from late April through October of 2014.

A small elementary school district, the district is made up of four grade schools, serving students from kindergarten through the fourth grade, as well as two middle schools serving fifth-grade through eighth-grade students. Trends in the enrollment data have the School Board and the Superintendent convinced that the district needs to build in order to support the number of students that are projected to attend the schools within the next five years. Further, due to the relatively small size of the district, it relies on local support in order to be able to provide and maintain rich educational experiences for all children. As a result of this local support, the district was successful in passing a 72-million-dollar bond in the November 2012 elections in order to begin addressing the enrollment issue. This bond money was slated to fund the design and construction of the

two new fourth and fifth grade bridge schools for the district. The district leadership views these bridge schools as a critical opportunity for developing and sustaining innovation within the district. It is expected that both sites will embody the district's vision of 21st-Century Learning.

In an effort to prepare for their opening, the district is engaged in a 21st-Century reform movement. The DDT has been created and charged with the task of leading this district-wide reform as well as preparing for the new fourth and fifth grade schools. In January of 2013, the concept was approved by the board and then presented to the administrators and teachers working within the district. Originally, the purpose of the DDT was centered on the curricular and environmental design of the two new 4th- 5th grade bridge schools. The DDT's secondary purpose was to allow selected administrators, teachers, and community partners, to collaborate and to serve as co-creators of curriculum and to seek internal and external expertise to realize the newly adopted strategic plan. The document entitled *Design Team 4th-5th Grade Bridge Schools* (Appendix C) illustrates the original vision for the DDT.

In the summer of 2013, the priorities of the DDT were inverted. Planning for the two new bridge schools became the secondary purpose and the implementation and realization of the district's strategic plan was cited as the primary function. As a result, it is appropriate to examine the DDT as the vehicle for articulating and implementing the district's vision for 21st-Century Learning as well as the strategic mechanism used to support this implementation process.

Procedure

In May of 2014, an email was sent out to all members of the DDT. The email requested an individual interview with each member of the team (Appendix D). It provided a link to a Doodle page that allowed participants to select an agreeable data, time, and location for us to meet for the interview. If members did not respond within a week (5 days) a follow-up email was sent. All members responded with either intent to participate or a decline to participate, prior to a third point of contact. Of the 18 participants originally contacted, all but three agreed to participate.

During the interview portion of the study, it became evident that a few additional people played important roles within the DDT. One was a part-time teacher on special assignment (TOSA) and two were site level administrators who became DDT Leads at the end of year one and beginning of year two. As a result, a total of 21 DDT members were solicited to participate in the interview process. As indicated earlier, three of the 21 DDT members contacted declined to participate. As a result, a total of 18 interviews were conducted. Table 7 describes the final participants included in this study.

Semi-structured interviews were conducted with all 18 DDT members around their role in implementing the vision for 21st-Century Learning and supporting innovation within the district. These interviews were conducted using a standardized interview protocol. The protocol was developed using concepts from both conceptual framework of this study and the theory of design thinking. Table 8 lists the interview questions and how they connect to each of the research questions (see Appendix E). Members, who agreed to be interviewed, received an honorarium of their choice. These included movie tickets, gift cards to Peet's Coffee and Tea and/or Starbucks. In order to accommodate all of the

different scheduling needs of participants, interview appointments were scheduled throughout May, June, and July of 2014. The duration of the interviews ranged from 22minutes and 26 seconds to 118 minutes and 45 seconds with and average of 46minutes for each interview. Once consent from each of the participants had been obtained, the interviews were recorded. In addition to the recording, written notes were taken. Transcripts from these interviews were made available to each participant so they could review their responses. The rich text was reviewed and analyzed using the artifact analysis framework and a coding process.

Timeline for Conducting the Interviews and Observations

Beginning in April of 2014 and continuing through July of 2014, district and site level leadership reflected on year one of the implementation process for the district. This included conversations around the current function of the DDT and next steps for the program. A pivotal point of time for the DDT, an observation of the final DDT meeting was critical as well as the observation of relevant Administrative Counsel (AC) meetings and board meetings. At this time, all interviews with the 18 different members of the DDT also were arranged and documented. During the month of July, the 18 interviews were transcribed.

At the beginning of August and continuing through October 2014, additional meeting observations and document review were conducted. This occurred in an attempt to capture important year two implementation processes for the district. It also supported the confirmation of described changes within the design and function of the DDT.

From August through November of 2014, data from all interviews, meeting observations, and relevant documents from the district were appropriately organized and

analyzed. Also during this time period, an email was sent out to all participants. The email informed participants that the transcriptions of their interviews were complete and available for review. These transcripts were sent to participants, when requested, and Member Checks were completed. This part of the process lasted through November. The data analysis was conducted using the DCAM framework (Halverson, 2003) described in the *Data Analysis* section of this chapter.

Background of the Researcher

A key feature of qualitative research was the researcher as an instrument (Creswell, 2009). To this end, I was directly involved in gathering data through the interview and observation process. I also examined documents relevant to this study.

While I entered into this research study with no intention of influencing or dictating the outcomes from this work, it is important that my orientation is communicated clearly. Working in the field of education for 15 years, I have a deep understanding of the challenges that schools and school communities face while trying to reform current practices. Further, my work in different roles within education has made me sensitive to how the change process can be viewed from different levels of the system. When I started my career, I worked as a classroom aide and behavior specialist for a year and a half before becoming an Education Specialist. I spent a total of seven years working as a middle school Special Education teacher and another two as a high school Special Educator before taking an assistant principal position at my current school site. I have worked in my current school district for six years and have served as an administrator for four of those years.

While I am involved in the change process and 21st-Century Learning reform movement taking place within my district, I am not directly involved with the work of the DDT. Regardless, I understand that it is important to reveal my relationship to this study and to be transparent around the biases. In general, I am interested in understanding the DDT as an artifact and the design processes used by district leadership to support change or innovation throughout the implementation of 21st-Century Learning within the district. This is because I recognize how challenging it can be to enact real change within a school district. I am curious to discover if there are solutions or processes that can mitigate or aid administrators in moving through typical barriers more effectively.

As the sole researcher in this study, my experience as an evaluator for this school district will aid me in my research process. As an assistant principal, I have been expected to conduct formal observation, informal observations, and interviews with educators many times over the course of the last few years. Further, my work as a Special Education teacher and as designated Local Education Agency (LEA) Representative for the school district has required me to take in-depth notes of meetings and to be able to verify accuracy for legal purposes. These skills have aided me in the accuracy and efficacy of my work as a note taker and recorder of both interviews and meeting proceedings. Finally, my role within the district and my professional relationship to those directly involved with the DDT has assisted me in gaining access to the relevant information and experiences that informed this study.

Interview Protocol

Research questions were evaluated using a standardized semi-structured interview protocol. Table 8 illustrates how the research questions connect to the interview questions. Concepts from the conceptual framework of this study were used to determine items for the protocol. The *Interview Protocol* is included under Appendix E.

As stated earlier, during the month of May emails were sent to all 18 members of the DDT. This email requested a personal interview with members of the team. Once permission from each of the participants was obtained, interviews were held and reordered. They were then transcribed and the transcripts were offered to each interviewee for review. When possible and on an as-needed basis, a follow up to questions occurred between the researcher, the teacher(s), and or the administrator(s) interviewed. The rich text was reviewed for themes using the data analysis process described later on in this chapter.

Observation Protocol

Research questions were evaluated using a standardized observation protocol also designed by following the components outlined by Creswell (2009). Further, concepts from the conceptual framework of this study, design thinking, the district's definition of 21st-Century Learning and education were used to determine the structure of the observation protocol. Observations of DDT meetings, and all relevant AC and board meetings were conducted. Relevant AC meetings and board meetings were determined based on agendas and invitations and or recommendations from members of the DDT. Microsoft Word for note taking and recording meetings was used to record the

observations. Each observation lasted the duration of the meeting or for the portion of a meeting that pertained to the DDT.

Observations and Supporting Document Examination

Meeting observations and document review occurred throughout this study. Beginning with the last DDT meeting of the 2013-14 school year and continuing through October of 2014, when a relevant, year two implementation meeting for the DDT was observed. Observations of all relevant AC meetings and board meetings also were conducted. An important time frame for studying the DDT, it allowed changes to the goal(s), features, and other elements of the problem solving aspect of this artifact to be confirmed. Relevant documents were also reviewed for consistency in findings.

Two key meetings were documented using a predesigned protocol (see Appendix F) created from the guidelines in Creswell (2009). These meetings were the last DDT meeting of the 2013-14 school year and the first DDT meeting of the 2014-15 school year. These observations included a reflection completed by the researcher to identify the meetings relevance in terms of the research. This rich data also was used to confirm the innovation occurring within the district. Two relevant board meetings and one AC meeting also was observed during the 2013-14 school year. Further, one relevant board meeting occurring in October of 2014 was observed. Summaries of notes and outcomes from these meetings were also reviewed to triangulate findings.

Data Analysis

The qualitative data generated was coded and then categorized into the appropriate categories of the DCAM framework. According to Creswell (2009), validating the accuracy of qualitative information collected involves six major steps: (a) organizing and preparing the data, (b) reading through the data, (c) beginning the detailed

analysis with coding process, (d) using the coding process to generate descriptive themes, (e) determining how these themes will be used in the narrative, and (f) interpreting the meaning of the data. Using data collected from the interviews, and confirmed by observations and document review, all six steps were complete as described above.

As Creswell (2009) indicated in step four, coding of the data is an important part of this undertaking. In the case of the interviews, coding took place after the data had been transcribed. The conceptual framework of artifact analysis and the DCAM framework (Halverson, 2003), as well as design thinking concepts served as the categories and themes for this study. Axial coding was used to sift through data and to provide a reflection on meaning (Merriam, 2009). The data was then grouped according to categories. The three major categories used to sort the data were Problem Setting, Problem Solving, and Design Thinking. Problem Setting included the following subcategories: the goals of the designers, strategies used in the design and implementation of the DDT, and resources drawn upon in the design and implementation of DDT. The Problem Solving category included the situational constraints and affordances that affected the implementation and use of the DDT, and the ways in which the DDT evolved over time to become a resource for successive problem-setting efforts (Halverson, 2003). The category of Design Thinking was open ended and solicited reports for DDT members about their experience with it.

A database was created to store all data during analysis. Any emergent subthemes, not identified by the conceptual framework of this study, were documented and presented. The arrangement of data through the use of the DCAM allowed for an organized narrative and presentation of the collected data (Merriam, 2009; Yin, 2014).

Human Subject Approval and Ethical Considerations

Permission to conduct this research was granted from the superintendent of the school district under study. The data collection stage of this research started after the University of San Francisco's Institutional Review Board (IRBPHS) granted approval and a letter was submitted verifying the IRB's approval to the District Superintendent. During Phase 1 of the data collection process, using recommendations from Yin (2013), Creswell (2009), and Merriam (2009), a letter was emailed out to all participants (Appendix D). This notice included such information as the University of San Francisco's name, an endorsement from the district's Superintendent, and a brief description of the purpose of this research. It also included a confidentiality form with an offer of access to personal data. Informed consent (Appendix D) in this document included a description of the benefits of the research and the time constraints that exist due to participation. An offer to answer any inquiries, a reminder that participation was voluntary, as well as, a reminder that a participant could withdrawal at any time was also included. As discussed earlier, an online scheduling tool (Doodle) was used to coordinate interview appointments.

In terms of the data analysis and reporting of data, all ethical guidelines identified in the *Publication Manual of the American Psychological Association* (2010) were followed to the best of this researcher's ability. As this research is qualitative and due to the fact that it is a case study based in the district with which the researcher is affiliated, biases are inevitable. According to Yin (2014), case study researchers are naturally prone to bias because they need to understand the issue under study before they even start collecting data. This can lead to a specific orientation. Although a certain amount of bias

remained unavoidable do to my affiliation with the organization, I have worked to remain transparent and ethical throughout the course of this research endeavor. Biases were disclosed and addressed in all appropriate areas.

Validity and Reliability

The validity and reliability of this research was protected through a variety of measures. In order to promote strength in Construct Validity, the use of Triangulation or the validation of data points and themes from multiple sources of evidence was employed (Creswell, 2009; Merriam, 2009; Yin, 2014). Further, a chain of evidence and the use of key informants to review the draft case study report was employed (Merriam, 2009; Yin, 2014;). To protect the Internal Validity of this study, critical self-reflection by the researcher regarding assumptions, worldview and bias, as well as my relationship to the study was conducted (Yin, 2014). Further, the use of explanation building through the use of themes developed from theory occurred (Creswell, 2009; Merriam, 2009; Yin, 2014). Due to the fact that this is a single case study, the External Validity of this research design needed to be protected. To this end, the use of theory was critical (Merriam, 2009; Yin, 2014). Halverson's (2003) artifact analysis was employed in the analysis of data. Further, the use of Chance (2010) and Rice's (2011) interpretation of design thinking and applied to education was used in the analysis of data related to that component of the study. Lastly, in an effort to protect the reliability of this study, an audit trail through the use of a database was established. Additionally, the inclusion of rich, thick descriptions and a type of "member checks" was employed to ensure credibility of reported findings (Creswell, 2009; Merriam, 2009; Yin, 2014).

Limitations

Due to the nature of the design, this case study was limited by the sensitivity and integrity of the investigator, acting as the primary instrument for data collection (Creswell, 2009; Merriam, 2009; Yin, 2014). Additional limitations are identified in each type of data collection. For example, in documentation review, retrievability can be a problem. This becomes a concern when documents are too difficult to find, if bias selectivity exists, or if any document is purposefully withheld due to privacy restrictions or other reasons (Yin, 2014). Other limitations include a difficulty in interpreting the documents and a discrepancy in the articulation and perceptivity of documents. Additionally, materials used maybe incomplete or the documents may not be authenticated or accurate (Creswell, 2009).

In terms of using interviews and interview protocols, Yin (2014) identified poorly designed or explained questions as a limitation. Further, inaccurate participant responses can be a problem. Participants may not have understood what was being asked of them. A potentially serious limitation to this study could be reflexivity. Reflexivity is the practice of interviewees giving the interviewer what they think the researcher wants to hear (Yin, 2014). Other limitations for interviews have been identified as a restriction in the setting from which the information can be gathered, the fact that interviews can result in indirect information, filtered through the views of the interviewees, and the fact that not all people are equally articulate and perceptive (Creswell, 2009).

According to Yin (2014), time can be a limitation when using observations as a data collection technique. Selectivity and reflexivity also come into play. Furthermore, since I was invited to observe the events of activities in most cases, there is a chance that

participants manipulated the events under observation, causing more bias (Yin, 2014). Other limitations identified by Creswell (2009) included the observer seen as intrusive or the observation of private information that cannot be reported. Careful consideration has been made to address these limitations.

In assessing the limitations of this study, it is important to reflect on the qualitative design and methodology employed. The study was designed to follow a single case-study methodology. The use of triangulation was employed as well as a form of member checks to determine if the information from the interviews were accurate. Additionally, rich, thick description for the themes and subthemes developed was collected. Regardless, the fact that a relatively small sample size was used is a limitation. Looking at the sampling methodology, it becomes clear where some weaknesses can be observed. The fact that three of the original DDT teachers decided not to participate in the study is a limitation. Additionally, the sample used does not reflect the demographics of the greater population of teachers and administrators. Important next steps toward determining the transferability of these findings would include recreating this process with a more accurate sample population. Finally, the relationship of the researcher with the participants can be considered a limitation. This and the fact that the phenomena being studied is unique to the community it has occurred within, limits the generalization of findings to other school districts. Overall, due to the limitations within this qualitative case study, findings should be considered preliminary and are restricted to the particular sample of educators.

CHAPTER IV

FINDINGS

The purpose of this dissertation study was to understand how design thinking led to the implementation of 21st-Century Learning within a school district. Specifically, this study attempted to capture and understand how the strategic integration of design thinking through the form of a District Design Team (DDT) promoted innovation within an elementary school district. In this chapter, an analysis of the DDT, a key vehicle for enacting reform efforts within the district, was conducted using Halverson's (2003) artifact analysis model.

The chapter begins with a brief overview of the district's 21st-Century Learning Initiative, stemming from the district's strategic plan and year one implementation plan. Next, a basic description of the DDT was provided. The majority of this chapter is focuses on the artifact analysis of the DDT. Finally, reports on how "design thinking" played a role in the function of the DDT during year one will be presented.

As this is a qualitative study, rich, thick description in the form of quotes from those educators that participated in the study have been incorporated into the reporting below. In order to protect the anonymity of respondents, no identifying information was used in this dissertation. Instead, a generic title or abbreviation and number have been assigned to each participant. For example, the Superintendent is referred to as the Superintendent. Site level/ Design Team Leads are referred to as SLDLs and are assigned a number 1-4. For example, SLDL1 refers to the first of four site level and Design Team Leads interviewed for this study. District Design Team Teachers are referred to as DDTTs and have been assigned a number 1-11. For example, DDTT1 refers to the first

Design Team Teacher interviewed for this study. Table 9 illustrates this naming process in more detail (see Appendix H).

Strategic Planning Process

To illustrate the conditions within the district leading to the creation of the District Design Team, a brief description of the recent strategic planning process becomes relevant. The district's new Strategic Plan, formally adopted in June of 2013, was the result of a two-year, iterative process that involved constituents within the school community at each phase of development. Three community forums, a strategic planning committee that included representatives from the different stakeholder groups (i.e. parent, teachers, students, etc.), as well as meetings with district and site level administration, and working sessions with the board resulted in the final nine page document (see Appendix A). This plan is supposed to drive reform and innovation within this bay area district for the next five years. As discussed in Chapter 2, the document is dense with three over arching areas of focus and 24 different initiatives to be completed by 2018.

As an approach to beginning this work, a "Year One Implementation Plan" was developed. Considered a "living document," the Implementation Plan also went through numerous iterations between the summer of 2013 and the fall of 2013 (See Appendix G for a draft of the Implementation Plan). District leadership was able to evaluate the Implementation Plan using feedback from stakeholder groups. Nine central goals stemming from the three core strategies identified within the Strategic Plan were developed. Within those nine essential areas, benchmark targets for year one were separated out. Of importance is the fact that the DDT was tasked with completing or aiding in the completion of many of the targets.

Considered a key vehicle for enacting the initiatives set forth by the Strategic Plan, the DDT was a select group of educators tasked with implementing many of the benchmark targets described in the district's Year One Implementation Plan. Table 10 attempts to capture the district initiatives that surfaced as part of the DDT's work. According to the district's Strategic Plan, these initiatives align to make up the current definition or framework for 21st-Century Learning within the district. It is important to note that while the DDT was responsible for launching many of these initiatives during the year one implementation process, it is not clear how many of the initiatives have been embraced or recognized district-wide. At the start of the 2014-15 school year, the DDT consisted of one district level DDT Lead, two site level administrators/DDT Leads, and 20 teachers representing the district's six schools. The configuration of the team cycled through three major iterations between the spring of 2013 and the fall of 2014 (see Appendix I).

Artifact Analysis of the DDT

To examine why and how the DDT came into being and how it was used as a vehicle for initiating reform efforts within the district, Halverson's (2003) artifact analysis framework was used as a lens. As illustrated in Chapter 1, the artifact analysis framework follows the Design Cycle Analysis Model (DCAM) and is broken down into two main orientations, Problem Setting and Problem Solving. Within these two main foci, components of artifact design are discussed (i.e. goals, strategies, resources, features, affordances, and constraints).

Table 10

Key District Initiatives for Year One of the DDT

Initiatives	Description	Partnerships/Curriculum
Project Based Learning (PBL)	Students learn by engaging in rigorous projects that are carefully planned, managed, and assessed to help students learn key academic content, practice 21st- Century skills, and create high-quality, authentic products and presentations.	Buck Institute
Technology-Infused Instruction	Involves the authentic use of technology to augment, support, and illustrate other district-wide initiatives	EdModo, Google, Hewlett Packard Twitter, Blendspace, etc.
5 Cs	Critical Thinking & Problem Solving, Communication, Collaboration, Citizenship (from local to global) and Creativity & Innovation. The 5Cs embody mindsets that are critical for our students to successfully participate in the contemporary and evolving workforce.	Partnership 21, Mindset Works
Design Learning	Often associated with the 5Cs, design thinking offers a strong focus on creativity and innovation. Students work through a design cycle to create and manage their own learning processes.	Curriculum: *Engineering is Elementary, Boston Museum of Science* and PBL
Common Core State Standards (CCSS)	A national education initiative to align state education standards.	CCSS was sponsored by the National Governors Association and the Council of Chief State School Officers and adopted by 46 states.

Problem Setting

The first phase of the DCAM model is known as Problem Setting. Problem Setting attempts to capture the initial design of the artifact based on the conditions and features present during the conception of the artifact. It can be broken down into three subsections. These include the goals, strategies, and resources used to help support and

define the artifact under study. Six questions were designed to look at; how and why the DDT came into being, the resources and strategies used to create the DDT, as well as, the initial goals set for the DDT by the district's School Board and Superintendent.

Why Was the DDT Initiated?

The DDT was initiated to fill two primary purposes. The first was to inform the design and development of two new bridge schools for 4th and 5th grade students, also known as the "4-5s" within the district. The second was to aid in the communication of the district's vision for 21st-Century Learning and to begin actualizing the 21st-Century Strategic Plan. The following quote from the Superintendent of the district sums up this thinking:

> It was initiated because after engaging in a Strategic Planning process, most notably engaging the community in the conversation about "what is 21st-Century Learning", "how would we all define it," 21st-Century Learning became the meat and the content of this Strategic Plan. It became clear that we needed staff that were focused on it and that it would entail a huge amount of professional development, and a shift in thinking and the resources needed to get there. And so, partially because another tenet that we had was around ownership (engagement of staff across the board, as well as community involvement in the process, which would remain critical to the process), we came up with this idea of how about if, at least for just a couple of years, a group of people just focused on that? (personal communication, June 19, 2014)

In this quote from the Superintendent showcases how the district's strategic planning process connects to the design and initiation of the DDT. He went on to provide a basic description of the focus:

> Primarily teachers and administrators would be involved in these next steps. Most importantly, perhaps, they would be involved with the new 4-5 schools. They are brand-new and we don't know of other Grade 4-5 multi-age schools out there that are thinking about 21st-Century Learning. It just doesn't exist, so we realized we really needed a concentrated strategic effort on that. (personal communication, June 19, 2014)

The rest of his comments also clarify how the dual purpose of the DDT came to be. Of the 18 respondents who participated in the interviews, 12 reported that the DDT was initiated to support the development of the 4-5s and 12 reported that it was initiated to take the Strategic Plan and begin implementing the vision of 21st- Century Learning throughout the district. Eight of the participants articulated that the DDT had been initiated to accomplish both. Other themes that surfaced during analysis, indicated that almost half of the participants felt that the DDT had been initiated to address the need to "dig deeper" into teaching and learning. SLDL1 captured this thinking:

> So I think I get the sense it was designed with the idea that what we're trying to do is going to be very difficult and complex --to move an entire district around a specific way of learning, to create a climate that is in alignment with the Strategic Plan. That's a big thing to do. So it was put in place to find people that could kind of think through the problems that were going to be faced and to come up with solutions to the challenges. (personal communication, May 14, 2014)

Eight of the 18 respondents also reported that "curriculum," "project based learning (PBL)," and "new thinking strategies," "new teaching processes," and "design" were primary factors involved in the initiation of the DDT. Eight participants (two teachers, all four site administrators, and two district level administrators) spoke about the need for an "accordion process" that allowed for "ownership" and involvement of the staff throughout the strategic planning implementation process. Discussed in more detail later on in this chapter, the accordion process refers to a communication approach used by leadership to acquire feedback and disseminate information to all levels of the system. For example, SLDL1 shared,

> I believe the design team was initiated to make sure that the process…was one that would bring all stakeholders and the staff on board in a logical and effective way. And also to think through kind of the big pictures on how to take the Strategic Plan and implement it in the school district, the practices, the procedures, and just to make it real. And so I think the idea of getting a design

> team together was to say, "This is our vision; let's figure out how to make it happen." (personal communication, May 14, 2014)

His comments helped to illustrate the accordion process referred to by members of the DDT.

Of note was the fact that seven participants (six Design Team teachers and one site level administrator/DDT Lead) mentioned that the priorities for initiating the DDT had "sifted" or "changed" from the time it was first discussed in the spring of 2013 to the first DDT meeting in the Summer of 2013. DDTT2 illustrated this feeling that a shift had occurred by stating, "I was under the impression that there was going to be a large focus on the 4th and 5th grade schools and the curriculum…And it was amazing, and it was a wonderful experience. It was quite different from what I thought it was going to be" (personal communication, May 30, 2014). DDTT1 expressed, "At least for those of us who applied to be on it, we thought it was really going to be more centered on the 4-5s" (personal communication, May 27, 2014). SLDL4 described the reasoning for that shift:

> Initially it was created to support the new configuration of the district, which include two 4-5 schools, fourth and fifth-grade schools. And the very best thinking, initially, was that the 4-5 schools would be made up of teachers who are sort of the innovation engine for the district. So we thought initially that the design team would be helping to get this new configured school up and running in conjunction with the Strategic Plan that we were creating at the time. And then as we completed the Strategic Plan, we realized that the design team needed to be more inclusive of all of the grade levels and that our initial thought of having the 4-5s be the innovation engine was a flawed idea and it really needed to lift the whole district up. (personal communication, June 23, 2014)

Not only is the shift in priorities illustrated by this quote; but, the DDT as an "innovative engine" for the district also comes into focus.

Overall, respondents indicated that the DDT was initiated to operationalize the Strategic Plan and to support the design of the 4-5s. Looking at the differences in

reporting on "why the DDT was initiated," responses seemed to indicate that not all participants were clear on the reasoning. In addition, not all members were aware that a shift in priorities had occurred prior to joining up for the 2013-14 school year.

Who Were/Are the Designers?

When asked who the designers of the DDT had been, most participants cited the district's Director of Learning & Technology (15 out of 18), and one of the part-time site administrator/part-time Design Team Leads (15 out of 18). Eleven participants indicated that the Superintendent had been involved in the design and initiation of the DDT. Another five believed the district's Assistant Superintendent to have been involved in the DDT's conception. Of note is the fact that all district level and site level administrators recognized the District Superintendent as being and integral part of the conceptualization and design of the DDT. In contrast, only five of the eleven teachers interviewed mentioned the Superintended as one of the original designers. Two out of eighteen participants mentioned a second part-time site administrator/part-time Design Team Lead as having a hand in the creation of the DDT. Finally, another two suggested that the entire Administrative Counsel (all site principals and assistant principals) had played a role in the original design and conception of the DDT.

What Resources Were Drawn Upon to Design the DDT?

Several themes surfaced from the responses to this question. The most commonly cited resources by participants were time, funding, professional development, human resources, and partnerships. The following summation offered by SLDL1 illustrates this well:

> Well, human resources. They dedicated some staff positions to it, so I think that's a huge commitment there. And then resources just in that what was being rolled

> out, in terms of the district perspective, there were resources there to bring in trainings as needed. But a lot of that is in alignment with the Common Core, too. But I think the thinking was just to put the human capital there and then to give us the ability to create. Also, partnerships like Buck, Ed Leader 21 conferences, things like that. (personal communication, May 14, 2014)

Two of the five commonly cited types of resources were also considered as limitations and therefore possible constraints to the function of the DDT; some respondents described time and money as limited resources. This will be explored further in the problem-solving portion of the artifact analysis.

time. Of the eighteen participants interviewed, ten referred to time as a resource. Time was discussed in terms of "release time for DDT Leads and DDT teachers" and in terms of the "monthly meetings" that the DDT members attended. Another common example of time as a resource was in regards to "freeing up in-house leadership" to be able to focus on guiding and supporting the DDT at their individual sites.

As discussed above, time also was explicitly cited by some of the DDT as being a scarce resource. Some of the team did not feel that time was adequately provided to support the team's development. In that respect, time was viewed as more of a limitation.

funding. Ten interviewees felt that money had been a resource used for the design of the DDT. This was described as "district money that was earmarked to finance part of the DDT." The Assistant Superintendent stated,

> In terms of fiscal support, we looked at our budget and really felt like we needed to allocate funds towards the Design Team. So I was working with the team to say, 'Okay, [Director of Finance], where do we get that money from?' 'What do I shift in terms of budgeting to cover that?' Because we knew that we would need to pay the teachers and that they were going to be doing extra work that they needed to be compensated for. And we knew that there was going to be training time. (personal communication, May 19, 2014)

The Superintendent added, “And then we did apply LCAP funding, or LCAP accountability monies, that were there to help transition us; we applied those towards this effort, and had a hefty professional development budget” (personal communication, June 19, 2014). The Superintendent is referring to funds allocated through the new state funding model for education known as the district’s Local Control and Accountability Plan or LCAP.

Other ways in which money was described as a resource included the financing of DDT lead positions, stipends for teachers, and financial allocations to partnerships with the Buck Institute and Ed Leadership 21. In addition, the financial investment involved in training the DDT in project-based learning, investment in technology, and planning days were among the reports. According to respondents, material stipends for DDT teachers were also provided in the amount of two hundred and fifty dollars. Finally, there was a sizable financial investment made toward training the DDT teachers for a week during the Summer 2013 at a “Summer Institute.” When asked about resources, SLDL4 cited a few of these different examples:

> We had monthly meetings with them, which we paid them for. We allocated about $250 each for resources if they needed to purchase things in their classrooms. We also invested in some technology and most of the schools were set, but if they needed more we purchased it. And then there was, you know, if we could -- some of them would go to field trips. Not everybody did, but we had that. We had planning days. There was a lot that was going on. (personal communication, June 23, 2014)

Similar to time, money was also described as a “limited” resource. It was considered by two district level administrators, three site level administrators, and one teacher to be a constraint that acted as a limitation to the function of the DDT.

professional development (PD). Fundamental to the continuous growth of an educator's practice, professional development in education can be considered a critical resource. Whether it is through "in-house" trainings offered by district employees or external trainings, provided by partners in education, teachers and administrators can gain access to the newest pedagogy and best practices of the profession. Professional development opportunities allow educators to stay current in their practice or to specialize in areas of expertise. Fourteen of the respondents regarded professional development as resource drawn upon to design the DDT. Interviewees described three main professional development opportunities: the Summer Institute, project-based learning trainings through the Buck Institute, and mini trainings around mindsets and educational technology. When talking about the Summer Institute for DDT teachers as a resource, SLDL4 described it as follows:

> We had a weeklong summer training. And we brought in fabulous people. We had some technology experts; we had some one from 'Mindset Works' supporting growth mindset. We talked about project-based learning, you know, gave them an overview of that. We talked about formative assessment, we talked about academic conversations, and we talked about a lot of different things and just collaborative skills that would need to happen in the classroom. So they were all sort of laying the groundwork that they were going to need to consider in a classroom. (personal communication, June 23, 2014)

Training for both the DDT teachers in project-based learning was also reported as an important resource. DDTT1 commented, "The PBL training, definitely, that was a big piece of the resource to get us trained, and to have us be a part of that" (personal communication, May 27, 2014).

In addition, the Assistant Superintendent had this to say about the partnership with Buck Institute:

> A lot of thought went into, "Was Buck the right group to go with"? And did, it follow in alignment with us? Because one of the things that we find is that a lot of people out there want to work with the district but it has to fit what our vision is. It has to fit with where we're headed. And it continues to not be a cheap endeavor, but it's one that we knew was worth it because of how the common core is, and that's why we focused on it. (personal communication, May 19, 2014)

Evident in her comment is the relevance of Buck's partnership and how their version of PBL training connects to the district's vision. Other professional development opportunities offered to the DDT teachers included a focus on how to use and implement educational technologies in the classroom. The technology-infused professional development was offered during the Summer Institute and at DDT meeting throughout the 2013-14 school year.

human resources. Members of the DDT offered human resources as a primary component of the Team's development and functionality. According to the Superintendent, "the resources have primarily been people…the combination of the leaders of the D13 and the teachers themselves that made up that team" (personal communication, June 19, 2014). Most teachers and administrators at both the site and district level defined human resources as the administrative time that was "freed up," paid teacher time, as well as a few "in-house" positions.

The dedication of staff positions and in-house leadership was cited most frequently. SLDL4 stated, "well, half of my time certainly went into it. But I was doing more than the design team at the district office. I mean, it was really launching the whole Strategic Plan" (personal communication, June 23, 2014). DDT members believed that the in-house leadership modeled some of the work that needed to be done and this was viewed as a resource for moving the DDT forward.

Teacher leadership also was viewed as paramount to the DDT's development. When asked about what resources were drawn upon to create the DDT, SLDL2 commented,

> Definitely talent. I think pulling in our teacher leaders who already have a lot of energy and expertise for moving these ideas forward. Just coming in that first week and seeing the teacher design team it was clear. You could tell there was just really a lot of good energy in that room. So I think that was a really wise resource to pull from in terms of people. (personal communication, June 18, 2014)

Administration at both the site level and district level viewed teacher talent and their input as an important resource. The Assistant Superintendent had this to say, "so most of the stuff we've done to-date, we've tried to really have the teachers be a part of that process. …They're the ones that are in the trenches doing it" (personal communication, May 19, 2014). She went on to add, "and so we wanted to make sure that we had a cohesive team that was committed to looking at those components and helping us to move things forward" (personal communication, May 19, 2014). In general, thirteen of the eighteen members of the DDT interviewed, felt that human resources had been a key resource for the design of the DDT.

partnerships. The third most often cited resource was partnerships. Partnerships with the Buck Institute as well as EdModo were regarded as key resources for the development of the DDT. Also mentioned was the partnership with Ed Leader 21 and the many different experts that were brought in to expose the DDT to different "cutting edge" ideas. Examples included a key speaker from Mindset Works and a consultant from the D.School at Stanford University. The DDT Leads also invited some guest speakers to come and present to the D13 in order to "vet" potential partnerships and investments in educational technologies. DDTT1 shared her perspective on the guest speakers:

> I think a lot of the guest speakers that they brought in the week that we had the Institute were a lot of great resources that many of us got on board with right away, and have been using all year. I know there was Blendspace and EdModo, there were lots of other things, too. Twitter, and other things that we learned about. I think folks are using more of some things than others, and different things. (personal communication, May 27, 2014)

Members of the DDT reported that throughout the year, they would have architects and other representatives from startup companies and educational technology companies come in to present information and ideas. DDT members expressed that this was a highly valued resource and that they were used as a sort of "think tank" for the district.

In addition to the different experts and representatives that were used as resources for the DDT, district leadership referenced the benefit of collaborating with a consultant who had "first hand experience in working to create 21st-Century Learning environments and schools." According to the Director of Learning and Technology, this consultant supported district level leadership in the translation of the district's Strategic Plan into an implementation plan. Other resources such as technology, site visits, and field trips were described as resources drawn upon to design the DDT; however, they were cited less frequently.

Overall, most DDT members identified professional development as the resource most often drawn upon to design the DDT (14/18 interviewees). Human resources were the second most referenced resources (13/18 interviewees). Partnerships with outside organizations were also verified by twelve of the DDT members interviewed. Money (11/18 respondents) and time (10/18 respondents) also surfaced.

What Strategies Were Used to Design the DDT?

Five primary strategies were identified as having been important to the design and function of the DDT, during the 2013-14 school year. Communication, the use of teacher leadership, the district's Year One Implementation Plan, the type of training opportunities provided for the DDT teachers (D13), and the monthly DDT meeting structure, were all themes that developed out of the data analyzed.

communication using the accordion model. The "accordion model" of communication was viewed as an important strategy for the design of the DDT. The District Superintendent described this model by saying, "we have the strategies internal to the district, our accordion model, where anything we do, we have groups at the school sites--teacher groups, student groups, and staff groups--that are engaging in conversations and going back and forth with me and with the School Board" (personal communication, June 19, 2014). Used as a communication model, the accordion process was said to be in place at all levels of the school district. Platforms and forums were designed to offer opportunity for all constituents (parents/guardians, other community members, educators, and students) to provide feedback. As a result of using this system, district level leadership transmitted and received feedback from all levels of within the district. Included in this model was a collaborative problem-solving approach. DDT leadership utilized the feedback received from the different levels within the system to make decisions around prioritizing and exploring different initiatives. SLDL4 described this benefit of the approach as follows:

> So I think it was critical to not have just one person leading the whole charge. Having it kind of dispersed amongst many to get really good thinking on these different areas was terrific. Some people that are a lot more linear may have felt uncomfortable with that, but we really had a better outcome and we all

> communicated really well with each other. (personal communication, June 23, 2014)

Two aspects of this model surfaced as important to the design of the DDT. The first was open and continuous dialog between DDT members and the second was the general communication strategy used by the district to communicate with constituents. Considered an important feature of the DDT, the feedback loop component is discussed later on in the section titled "What Features Are Built Into the DDT"*?*

Open conversations between teachers and administration were viewed as an important strategy from the teacher side of the DDT. For example, DDTT3 commented, "They were very open and communicated well" (personal communication, June 9, 2014). DDTT6 described this further: "And it would go back and forth; so there was a dialogue, an openness to conversation--I guess that's part of the strategy--and hearing out in a forum that would provide that conversation back and forth between administrators and supporting staff" (personal communication, June 18, 2014). This part of the accordion process was further illustrated by SLDL4:

> How the design team works is really kind of an accordion model…we keep a running agenda of some of the things that we need to get accomplished. …As we're designing these new schools, there's also design of project-based learning curriculum, tech-infused learning. It's coming together, we're getting our work in order, we're going out and then connecting with teachers through committees and work like that, and then bringing information back--being the conduit and also the work force. (personal communication, May 14, 2014)

This highlights an aspect that came out of the interviews with both the D13 and the DDT leadership, which was the practice of involving all constituents in the communication process. The Superintendent commented, "It seems to me that our core strategies at this point have to do with the hope of constantly surveying the constituents, including students, in asking questions about how things are working, and using those two

responses to reshape our thinking" (personal communication, June 19, 2014). He went on to warn that this type of communication strategy can be viewed as a "messy process." Some constituents would prefer if we would "just make a decision, write it out, and move forward." He continued, "And our strategy has been to constantly push back and say, before we move forward, we're going to make sure that all the constituents have weighed in, and we're moving forward together--with the belief that ultimately you move a lot faster that way" (personal communication, June 19, 2014).

In this form, the accordion model took the shape of parent and community events offered by the district around 21st-Century Learning and the work that the DDT was doing. Some of this type of communication began before the DDT was even assembled and while the Strategic Plan was still being developed. For example, the Director of Learning and Technology reflected, "we had these public forums that were prior to the Strategic Plan and laid some of the groundwork for the kinds of approaches to learning. We had discussions about 21st-Century Learning Skills. There were three. They were in the spring when I first came" (personal communication, May 13, 2014). These comments reflect the on-going communication between district leadership and constituents.

More recently, "Parent Education Nights" were offered throughout the first year of the DDT and Strategic Plan roll out. During these sessions, topics like Common Core State Standards, Smarter Balance Assessments and project-based learning (PBL), were covered. It was an opportunity for the parent community to deepen their understanding of what 21st-Century Learning is and to offer feedback on what it looks like within the district's schools. Furthermore, two bus tours were designed in order to get parents into

classrooms at each site and to see PBL in action. The Superintendent summed this piece of the communication model up nicely*:*

> And we did put out this series at the same time for parents to get engaged; we did the bus tours, and had several parent involvement engagement nights, where we dug deeper into, 'what is 21st-Century Learning and what's going on with the sites' -- with a strong focus on project-based learning. (personal communication, June 19, 2014)

Overall, members of the DDT at every level valued the accordion model as a strategy used in the design and function of the DDT.

use of teacher leadership. Recognized as another key strategy by all levels of the DDT membership was teacher representation from each school site. It seemed to be considered a requirement, by both leadership and teachers, that the people selected to join the DDT were all "folks who wanted to do the work" or be "early adopters." Further, the team felt that this group needed to be made up of teachers who were willing to "spread new thinking and influence other teachers." The Director of Learning and Technology commented,

> The strategy would be that, by having representation from every campus with teachers who would go through our summer institute and then follow up with project-based learning, would help spread the reconsideration of learning environments and approaches to learning that we wanted to have. That would then be authenticated with the feedback loop of teachers letting us know how things are going. ...And then communicate with the idea that they would influence other teachers and cultures as part of that endeavor, and also be the seed to get it all started. (personal communication, May 13, 2014)

This was reiterated by the Assistant Superintendent who added, "We were looking for cross-grade level and cross-school representation in the end. And that was because we wanted to be able to have sparks at all of our schools that would allow it to grow organically" (personal communication, May 19, 2014).

In addition, D13 teachers also identified teacher leadership as a strategy. For example, DDTT6 noted, “The strategy I saw was, get the early adopters--people that were interested in taking on change, because change is difficult. So hand it to people who are interested in making that happen. And supporting people as best they could to take on that yoke” (personal communication, June 18, 2014).

implementation plan. Considered a way to begin “operationalizing the district’s Strategic Plan” both DDT leadership and D13 teachers mentioned the use of the year one Implementation Plan as a strategy. SLDL2 explained it from her lens:

> Definitely the Implementation Plan. There is this whole tight-loose thing. It's tight in terms of everyone knows what we're trying to do and accomplish and what the outcomes need to be, but how we get there--it felt like there was a lot of autonomy in how we prioritized within the Implementation Plan where the focus areas would be. (personal communication, June 18, 2014)

This was regarded as an important strategy for site leadership as it allowed for flexibility at the school sites. SLDL2 continued, “One strategy along those lines was we were all asked to have some fall event where teachers re-read the Strategic Plan and the Implementation Plan. And we had to develop our own professional development plans and calendar of meetings. There had to be ownership of how are we going to tackle this” (personal communication, June 18, 2014)? She added, “I mean this is the first time I've ever seen a strategic plan actually filter down into the classroom” (personal communication, June 18, 2014).

DDT teachers had a similar take on the Implementation Plan as a strategy. DDTT9 commented, “So I think the implementation plan is key. They wrote out this plan and specifically the steps that we would want to accomplish in year one, year two, year three. So we constantly are talking about those and discussing how to roll them out

(personal communication, June 26, 2014)". DDT members at every level viewed the Implementation Plan as a road map for the work that needed to be done and as a tool for translating the targets named in the district's Strategic Plan into action steps.

targeted training. As a result of the Implementation Plan a professional development plan was developed. The focus for the 2013-14 school year became, technology-infused instruction, PBL, and the 5Cs, which according to members of the DDT included elements of design thinking and growth mindsets. The Summer Institute, the PBL trainings, and even the DDT meetings offered platforms for the training around these initiatives. DDTT3 teacher described this: "So there was a focus on project-based learning, they were teaching us how to write the driving question and how to structure project-based learning experience for the students (personal communication, June 9, 2014)". She went on to say, "and then other strategies were just using EdModo with our classroom or different -- Just various strategies to integrate technology in the classroom" (personal communication, June 9, 2014). Further, when asked about strategies used to design the DDT, DDTT6 stated, "I guess put the words, 'walk the walk, talk the talk'"(personal communication, June 18, 2014). She went on to explain that DDT leadership molded the different strategies and integrated them into the design of DDT meetings:

> Design theory was integrated into our meetings, same with project-based learning. Constructivism would also be dovetailed into our meetings. Those are all strategies. So they would be modeling them, we would be modeling them, practicing them, identifying; so it was a metacognitive experience where it was like, "Here, we're doing our authentic presentation now." "Here is our driving question." (personal communication, June 18, 2014)

Finally, educational technology or "tech-infused" instruction was the other consistent theme that surfaced out of the PD offered to the DDT. Though there was deliberate effort

on the part of the DDT Leads to deemphasize this as an initiative, the hope was that teachers would "grab on" to what resonated with them.

monthly meetings. This was an interesting theme because it surfaced as both a strategy and a feature used in the design of the DDT. Most of the D13 teachers that valued the DDT meetings as a strategy, referenced procedures and things like meeting protocols. DDTT5 explained, "So yes, I mean, agendas were set and norms were established. You know, all of that type of protocol was always part of every meeting, everywhere from the week-long institute last year to the meetings we would have throughout the year" (personal communication, June 10, 2014). Collaboration was another aspect of the DDT meetings that was reported as a strategy. DDT teachers viewed collaboration with colleagues from the same school and other schools within the district as a strategy. DDTT1 illustrated this by stating, "I guess the ability to work with someone. That definitely helps. I sort of look at that as a strategy" (personal communication, May 27, 2014). DDTT3 illustrated this further:

> I loved the Design Team meeting in October, because they gave us time to actually work on our PBLs, which was extremely beneficial. And then there were a couple other meetings that -- I guess that was more like a workshop. …But I guess the most beneficial was the actual workshop to collaborate with your co-workers, ask questions and get it done. And then you felt like you had the feedback and support that you needed. (personal communication, June 9, 2014)

The use of the meetings for a type of "studio time" was viewed by many of the D13 to be a successful strategy.

"Temperature checks" were another benefit attributed to the DDT meetings. DDTT11 commented, "they would check in with us in the monthly meetings to see how things were going, kind of take a temperature check about how stressed we all were" (personal communication, July 7, 2014). SLDL4 described this process as follows:

> So a lot of our meetings then turned to informational segments, but also then a lot of problem solving and time for them to talk with each other because they were trying to figure out how to manage the shifts that they were making. And I'd have to say that a large focus, then, turned towards project-based learning very quickly, once they were trained on project-based learning. So the work that we were hoping to go to, the deeper work, was harder to do. These guys were also the leaders; they were taking on way too much in the district. So it turned into kind of an approach to help them manage the different things that they were involved in as well. (personal communication, June 23, 2014)

DDT Leads were available to teachers and adjusted meeting agendas based on their feedback. Many on the DDT also viewed this iterative process to the work as an important strategy.

Overall, eleven DDT members mentioned the feedback loop or accordion process as a key strategy. Five talked about the use of teacher leadership. Another five spoke about the Implementation Plan as a strategy. Nine members regarded the professional development opportunities provided to DDT members as a strategy because of the type of initiatives the group was exposed to. Finally, four members of the DDT felt that the monthly DDT meetings had been a supportive strategy in terms of the design of the DDT.

What Features Are Built Into the DDT?

Five features were identified as having been specially designed into the DDT artifact. These included the shared vision and leadership approach of administration, the weeklong Summer Intensive professional development, monthly DDT meetings, a feedback system, as well as the district's partnership with the Buck Institute.

shared vision. DDT members at the district and site level valued a shared vision of leadership and a shared style of leadership. DDT Leads attributed the alignment of vision for the organization to the district's newly adopted Strategic Plan. The Director of Learning and Technology sums this up nicely: "I think the Strategic Plan is one thing that

really has helped everything we do because we're informed by it, driven by it, and we all refer to it" (personal communication, May 13, 2014). DDT Leads at the site level felt that the Implementation Plan was directly connected to the decision making processed of the DDT.

DDT Leads reported that the other component to this was the collaborative nature of the leadership at both the district and site level. For example, SLDL1 described it as "I would say it's a very flat hierarchal setup, so there's not a kind of a top-down approach. So everybody is looked at and contributing on an equal basis. So I think that was designed in" (personal communication, May 14, 2014). This type of leadership approach was also described by DDTT9: "That's what I find exciting in this administration, instead of it being just kind of top down, they were trying to get feedback, and they weren't just making decisions" (personal communication, June 26, 2014). She added, "And it feels more open and transparent and more like, 'let's think of it this way'. And I think that's unique. I think, in a lot of districts, you don't have that" (personal communication, June 26, 2014). Along these lines, leadership viewed the DDT as an example of this type of approach. For instance, SLDL1 reflected,

> Well, the one thing that really has struck me is just the transparency kind of within the entire district structure and how everybody sees themselves as learners. And there's not a lot of ego and things like that involved, which is very refreshing. And so I think the design team is, in a degree, kind of a microcosm of what the district is, if that were the specific focus. (personal communication, May 14, 2014)

Of note here is the fact that while many on the DDT leaders reported shared vision, transparence, and the opportunity to provide feedback to leadership as a feature of the DDT, these were also viewed as challenges or areas in which a breakdown in

communication occurred. This will be discussed further in the problem-solving section of this artifact analysis.

meeting structures. Meetings were commonly cited by members of the DDT as a feature of the Design Team. The DDT meetings took two shapes throughout the first year. There were weekly, hour-long meetings for DDT Leads and monthly 90-minute, meetings for the whole DDT. Time for these meetings was invested and scheduled upfront. The district's Assistant Superintendent noted,

> I think the other thing that was built in terms of structure is that we realized it's not a "one-stop shop," "you're done" kind of thing. So there was structure built in for ongoing time throughout the year. So that time was scheduled. Everybody knew about it upfront. And there was supports built into the system as well for the design team so that the administration was there to support the teachers. (personal communication, May 19, 2014)

The built-in administrative support that she mentioned also included site visits and tech support by DDT Leads. They made themselves available to support the D13 as those teachers began applying what they were learning in the classroom.

DDT members identified that these monthly meetings had acted as an important platform for piloting and vetting different technologies and ideas throughout this first year. Exposed to potential partnerships and different directions, teacher feedback was asked for, considered, and used to inform decisions made by site and district level leadership. SLDL4 illustrated this piece as follows:

> We would bring to them things that we were considering quite a bit, you know, different groups that we wanted to work with, we would vet them with the design team. That was really important. And we also brought architectural plans and talked about the vision for the 4-5 school in particular. And so we would get some feedback. (personal communication, June 23, 2014)

Another key feature offered as a result of the DDT meetings was the freedom for D13 teachers to experiment with new ways of teaching and instructing. Moreover, teachers

valued that they had "voice and choice" or the ability to select what things to experiment with. When asked about features that contributed to the design of the DDT, DDTT1 observed,

> I guess being exposed to certain things, and then being encouraged to just go back, and try it. I felt like there was a lot of freedom in trying things, and not worrying so much how it's going to turn out or just giving it a try. Then we were also given a lot of permission to let some things go so that you can try something out so that was okay, and you could try to be more forgiving of yourself. (personal communication, May 27, 2014)

In general, 13 of the 18 DDT members interviewed offered the monthly DDT meetings as a feature of the DDT. Of those 13 all but three were D13 teachers. Of the four administrators that identified the monthly DDT meetings as a feature of the DDT, two were the original site level administrators/DDT Leads as well as the Director of Learning and Technology and the Assistant Superintendent for the district.

summer intensive. District level leadership viewed the weeklong professional development experience, called the Summer Intensive, as a main feature of the DDT. The DDT leadership at both the site level and district level reported that this professional opportunity "provided significant context for the team." The district's Director of Learning and Technology commented, "well, one, we decided to have a summer institute. It was really important that we spent that week together. We could really touch on those themes, and it was an opportunity to bond and bring people together and sort of consider what we might want to try out there" (personal communication, May 13, 2014). This week allowed DDT Leads to begin modeling the work to be done. In addition, the Summer Intensive is credited among the leadership as having generated excitement and positive momentum for the team. The Assistant Superintendent communicated this well:

> They were talking about what they were moving towards. They were modeling--I guess is the way I want to say it. They built in massive quantities of collaboration time, and they brought in expert speakers. They had input time and then collaboration time and communication time. I think that was one of the key components. And they were very careful about the order of how the information was disseminated so that it had a logical flow. They did a beautiful job of orchestrating that week. (personal communication, May 19, 2014)

Her comments help to illustrate why district leadership valued this weeklong professional development opportunity as a strategic aspect of the DDT's inception. Interestingly, all district level leadership reported the Summer Intensive as a feature of the DDT; however, site level leadership and teachers either did not list it or describe it as part of the professional development plan for the year. Only one teacher identified it as a standalone feature.

feedback system. Another feature described by members of the DDT was the feedback system in place. This system was the result of the accordion model described under the strategies subsection of Problem Setting portion of this artifact analysis. The feedback system was believed to be a central feature of the DDT and was explicitly referred to by more than half of the team at some point during their interviews. Teachers spoke about how they would be asked to complete surveys and were requested to provide feedback at meetings. DDTT8 explained, "They sent out emails with information about things that they were finding and solicited comments and feedback from us, also wanting us to share things that were going on for us in the work in our classrooms" (personal communication, June 23, 2014).

Part of this process included site observations conducted by DDT Leads. Teachers and administrators felt that this was an important component of this feedback process. It provided a feedback loop for how PBL and technology-infused instruction and other year

one district initiatives were translating into the classroom practices of the D13. For example, DDTT1 observed, “Well, I think in the beginning having them visit the schools. That was definitely a plus, and a positive. So I liked that part, and making themselves available to come to the site. That seemed to wane as we all get busier, and then I felt like it was harder” (personal communication, May 27, 2014).

Another component of the feedback system was the presentation of information and feedback to the board. At times teachers from the DDT accompanied the DDT Leads and shared out on the DDT work at School Board meetings. During other times, the DDT Leads presented on behalf of the team. The Director of and Learning and Technology explained,

> Reporting to the board, having that as part of the implementation plan, so in the implementation plan if you go through it, a lot of the assignments are the design team, and that would be the administrative folks would be responsible. So we had sort of shared responsibility, but it was the vehicle for trying to realize the implementation, which was pretty ambitious because unlike many strategic plans--this one is definitely in action, so that was critical. (personal communication, May 13, 2014)

This process of asking for, receiving, and responding to feedback has continued through the end of year one into year two.

partnership with buck institute. Project-based learning as an approach to teaching students was another valued feature of the DDT. The Director of Learning and Technology talked about how an important element “was to really make our commitment to project-based learning.” This decision triggered the partnership with the Buck Institute. He explained this feature meant “having a program to train all teachers but then having a Design Team to sort of be the ones we're really in touch with to see how that would support an active classroom” (personal communication, May 13, 2014). The

Superintendent further explained the thinking behind this: “The idea was that the Design Team 13 would develop curriculum--project-based learning in particular, technology-infused--and then would be sharing those units. They would build units; they would share those units” (personal communication, June 19, 2014). The D13 became some of the first teachers in the district to be trained by the Buck Institute in PBL.

Of note is the fact that the DDT and district level leadership decided to open up the PBL training to a voluntary group of teachers from each school site. As a result, a PBL 101 cohort was developed. The 30 teachers, who participated in the PBL trainings, attended a two-day training and then two half-day follow up trainings. The reasoning behind this move was to continue spreading the excitement of PBL across the district an even faster rate and to help develop an even larger PBL project repository for the district. DDT teachers and PBL101 Cohort teachers were asked to share out one of their PBL projects in May of 2014 at a district sponsored “Ice Cream Social.” Overall, eleven of the 18 DDT members interviewed talked about PBL and the district’s partnership with the Buck Institute as being an important feature, designed into the DDT.

What Are the Current Goal(s) Set For the DDT by the Designers?

The DDT identified three main goals. These included supporting the implementation of the district’s Strategic Plan, the design and planning of the two new fourth- and fifth- grade bridge schools, and the use of the DDT to explore new and innovative approaches to teaching and learning. The Director of Learning and Technology succinctly describes these goals as, “The goals? One, is to inform the design of learning environments, the new 4-5 schools; two, to implement the Strategic Plan; and

three, kind of to serve as a test bed for innovation" (personal communication, May 13, 2014).

Fourteen of the participants interviewed identified an original goal for the DDT as being responsible for implementing the Strategic Plan through the Implementation Plan. Fourteen interviewees also reported that a goal for the 2013-14 school year was the role out of PBL within the district. Five of the participants went on to describe that a goal for the DDT was to "serve as a test bed for innovation." Tied to this, seven participants explicitly stated that a goal was to allow for teacher input into the change process and to solicit teacher feedback. Two of those seven DDT members also reported the need to improve the accordion process moving forward.

Eight of the respondents interviewed communicated that one of the goals for the DDT was to inform the learning environments of the new "4-5s". The Assistant Superintendent explained, "That was our original plan, to focus on the "4-5s". When we first talked about the design team, it was "4-5". But that's where things shifted and we realized, no, we had to look at transformation across the board (personal communication, May 19, 2014). Even though this shift in priorities had occurred, 12 of the participants interviewed described this goal as just "coming in to focus" or "coming online" for the 2014-15 school year. The Director of Learning and Technology illustrated this notion:

> I think the 4-5 is coming into greater focus because it's more imminent. So probably we're going to have to split into smaller groups to be more focused, given next year. So that will be a change, but it will continue on. I think we'll continue with this idea of a test bed for innovation, and we'll definitely be involved with implementing the Strategic Plan. (personal communication, May 13, 2014)

This was generally a shared sentiment by members of the DDT. The next section captures the thinking behind the shift in roles of the DDT.

Have You Seen or Do You See the Role of the DDT Changing?

When asked about the goals or the role of the DDT changing, SLDL1 had an interesting way of considering this question:

> When I first came on, I thought it was going to be largely around designing the 4-5 schools. And what I've seen is it's really a lot more around staff development, curriculum and instruction piece that the district is undertaking. …really I think most of the work that's been done has been district-wide as opposed to let's figure out what these schools are going to look like. …The new learning practices are happening and we haven't even broken ground on the schools yet. (personal communication, May 14, 2014)

His comments help to illustrate the shared perception that a shift in the role of the DDT had occurred. His view also reflected the notion that the work of DDT is presenting on a district-wide level. Additionally, six DDT members in total expressed that the role of the DDT was changing because it was becoming more focused. Several new characteristics were referenced to defend this thinking. The most frequent changes cited were the need for "focused conversations" and the impending split of the DDT into three smaller groups. Most of DDT members referred to Pre K-3, 4-5, and 6-8 grade level design team configurations.

When asked whether the current role for the DDT has changed, the Superintendent replied, "Yeah, it has definitely evolved. In terms of the goals, I would say we absolutely hit our goals, and we hit them early on. So that's where we exceeded, and therefore quickly went to, 'so what should this Design Team thing be in the future? How does it adapt to what our current needs are'" (personal communication, June 19, 2014)? He went on to express his excitement for the transformation of the DDT:

> And I'm really looking forward to next year, because the new model has us having three Design Teams--one that is focused on preschool to 3, one that is 4-5 still, and another that is 6-8--which is critical, because that's the other thing that was going on during all this time: this forcing function of designing new schools. …So

> that leads us to now having three separate Design Teams that come together a few times in the year to talk about the whole district and what we can say about the design of our schools at every single level and how they're connected. But it also allows for us to build specifically the curriculum and exit outcomes at each of those levels. …I think it's going to take a much deeper dive into curriculum and instruction at those various levels, in terms of what we mean by 21st-Century Learning. (personal communication, June 19, 2014)

The Superintendent's comments capture the newest thinking for the configuration and goals of the DDT. Overall, nine of the interviewees felt that the DDT was now capable of "going deeper" into instruction and curriculum at all levels. Creating learning outcomes at all three of the aforementioned grade-level configurations was a common theme. Included in the discussion about the role or goals of the DDT changing were themes such as "support the capacity in the district for PBL" and "refine the accordion process in order to bring more teachers on board with the Strategic Plan and 21st-Century Learning" (personal communication, June 23, 2014; personal communication, June 18, 2014).

Somewhat related, nine of the DDT members interviewed suggested that the purpose/goals of the DDT were the same; however, the team was "now in transition" and "expanding." The Assistant Superintendent had an interesting way of explaining this evolution of the DDT's design:

> I think as we look at everything that we're doing, it becomes iterative. And based on what we learned from before, "how is it shifting?" So now what we're looking at is, I don't think we're going to have a design team moving forward. We're looking more at trying to do smaller subgroups of 21st-Century Learning kinds of groups. (personal communication, May 19, 2014)

This view of the Assistant Superintendent helps to illustrate the flexibility and the iterative nature of the DDT's design. Reflecting upon this new DDT configuration for the 2014-15 school year, a site level administrator/DDT Lead added, "there's sort of an under angle to all of this, too, that when you're going through change, when you select a design

process it's because you're trying to establish a culture of innovation also" (personal communication, June 18, 2014). During the first meeting of the DDT for the 2014-15 school year, the changes described above were observed.

Problem Solving

The second part of the DCAM model, known as problem solving, includes an investigation into activities that the DDT has engaged in to address the problem of implementing 21st- Century Learning within the district as well as the affordances and constraints that impacted the work of the DDT within the district. Four questions and three follow-up questions were used to gather data from the DDT members who participated in the interview process.

Affordances

Affordances are entities within the school environment that helped the school implement a school reform artifact such as a protocol, program or procedure. Affordance that were perceived to have supported the DDT in achieving its goal(s) and the resulting benefits were investigated using the following questions:

- What feature(s) within the current organizational structure of the school district have helped to support the DDT in achieving its goal(s)?
- What has been beneficial or positive about being a part of the DDT or working with the DDT (goals achieved, lessons learned, problems solved)?

The feature most commonly cited was the shared vision and the leadership of DDT members. Leadership exhibited by DDT members at all levels was referenced. This theme also included the recognition of a clear vision for the district resulting from the

Strategic Plan. Additionally, the feedback loop, which is part of the accordion process, was cited as a supportive feature that aided the DDT in achieving its goals.

shared vision and leadership. Thirteen members of the DDT considered the leadership structures as one of the most supportive structures in place to support the work of DDT. Examples of this included references to the Superintendent's vision, the Strategic Plan, the leadership exhibited by the DDT Leads in general, and the feeling that there was support from leadership at all levels (board, site, and district). Teacher leadership and the structures in place to support it were also discussed.

When talking about the district's vision for 21st-Century Learning as a supportive feature for the DDT, SLDL1 had this to say:

> The Strategic Plan lays it all out. So I think the Strategic Plan, the vision support from the Superintendent all heading in that same direction makes it easy to say, "This is where we're headed." There's not a lot of questions about what it is that's important, "what do we value." And I don't feel like there are a lot of roadblocks coming from the board because this is where they want to go. I feel like we're working to realize that vision. ...I think that's what's helped make it effective. (personal communication, May 14, 2014)

These comments help to illustrate how the Superintendent's vision was supported and aligned to the School Board. Along these lines of leadership, the district's Strategic Plan and Implementation plan also were referenced by members at all levels as being an important structures in place to support the work of the DDT.

The leadership exhibited by DDT Leads and the TOSA was also viewed as a supportive feature within the theme of Shared Vision. For example, the Superintendent shared,

> Our leadership and the attitude of the DDT Leads and the Teacher on Special Assignment--that group of admin folks that are making that team happen, and the way they've engaged so sincerely with the participants. I think, in shifting how we're doing something, really reflecting on what they're hearing from teachers,

> and putting forth new ideas and new ways of moving forward. I just think it's been just huge. (personal communication, June 19, 2014)

His comments emphasize how the leadership style of the DDT Leads supported the Team's work through the use of open communication. Having made a similar observation, the Director of Teaching and Learning added,

> And I would attribute it to the tight relationships between the district office and the principals, really helps a lot, because it's not like things are being delivered, at least from my point of view. It seems like there's real dialog, which I don't know if you see in schools. (personal communication, May 13, 2014)

This thinking also illustrates the value placed on open communication as an approach within the leadership. Closely connected to this approach, eight members of the DDT also identified the collaborative aspect of the work as a supportive feature. It was explained as a compliment to the communication style and leadership approached described earlier. For example, SLDL4 had this to say about collaboration as a supportive feature:

> I think it was critical to not have just one person leading the whole charge. Having it kind of dispersed amongst many to get really good thinking on these different areas was terrific. Some people that are a lot more linear may have felt uncomfortable with that, but we really had a better outcome and we all communicated really well with each other. (personal communication, June 23, 2014)

When asked about supportive features, the Assistant Superintendent added, "I think that the collaboration component, I can't underestimate that. And then I think that coupled with the implementation plan that we had written up, which is aligned with this Strategic Plan" (personal communication, May 19, 2014). As a structure, DDT leadership identified that a collaborative approach to decision making fit the communication model used by district leadership.

A final component of this theme included the role of teacher leadership. The Assistant Superintendent shared her perspective on the value of the DDT teacher leadership:

> The people, the human capital, have been amazing in support of the DDT. And then I would say the teachers themselves. They've learned some of those skills we're trying to teach our kids. And they were before, but they're incredible collaborators, and they've developed partnerships. And that has really helped us district-wide to bridge from my own classroom, my own school to my district, and that's been huge. (personal communication, May 19, 2014)

In addition, structures in place to support the teacher leadership piece were referenced as a key feature. DDTT8 illustrated this succinctly: "I think that the primary thing is that the district administrators and the School Board were in support of there being this Design Team (personal communication, June 23, 2014). She added, "They had us present to the School Board some of what we were doing. They also provided the funding to make it happen, not only for our additional hours but also for trainings" (personal communication, June 23, 2014). DDTT5 commented, "Well, I mean, there was time – definitely time set aside. And, you know, that time was honored by, honorariums or stipends. So I think, acknowledging that this work is going above and beyond, and that it is not something we expect you to do without some kind of compensation" (personal communication, June 10, 2014). Yet another important structure to support the teacher leadership piece was the professional development opportunities. The district provided funding for the training of the Design Team teachers. The Superintendent pointed out, "That's all under that human capital aspect of things, and ultimately our investment in professional development that is participatory and builds the leadership of teachers or honors that leadership, because they are the leaders. And that has been critical, huge"

(personal communication, June 19, 2014). Overall, funding, time, and training were all structures reported as important for supporting the teacher leadership component.

feedback loop. According to members of the DDT, the feedback loop that is a part of the accordion process was another important structure. This is because it led to a responsive structure to the DDT meetings and proceedings as well as a sense of collaboration. SLDL4 observed, "So as we are designing, it's with these evolving and iterative processes, we're looking ahead. We're very cognizant of that for next year." I'm looking as to where we're going with what we want to think about for moving forward and keeping people balanced" (personal communication, June 23, 2014). DDTT9 illustrated this open type of communication in the following way:

> So the goal is to have this sort of accordion thing, I think, as [Site Level Design Team Lead] describes it. Like they go out, they tell/give feedback or let others know what they're working on. And then staff can give their input, feedback, and then bring it back to us. So the goal is to have open communication and kind of really get all the stakeholders involved. (personal communication, June 26, 2014)

The Assistant Superintendent captured some of the value of the open communication piece when she said, "and all those different perspectives, when you have that come in, and you have those great conversations, the depth of what you get out is so much more than what you would expect if it's just a smaller group" (personal communication, May 19, 2014). DDTT5 teacher affirmed this thinking when she reported: "I think that we've always, regardless of whether it was what we thought may happen or not, I do think that our feedback is valued. And it has been an opportunity to take on a different kind of leadership role" (personal communication, June 10, 2014). She added, "so that's been really positive, you know, to be able to do that and to be able to give feedback. And it's been evident in some of the things we've seen that we are being listened to" (personal

communication, June 10, 2014). Overall, the feedback loop was highly valued by DDT members as an affordance.

working with colleagues. When members of the DDT were asked about the benefits or positives of working with or as a part of the DDT, collaboration came up again. This time it was in regards to professional growth and the synergy that comes from working with others and sharing ideas. DDT teachers and administrators alike spoke about the benefits and the opportunities afforded them as a result of working with other professionals. They shared that they had become inspired as a result of collaborating with other members of the DDT. For example, DDTT6 teacher explained, "The synergy you get from the people: It's inspiring to be with those people who are inspired. And being the early adopters, it's helpful, because you can go to the wellspring. That's what I liked the most. Everybody just started getting excited about teaching" (personal communication, June 18, 2014). Another D13 teacher, DDTT10 shared, "It opened my eyes to many different things" (personal communication, June 26, 2014). Along these lines, a third DDT teacher, DDTT4, reflected on how the collaboration allowed her to experiment with new instructional methods and other ideas in the classroom:

> I really liked getting to know other teachers from other schools. Our weeklong summer institute was great; I learned so many strategies, I met so many new people. It was really inspiring to start the school year having had that training. I felt really excited to go try new things in my classroom. (personal communication, June 9, 2014)

She went on to observe, "Where, if you don't have that before the school year, you're not maybe as inspired. It's like, okay, getting ready to start, but you don't have a bunch of new strategies like that that you're ready to try out" (personal communication, June 9,

2014). Several of the DDT members referenced a feeling of inspiration and excitement as a result of belonging to the DDT.

Five of the D13 also prized articulation between the elementary school teachers and middle school teachers, afforded by the collaboration. For example, DDTT11 shared that she benefited from "getting to know across grade level what's going on in different schools and meeting a lot of teachers I probably would have never interacted with" (personal communication, July 7, 2014). She added, "It's just really neat. And because we spent so much time together with the summer thing and this I got to know a lot of teachers better. There was a lot of collaboration" (personal communication, July 7, 2014).

Personal growth and change in professional practice was also clearly identifiable as a benefit for DDT members. DDTT8 provided a clear illustration of how membership benefited her professionally:

> For myself it gave me a lot of new ways of looking at my instruction, changing some of my practices, revamping things in ways that were, I think, more exciting for the students but also for me in the way that I teach. I like pushing myself as an educator to change the things that I'm doing. And if I see something that I think will work better for the kids, then I want to try it. So it provided me a lot of different things that I think work better for the students that I was able to put into practice. (personal communication, June 23, 2014)

A similar sentiment also could be observed within the DDT leadership. SLDL1 exemplified this well:

> I've learned more this last year than I have in the last five combined. Being part of a culture and a community that is trying to think outside the box, trying to do things in new ways, that is trying to break down the walls of what a traditional school or classroom might look like, these are all really good, positive things. (personal communication, May 14, 2014)

Overall, fourteen members of the DDT talked about how a benefit of membership had resulted in "pushing themselves as learners," "feeling inspired," and "trying new things."

adopting a framework for 21st-century learning. DDT members also identified that "settling on an approach for 21st-Century Learning," had been a benefit. This theme was broken down into two smaller conversations. One was a general excitement for the work of implementing the Strategic Plan and the other was a reflection on choice to implement PBL and technology-infused instruction.

Of interest is that most site level administrators and Design Team teachers who cited this particular benefit shared an excitement and appreciation for the Strategic Plan and implementation process. According to SLDL2,

> It's just so exciting to feel like there's this really big, important idea that everybody is moving forward on. …Usually there's this lag time where you're kind of like getting the pulse, identifying the priorities at the site because it's so disconnected from the district work. But that wasn't the case here. (personal communication, June 18, 2014)

DDTT9 illustrated this type of thinking further: "Honestly, I mean, it's partly the Strategic Plan. … I've lived through different superintendents and strategic plans. And this is the most exciting and innovative and out-of-the-box thinking that we've ever done" (personal communication, June 26, 2014).

At the district level, leadership reflected on the directions chosen by the district via the DDT. For example, the Director of Learning and Technology shared, "We knew we were interested in 21st-Century Skills, but making the decision to go with project-based learning as our foundation, that was huge. If you could overlay that with the common core, technology-infuse, and the 21st-Century Learning, then you have a structure to work off of" (personal communication, May 13, 2014). He reasoned that

while there are only a few teachers trained in PBL within the district, the process fits the district's needs: "So really, it's a match with the Strategic Plan, it's a match with, I feel, with the spirit of the present timbre in education around the common core" (personal communication, May 13, 2014). His comments help to illustrate, from the district leadership's perspective, how the work of the DDT is validating and materializing the district's vision.

His perspective on the Technology-Infused Instructional piece is also interesting because he feels that an "authentic use for technology in the classroom was identified: "The second piece that's been really interesting, from my point of view, has been the tech infusion. So you know, part of the challenge around tech is, everybody wants it, but where does it fit? And what are you trading off? Is it even worth it" (personal communication, May 13, 2014). He illustrated this with a description of how the district was set up prior to his arrival and then through year one of the DDT and PBL roll out. One of the most important ideas he shared was that teachers began reporting an "authentic need" for technology in the classroom. He shared what teachers had been reporting to him about the use of Chromebooks:

> But the piece that was really surprising was, they're saying, "We need these to do our projects." So, here you have then an authentic use where kids are doing real work to accomplish a goal, and so that's the ideal, that's beautiful. So I think it's coming, we're finally seeing it happen after lots of false starts. So it's been really a surprise, gratified, and fits nicely, once again, into the model. It was unanticipated. (personal communication, May 13, 2014)

In the end, the current framework of 21st-Century Learning for this district was said to include PBL, the Common Core State Standards, technology-infused literacies, and the 5Cs. Design learning is implicit in the ideas of 5Cs and is connected to one of the competencies "creativity and innovation." Overall, nine members at the DDT explicitly

identified this theme as a benefit. Five of those nine were administrators at the site or district level.

lessons learned. Lastly, one "lesson learned" around the original priorities of the DDT surfaced from the data analysis. Members at every level of the DDT reported the "communication glitch" around the shift in priorities from the design of the "4-5" schools to implementing 21st-Century Learning, district-wide, had been a "difficult thing" for the team to work past. For DDT leadership at the site and district level, this was a lesson learned. The Director of Learning and Technology explained, "Lessons learned would be it was really hard when we changed directions. ...You hate to get your message wrong. I know why it happened, but that was a difficult thing because then we alienate some people. So there might have been some hard feelings among some teachers who get left out" (personal communication, May 13, 2014). SLDL4 agreed with this thinking when she stated, "other constraints, I would say that what I had shared before, the four-five focus was a constraint that didn't necessarily need to be there, but we had to deal with that" (personal communication, June 23, 2014). This breakdown in communication will be discussed further in the section addressing challenges and frustrations.

Constraints

The constraints or the perceived features that limited or hindered the work of the DDT in achieving its goals were examined using the following questions:

- What limitations within the current organizational structure of the school district have help to constrain the DDT in achieving its goal(s)?
- What are some of the challenges/frustrations that have occurred as a result of working on or with the DDT?

Time and money were perceived as limited resources. In addition, communication breakdowns and or misinformation exchanges that occurred within the team and outside of the team were viewed as constraints to the progress of the DDT. Some members also identified a couple of additional frustrations. For example, several members of the D13 felt that they were not as appreciated or as supported as they would have liked. The general communication style was also viewed as a frustration at times.

Within the theme of time as a constraint, a few different subtopics surfaced. Members who talked about time as a limited resource, talked about it in terms of how it inhibited the DDT's process, and the fact that the lack of time added to a feeling of being overwhelmed. Some ideas on what might have led the feelings of being overwhelmed were also explored.

inhibited process. The allotted amount of time for DDT meetings and the frequency of meetings were generally seen as limiting to the progress of the D13. For example, DDTT10 shared, "And, you know, thinking back now, what we were really able to get done in those hour-and-a-half meetings--it didn't feel like we accomplished much, other than giving feedback on decisions that had already been made" (personal communication, June 10, 2014). She went on to share, "So it felt more like we were more of a sounding board than--you know, than really a part of it, or a decision-making body, I guess I could say" (personal communication, June 10, 2014). While discussing constraints with SLDL1 this same sentiment was shared: " So, getting teachers together is difficult. I think that's one of the things that acts as a constraint. Just the lack of time to meet and talk with the teachers about what's going on" (personal communication, May 14, 2014).

The lack of time to meet was also seen as a limitation for the leadership aspect of the DDT. For example SLDL2 shared, "I think that because we don't meet that often as an admin team I don't always know what the priorities are. Things are changing and sometimes there's not communication" (personal communication, June 18, 2014). Overall, the following quote from DDTT9 captured this subtopic well:

> Well, I hate to say it, but it's always time and money. We're moving so fast in things that it's hard to keep up. And I think that the teachers feel that, too. It's hard to--, when you want to implement something, you need to meet, you need to have everybody involved, and you need to bring everybody along. And that just requires time. And then with six schools and their site plans all being different or different--it's really hard to get things on the right calendar without having conflicts. (personal communication, June 26, 2014)

Her comments reflected those of many on the DDT in regards to time has a constraint.

feeling overwhelmed. The perception of being overwhelmed due to the lack of time was referenced in all levels of the DDT. For the D13, the time commitment and the expectations they perceived to be in place led to the belief that a lack of time was a constraint. For example, DDTT5 had this to say: "And really, many of us worked harder this year than we felt we have--many of us felt like first-year teachers again. We were building everything from the ground up again. And just the time involved and the energy involved and the emotion involved--it was very draining" (personal communication, June 10, 2014). While discussing the lack of time, DDTT7 passed on the following: "And because I was sort of trying to acclimate and also I was very excited about the Design Team, I was putting a lot into that and probably not stepping and striding. …So for me personally, that felt like too much to try to manage it" (personal communication, June 19, 2014). Another D13 teacher, DDTT11, contributed, "Time was huge! We met formally once a month, but we were supposed to be kind of the trailblazers for all the people and

we were all new to that. So in addition to just the design part of it, we were also doing all of that so at times we were all very overwhelmed" (personal communication, July 7, 2014). Leadership shared this same perception. For example SLDL1 stated, "I feel like everybody's pretty overwhelmed and just like paddling as fast as they possibly can. And sometimes I think it keeps you from going deep into some of the things, so just kind of moving at a really rapid pace" (personal communication, May 14, 2014).

D13 teachers attributed some of the feeling of being overwhelmed to the lack of enough collaboration time and reflection time to process the new information and strategies that they were exposed to. For example, DDTT1 explained, "I feel like time was definitely not as available. I would have liked to have more time for us to do more planning, and working together a little bit more" (personal communication, May 27, 2014). Another D13 teacher, DDTT2, shared her perspective on this: "Well we met once a month, so sometimes it felt like we needed more time. And the agenda was pretty well packed, so the time went by really quickly. And I wish that we had more time to -- it was very packed, so I wish we had more time to have that built-in discussion time, reflection time" (personal communication, May 30, 2014). Still others felt that the due to the lack of time, they were not able to process all of the information and opportunities coming at them. DDTT3 commented, "sometimes I felt lost, just overwhelmed by just so much information coming your way all at once" (personal communication, June 9, 2014). DDT Leads did pick up on this same notion; however, they had a slightly different perspective.

From the leadership lens, the time it took to build capacity within the D13 acted as a constraint to the work of the DDT. In continuing the conversation around the pressure of the workload and its connection to time as a constraint, the Director of

Learning and Technology stated, …"That's a lot of time just to keep the focus, so that's the tension, the dilemma. I think that's with any endeavor you take on in schools. Certainly it was for us too. But it was remarkable what people accomplished. You got to hand it to the teachers. I admire teachers who do remarkable work. They found a way, but it's asking them to dig deep" (personal communication, May 13, 2014). In general, fourteen of the 18 DDT members interviewed explicitly referenced the lack of time as a constraint. Twelve of DDT members also attributed a feeling of being overwhelmed to a lack of time.

communication breakdown. Members of the DDT perceived that two different types of communication breakdowns had acted as constraints. One was a general sense of disconnect between the leadership and teachers on the team. The other was specifically around the role of the DDT within the district. Many DDT members referenced the resulting misinformation found out among the general teacher population in the district as part of the constraint.

Of interest were the conversations had with D13 teachers on the topic. The teacher side of the team tended to reference a general sort of disconnect between leadership and teachers. For example, DDTT11 stated, "There's some disconnect between the top and if we can, sort of, teachers, the bottom. There's a problem, a breakdown in communication" (personal communication, July 7, 2014). This was further confirmed by DDTT6 who shared, "I think from the get-go, they wanted to get feedback from all stakeholders. And so I do think that they tried to implement meeting forums and specific meetings and communication to make sure that there was the communication back and forth. But I do think there was a hitch in perception; and I think that's something that

we're all working on" (personal communication, June 18, 2014). To illustrate this further the following quote by DDTT8 was chosen:

> I also think a problem in the district is that they like to think that they are in a collaborative process, but it is really more of a top-down kind of method in terms of the way that they're handling things. …I mean, there's moments when it feels more collaborative, but mostly it feels that the district administration is a huge driving force and push for what we're doing. And I guess I should say, too, that there's a certain amount of that that has to happen. When you're in the leadership role, you've got to make some decisions. But then just make the decisions and own it. (personal communication, June 23, 2014)

A few different Design Team teachers shared this idea of a collaborative process and then a top down process playing at odds.

Part of the concern seemed to come from the original purpose of the DDT. As indicated earlier, there was some confusion within the team as to why it had been assembled. Both leadership and some of the D13 felt this to be a constraint. DDTT5 explained, "And, you know, again, sometimes questioning, again, 'what is our role here'? You know, 'why are we here'? 'Are we here because you want us to be the leaders in implementing the Strategic Plan'? Or, 'are we here because you want us to be the leaders in helping you to design a new school'? Because I don't know that those necessarily need to be the same thing" (personal communication, June 10, 2014). Recognized as a lesson learned for the leadership, it seemed to be a key piece of evidence for communication breakdown, especially within the teacher membership. In talking about this incident, DDTT5 also stated, "And, again, I think it's just being transparent. Be completely transparent as to this is what we're doing and why. And that tends to cut off any of those misconceptions before they're able to take root" (personal communication, June 10, 2014). Though the shift in goals and the purpose of the DDT occurred in the fall of the

2013-14 school year, teachers and DDT Leads often made reference to it and the communication issues they perceived it to have caused.

This breakdown in communication was often talked about in terms of how "other teachers" in the district perceived the work or the role of the DDT. DDTT5 examined this further:

> I can kind of speak maybe for teachers. I mean, that lens might be, well, I thought you guys were in charge of designing the 4-5 school. Why are you doing PBL? And if that could be part of it--I thought this is what you were doing. I thought you applied to do this, so why are you not doing that? (personal communication, June 10, 2014)

This was observed at the leadership level too. For instance SLDL3 observed, "I think communication around what these Design Teams are about can be a huge limitation too. So if teachers who are on the teams understand very clearly what they're there for, but other teachers or staff do not understand what they are, people can be put in uncomfortable situations" (personal communication, June 20, 2014). D13 teachers confirmed this idea. DDTT1 explained the reasoning behind why this miscommunication was a concern for her: "Because I feel like there was this perception that it was this exclusive group, and only certain people that applied got in. And the ones that didn't get in, and there was some, I guess, felt resentment as a result of that" (personal communication, May 27, 2014). In her reflection of this communication breakdown, DDTT1 recognized,

> It created tension sometimes, and also that has to do with personalities, and how people deal with that differently. But it was difficult because then it was like, "Wow, you learned that, and you know that," but we're like, "Well, we're trying to share it with you." But then there wasn't the time to really be able to do that because we had all these other things that we needed to be getting done. So we think there could have been maybe more time for that. (personal communication, May 27, 2014)

These comments help to illustrate the type of communication breakdown that could occur between the DDT teachers and the teachers at their sites.

Another miscommunication that surfaced in the data was around the push towards Project Based Learning. DDTT1 pointed out, “I don't think any of us expected the time commitment to be so big. I think now that's what the other general teacher population's worried about. I know at my school there's a lot of pushback there with not wanting to do the PBL at all. So it's going to be a tough sell at my school” (personal communication, July 7, 2014). SLDL4 recognized this as a natural reaction to the shift in thinking about teaching:

> I think in a more kind of nebulous perspective, it's fear. Teachers have kind of been robbed of their ability to be the creators of their content and, you know, the art of teaching, I think, has been pulled away with No Child Left Behind, and so teachers are a little bit uncomfortable. But I think it's a temporary thing. They're going to love it. And those that have already jumped in and learned, yeah, there's a lot of work involved with, like, PBL, but once they're in control and they're developing it, they see the results and it's fabulous and it gets back to what real teaching is all about. (personal communication, June 23, 2014)

She goes on to discuss that some of the miscommunication and misinformation had resulted in teachers pulling out of the PBL trainings for the following year. She had this to say about it:

> So anyway, that was hard. And it was hard in the end, then, you know, there was so much growth and excitement that happened in the district, it was really hard to end the year with people pulling out of PBL and saying negative things about the design team when, in fact, they had done so much good and the work that we did do, the initial groundwork that was laid was really terrific. (personal communication, June 23, 2014)

Of the 18 DDT members interviewed, twelve perceived communication breakdowns to be a constraint.

funding. Funding was the other limited resource perceived to have acted to constrain the progress of the DDT. When asked about constraints, the district’s Assistant

Superintendent replied, “Time and money. I mean, it is. We're always looking for ways and wanting to be able to pay folks for the work that they do” (personal communication, May 19, 2014). For her, the funding as a limited resource seriously impacts the human capital aspect of the process. She went on to add that “being a small district, people do multiple jobs and wear a lot of different hats.” The Superintendent also identified money as a limited resource but he came from the perspective that it cannot be allowed to limit progress:

> So ultimately, a lot of it gets down to the money, unfortunately; but I don't think it starts there. I think if you start with, "We don't have enough money," you've sort of cut off your options -- as opposed to saying, "We need to be making it happen. Let's push on it, and how do we try to effect the lack of resources along the way?" But absolutely it's a huge constraint. (personal communication, June 19, 2014)

Site administrators/DDT Leads also identified money or lack of it as a constraint. Representing the perspective, SLDL4 shared, “And then money is a constraint. It's a huge constraint, because we don't have a lot of resources” (personal communication, June 23, 2014).

From the perspective of the D13, money was also a constraint. For example, DDTT1 shared, “We would have these meetings, and we would get paid, but it's like, Only an hour and a half” (personal communication, May 27, 2014). She goes on to illustrate how the lack of money to support the work of the D13 caused a struggle for teachers, professionally: “I know that could be looked at from both sides, but it's like, Well, if the teachers are willing to just give more of their time then we could be meeting, and have more collaboration, and more of that” (personal communication, May 27, 2014). She went on to explain, “But then the other side is, I'm already giving so much of myself. It would be nice to get a little more compensation.” So I feel like that piece

definitely was like a push and pull. I think all the teachers on that team will work above and beyond" (personal communication, May 27, 2014). The district's Superintendent was aware of this struggle. He pointed out that the district was one of the lowest funded districts in the area. He recognized, "I think those are the major constraints, and there's a lot of things tied to that: teacher morale. These different things are tied together, that if you had the funds to really flip that around, it would make a difference" (personal communication, June 19, 2014).

When talking with Design Team Teachers, many felt the lack of monetary resources in terms of limited technology and professional development opportunities. For example, DDTT8 observed, "I think the fact that they were unable to secure more electronic devices for the teachers who were--especially the ones doing Design Team and the PBLs, because there was a cohort of PBL teachers. It definitely caused a lot of friction and frustration amongst ourselves for not being able to have access to it to be able to do the things that we knew we wanted to be able to do" (personal communication, June 23, 2014). Another teacher, DDTT5, recognized, "I don't think we had the opportunities that we thought we might, even if it was just a release day to go see this or to look at this or--you know, whatever that was, we didn't have--you know, we didn't have those opportunities" (personal communication, June 10, 2014). Some of the frustration at this level also had to do with how teachers viewed the prioritizing of monies. Some teachers reported feeling that the focus should remain on the human resource aspect of this change process to order to being more teachers along. In general, 12 of the 18 members interviewed explicitly viewed the lack of money as constraint impacting the work of the DDT.

DDT teachers identified a frustration. In addition to constraints, members of the DDT identified a major frustration. This frustration was the DDT teachers feeling unappreciated by the leadership for all of the work they were doing. Seven of the DDT teachers interviewed reported a frustration around a lack of appreciation for all of their work. DDTT8 commented, I get "a sense that they don't really understand what we're doing in the classroom, and that adds to a lack of appreciation for the work that we're doing" (personal communication, June 23, 2014). DDTT1 pointed out that the members of the School Board and the Superintendent has not shown up to some of the events that the D13 were presenting at. She shared,

> Everyone has their reasons, but to me that was a little deflating, I guess because here you're doing all this work. You're doing it for yourself, but you really are doing it for the district. And you're a representative of this team that's doing all of this groundbreaking work that the district has laid out in their strategic plan. That just didn't feel that great, and I know a lot of teachers expressed that feeling. (personal communication, May 27, 2014)

For teachers, this frustration occurred as a result of working with the DDT.

Understanding How the DDT Was Used

In order to understand how the DDT was used to accomplish the work of operationalizing the Strategic Plan and introducing 21st-Century Learning into the district, the following questions were utilized:

- How is district leadership using the DDT throughout the district?
- What does this look like?
- How has the use of the DDT evolved over time?

use of the DDT throughout the district. When asked how leadership was using the DDT throughout the district, two primary roles were identified. DDT members perceived the modeling of 21st-Century Learning as critical and viewed the DDT as the "driver of

change" within the district. Included in that was the feedback that the DDT was able to provide to district leadership in regards to the "new" direction. The district's Superintendent illustrated how the DDT was used to model 21st-Century Learning at the site level throughout the district:

> Each of the individuals within their own sites have been playing important modeling, if not leadership roles, depending on who the person is. In some cases, the principals are really engaging those individuals in providing professional development at the site for others, or sharing that learning in some way. In other cases, the teachers have just sort of taken it in, and are opening up their classrooms for visiting, and using their site-based development collaboration time, and staff meetings to learn from that group of people. And I believe that on many levels, that has happened at every single site, in some way or another. And that really was our theory of change: It was basically based on that team of 13 being really critical to providing that original impetus. (personal communication, June 19, 2014)

The leadership and teachers viewed the use of the DDT in the same way. DDTT8 explained, "using it definitely to implement the Strategic Plan. Also to build support of the things that they would like to see implemented--the PBLs especially. They also asked for input for the new campus structures" (personal communication, June 23, 2014). DDTT6 reflected, *"*So in using it as, again, the startups, and inspiring others" (personal communication, June 18, 2014). DDTT2 added, *"*I think that the District Design Team pioneered or we were pioneers of different programs. And I think that it kind of was a springboard for the district. I think there are some people that are doing this. They love it and that's infiltrating into the schools"(personal communication, May 30, 2014). She went on to say, "That's helping the district kind of move forward and sell it, that kind of a thing. So I think that helped the district. I feel like our district has made so much progress this year" (personal communication, May 30, 2014). Overall, there does seem to be alignment between leadership and teachers in terms of this use of the DDT.

The role of the DDT to gather feedback was clearly explained by one of the site level administrators/ DDT Leads (SLDL3):

> My sense is that cabinet-level conversations around things that need to happen on the timelines associated with a strategic plan, knowing that this was year one of the Strategic Plan, and then direct communication from cabinet, either Superintendent or Assistant Superintendent or someone to the 2013-14 Design Team Lead was one way that it was used. So I need some information on this. Please go to the design team and have a conversation and report back to me. I think that was probably one way it was used. (personal communication, June 20, 2014)

When asked if it was being used throughout the district DDTT3 replied, *"*I think so, because there's a representative from each school on the Design Team to get feedback and to see how the PBLs are going in the different classrooms" (personal communication, June 9, 2014). She went on to explain, "So I think by having at least two members from each site, it gives exposure to each school to provide feedback and test things out" (personal communication, June 9, 2014). This indicates that teacher members of the DDT were aware of and understood this function of the DDT. DDTT5 interpreted the DDT as having been used "kind of like a guinea pigs, a little bit. Like, 'we have this very willing group of people, you know, who are willing to dive in and willing to take risks and willing to try something new and willing to grow'" (personal communication, June 10, 2014). An additional aspect of this feedback process that surfaced was the "smoothing out of the process." This comment is in reference to the accordion process district-wide. DDTT6 commented, "And it seems like they're working towards a better knitting of that, to smooth out the bumps, so that is implemented or implemented more smoothly, or that conversation gets a little bit smoother, going back and forth" (personal communication, June 18, 2014). Again, DDT teachers and DDT leadership seem to be in alignment with an understanding of this function of the DDT.

Of importance to note here are the perspectives of the two DDT teachers who were not able to identify a clear use or function of the DDT. Their views may provide insight into how to prevent misconceptions of the role of the DDT moving forward. When asked about the role of the DDT, DDTT1 shared, “I'm not really sure, actually. I don't really know the answer to that. It's actually a good question that I don't feel like maybe I know what my purpose is now. That's really my honest answer. I don't really know” (personal communication, May 27, 2014). DDTT4 suggested that the role might have centered on the PBL roll out:

> I don't know that we were given that role yet, as leaders. I think we do have the opportunity to have the say in the school, which is important, but I don't know that other people necessarily know that and know who to go to, to talk about it. (personal communication, June 9, 2014)

These perspectives seem to connect back to the limitations felt by some members of the DDT around other teachers’ perspectives of the team and its work within the district.

In total, ten of the DDT viewed the “sounding board” or “think tank” aspect of the DDT as the most important function of the DDT for district leadership. Nine perceived the “driving force” and the modeling aspect of the DDT to be the most critical use. Only three DDT members identified both. Additionally, two of the DDT members could not identify how district leadership was using the DDT.

what it looked Like. Answers to this question depended on what DDT members viewed as the role or function of the DDT. In order to illustrate this, some example perspectives are provided. In reference to the modeling function, SLDL4 provided this description:

> Well, they were certainly trying out a lot of different things with technology. We saw Zoom conferences going on across the country. That was in first grade as part of the project-based learning unit. We saw a lot of hands-on learning. It wasn't

> just PBL, there were projects being done with engineering is elementary and so kind of furthering--pushing the envelope with science. We saw a lot of presentations, so kids presenting their work and collaborating with each other. So we would go out and witness that all the time. There was always a high use of technology. (personal communication, June 23, 2014)

This gives a sense of what type of experimentation and modeling was occurring within the D13 classrooms. This same DDT Lead went on to illustrate how the work of the D13 teachers also provided modeling for the parents with the district.

> And then we had the bus tours, you know, where parents were invited in to see project-based learning in action. That was pretty cool. And the kids, by and large, were the ones that would lead their parents around to show them what was going on. So there was a lot more exposure to what was going on in the classroom. (personal communication, June 23, 2014)

Overall, his comments helped to showcase the modeling function of the DDT at different levels of the system. Turning towards the feedback role held by the DDT teachers, in particular, the Assistant Superintendent offered:

> They've been part of curriculum discussion, assessment discussion, building discussions. They've been involved in a lot. And I think they will continue to be involved, and they'll continue to be folks that we'll continue to see as resources. And they're the first ones to really jump in and try something new. So if we're going to add something else, maybe they're the ones that we can reach out to again and say, "What do you think about this?" Or next level of training, "What are we going to do with the next cohort? What kind of feedback did we get from them? What kind of feedback do we need to do in terms of planning ahead and soliciting? What did we do right? What could we change and make better down the road?" (personal communication, May 19, 2014)

Her perspective not only highlights what district leadership intends to use the feedback for but she also indicates that leadership values this role held by the D13.

how the use of the DDT evolved over time. Responses to this question could usually fit along two lines: those who viewed that the use of the DDT had evolved and those on the team that felt that it had not. For example, the Assistant Superintendent indicated that the DDT had evolved and was evolving all along. She explained, "they've

had a really diversified role. Like I said, I think that the design team has really shaped a little bit and evolved over time. So I see them as being hugely valuable resources of humans with knowledge and experience" (personal communication, May 19, 2014). She went on to suggest, "And I think what we're now doing is saying, 'All right, let's take your expertise, and where do you want to take your expertise,' and spreading that out further as we're looking at our 21st century groups" (personal communication, May 19, 2014). SLDL4 shared a similar lens. When asked if the DDT had evolved, she said, "Yeah, well, I think that the plan will have to be that the onus of creating even an implementation plan and things like that will be more so on the design team (personal communication, June 23, 2014). She went on to clarify, "people at the district office can certainly take a first stab at it, but they wont really have to look at all that stuff and go over it with a fine-toothed comb. And I think it's going to be easier and easier to work on a vision" (personal communication, June 23, 2014). This view fits with the use of the DDT as a district resource that will continue the model and work to implementing the Strategic Plan.

Of note is the difference between the teacher perspective and that of the leadership. When teachers discussed if the DDT had evolved, most teachers referenced the shift in priorities at the beginning of the 2013-14 school year. DDTT9 shared,

> I think it's, and this is my own opinion, I thought it was more focusing on this new school. And that just may be my own error. But it seems like it's gotten bigger in that it's--the design team is really a design team for the entire district to pull off the Strategic Plan. So I don't know. In some ways, it's gotten bigger, the goals, I mean. And then, in other ways, it's small. It's down to the nitty-gritty details of how many Chromebooks do we need? Should we do typing club for grades 3 to 5? (personal communication, June 26, 2014)

Along the same lines, DDTT4 answered with “I don't know. I think it actually shifted. My impression was that the date for the school opening got pushed back. I think we were supposed to really get the school ready, and then when they had another year it was like, ‘What do we do with these people’? And then that's where they came up with the PBL and the other things, because it wasn't as urgent to work on the school any longer” (personal communication, June 9, 2014). Surfacing in these responses is the same theme of “commination breakdown” discussed earlier in the limitations section. Eight DDT members indicated that the use of the DDT had evolved over time.

When asked if the function of the DDT had evolved, teachers and DDT Leads who shared the belief that it had not gave answers such as “It's been pretty consistent for this year, that I've seen. The priorities were pretty much laid out at the beginning of the year around implementing parts of the Strategic Plan, and that stayed kind of true to form. I mean, there's still a lot of work that needs to be done, so we’re just heading down the road” (personal communication, May 14, 2014). These types of answers to this question were particularly interesting because they seemed to contradict the perceptions held by other members on the DDT. This would indicate that a misconception might still exist within the DDT. Overall, 10 of the members gave arguments for why they felt that the use of the DDT had not evolved yet.

The Superintendent had an interesting response to this question. He said, “we did set it up specifically to get us from where we were last year to the transition to Common Core to moving the Strategic Plan, professional development, all leading to essentially the opening of the first 4-5 school. It was all built around that notion” (personal communication, June 19, 2014). He observed, “I could easily see some structures that are

more ongoing, that will come from having implemented this, and it will iterate in some way to be something that is critical to the district" (personal communication, June 19, 2014). This response seems to indicate the DDT was not designed with permanence in mind, but with the idea that it would always evolve and change as needed.

From a purely structural lens, changes to DDT were visible by the beginning of the second year (2014-15). The entire DDT was only scheduled to meet three times within the year. The October 21st "Kick off meeting" was the first of those. Most monthly meetings were arranged by grade level focus groups (preschool through third grade, fourth grade and fifth grade, as well as sixth grade through eight grade). Some groups were scheduled to meet more frequently than monthly if the need arose. Regular Administrative Design Team meetings were scheduled between the DDT Lead, the two site administrators/DDT Leads, and the part-time DDT teacher on Special Assignment.

Design Thinking and the DDT

In an attempt to further understand the design processes used by district leadership to support change or innovation throughout the implementation of 21st-Century Learning within the district, the following questions were explored:

- How important is design thinking to the design and function of the DDT?
- How is the district leadership using design processes as part of the district-wide implementation process?
- What do you see as a benefit to using design processes as part of the district-wide implementation process?
- Do you have any frustrations with the use of design thinking?

Importance of the Design Thinking Process

14 of the 18 participants interviewed, believed design thinking to be an important process to the design and function of the DDT. Of those 14 respondents, nine explicitly referenced design thinking as and important "philosophy," "critical principal," or an "important process." Five of the 14 members interviewed, tied the importance of design thinking to its usefulness as an approach in the classroom.

Those DDT members that viewed design thinking as a key principal or approach to the work of the team often cited the connection between design thinking and innovation. For example SLDL2 observed, "I mean in terms of kind of the principle behind the whole thing, I think it's very central, the whole idea of having an innovator's mindset and being committed to continuous improvement and user-based design" (personal communication, June 18, 2014). She added, "I think it is definitely is in the hearts of everyone who's working on that for sure. I think it's been much less explicit than I thought it might be" (personal communication, June 18, 2014). DDTT6 supported this thinking around the importance of design thinking, *"*I think it was very important. It's a shift, a mindset shift" (personal communication, June 18, 2014).

Design thinking as a philosophy was also referenced by DDT leadership as having been an important component to the development of the team. For example, SLDL1 offered,

> Well, I mean, the design thinking process, which I've learned a lot more about this year, I think it's the engine and it's the philosophy that I think everybody brings to the table. If you sit down and try to figure something out, it doesn't have to be perfect the first time and there's the idea that we're going to learn from what we're doing. (personal communication, May 14, 2014)

The Superintendent shared this view:

> I would say that explicitly, it has been critical to the development of the team and as a functioning team. They put forth very useful ideas about how to move forward. And without having concrete examples of it, I just know that having come at it from a design perspective, and being explicit about that, was really critical in the beginning. (personal communication, June 19, 2014)

His comments helped to illustrate his belief that design thinking played a role in the inception of the DDT. Important to note is the fact that he stated he is not sure whether it has continued to play an "explicit" role in the function of the DDT. He did indicate that he believes it has a natural place in the function of the team as an embedded process. This was evident when he shared,

> I think in a way, it becomes a little more embedded. What I believe is absolutely critical is that, especially for the original DDT Leads, because of their background, it becomes implicit, just because of the way they go about doing work--the way we design our professional development, the way we try something out, gather data, ask ourselves if it's working, and reiterate. (personal communication, June 19, 2014)

In alignment with the Superintendent's view, SLDL4 stated, "I think it's really critical. We talked about it initially--well, and throughout--but I think we are now going to revisit it in every meeting" (personal communication, June 23, 2014). This indicates that members of the DDT do consider the design process, to be important to the design and function of the DDT; however it does not seem to have an explicit role in it yet.

Although most of the teachers interviewed stated that design thinking was important to the design and function of the DDT, they did not report explicit connections. Some teachers referenced elements of design learning that can be found within PBL model. Others brought up the design cycle used in the Engineering is Elementary curriculum, developed by the Boston Museum of Science. Still others referenced the design cycle used by the D.School at Stanford. Finally, four of the teachers interviewed,

either did not know if the design thinking was important to the design and function of the DDT or felt it played a minimal role.

The Use of Design Processes As Part of the Implementation Process

The responses to this question indicated that 14 of the DDT members recognized that leadership was using the design processes as a part of the district-wide implementation process. Most of the interviewees suggested that it was evident within the actual leadership approach of the administration. Five of the DDT administrators felt that the leadership style of the Superintendent was a key way in which design thinking was integrated into the district-wide implementation process. Five members, all teachers, felt that the leadership may have been trying to use it as a part of the implementation process or they were not sure.

Design Thinking As a Leadership Approach

Talking with the Assistant Superintendent about how design thinking was used to support the district-wide implementation process, she answered, “so most everything that we try to do like in terms of our staff meetings and when we're looking at our work with our teachers, we're trying to keep those same principles in mind” (personal communication, May 19, 2014). The Director of Learning and Technology for the district suggested that a design process was being followed. He described this through a leadership lens. He also noted that at this time the district is not following one particular model:

> I think informally, yes. Are we marching to any particular model of it? No, but certainly, we know what our problem is, we're looking at all the possible solutions. We prototype. We try things out, and then we follow through with them if we like them, or we move on, sort of this rapid prototyping. We do understand that there's going to be some failures, false starts will come, but there's some resiliency there. So there's not this idea, "Now we're turning back." So I think

> we've adopted a lot of that design mindset. (personal communication, May 13, 2014)

Here he also pointed out the idea that the mindset that design thinking can afford is what is desired. He suggested that this offers more freedom to explore: “But then the other one, that there's just not one solution to the problem. There are a lot of different ones, and that's interesting. So that leaves a lot of room for creativity” (personal communication, May 13, 2014). In addition, he shared is belief that the 5Cs are a part of this conversation at the classroom level:

> And the other fundamental piece has been, that we haven't talked about much, is the whole idea of the 5C's, too. That there is a set of skills we want that have really resulted in a bit of a surprise. We started out with that for the students, but when we started thinking about it, it cuts across the whole system. If you have to collaborate, communicate, be creative thinkers, that's all good stuff. And we should hold all of us up to that. And I think that's been really helpful too, as an organizing piece. And that's been informing the design team on how they approach things, even with the committee that's looking at evaluation. So, that's been a good thing, and that fits in with the whole design world. So, we're seeing validation of design. (personal communication, May 13, 2014)

An important point to make here is that the leadership does not just value design thinking in isolation but through the connection it has to the other initiatives within the district. When speaking with the Superintendent about this same question, he confirmed this notion:

> Now, my view is that project-based learning, as we are implementing, what I like about it is that it does embed a version of design thinking. It's not necessarily, "Here's the version we've all agreed is a correct one" or anything, but it clearly has design thinking as a part of the whole process of the project-based learning. So I think that's building capacity. And that's really critical. I still think that eventually being more explicit with the District’s way, if you will, of what we mean by that will be important over time. But I think it's less important today than the fact that the people who are working with the D13 exude that, and exhibit it in ways without the terminology, and PBL is supporting that in a big way. (personal communication, June 19, 2014)

This first part of his comments indicated that he values the connection between design thinking and other initiatives in the district as a way to build a capacity within the district. Additionally, he acknowledged that this may be done in an informal way for now. The Superintendent went on to add,

> And I hope that the principals, in working with staffs, are using design activities with staff in staff meetings, to help come up with ideas or "How might we do things differently", so that it just becomes part of the practice. And while you're doing that, you're learning about what of those things work and don't, in order to come up with a more concrete model--that is the district's model, which is just modeling the design learning way, in order to develop something, right? So I just think we're caught up right in the middle of that iterative phase of designing what design is for us, and defining it. (personal communication, June 19, 2014)

His response indicated that there is an expectation for DDT Leads and site administrators to engage in design processes with their staff. Also included in this response is the idea that this process is not yet explicit, well-defined, or even visible as an approach. SLDL4 confirmed this expectation. In her response she also pointed out a concern around the current state or the "iterative phase" of this process:

> At the administrative level, we haven't had any good training or understanding about this. Some have received a lot of training in this and have it as their background knowledge and other just don't. And the Superintendent doesn't know how to--like he just assumes that people are there. And so I think that we need to take a step in helping, like give some information about this and be more explicit about it. And that will help everyone. Because then, if the administrators all own it and all see it as a part of their process, then they can encourage that in the teachers. (personal communication, June 23, 2014)

Her response highlighted the idea that all administrators within the system should be trained in this mindset and approach. Though the focus of this study is on the DDT, this response and the response of the Superintendent seem to indicate the need to involve other administrators with this piece of the implementation process.

Turning to the perspective of teachers on the use of design thinking as a leadership approach, the conversation changed. Many of the D13 were aware of design thinking on some level; however, teachers did not report a clear understanding of how district or site level leadership were using design thinking. A few of the D13 teacher did not feel that DDT leadership had used it within their leadership approach at all.

The Superintendent As a Design Leader

DDT Leads, the Director of Learning and Technology, and the Assistant Superintendent all attributed the use of design processes as part of the district-wide implementation process to the leadership of the district's Superintendent. For example, the Assistant Superintendent said,

> The Superintendent's leadership is really about that. He keeps us focused on, "This is where we're headed." And that Strategic Plan makes that beacon easier to follow. We know what we're doing. Is it in alignment with that? And design thinking is one of those components that I think is critical. (personal communication, May 19, 2014)

She pointed out how the Superintendent's style keeps everyone centered on a design thinking approach. DDT Leads also shared a belief that the Superintendent's Leadership style was a primary diver of the design thinking approach used in the implementation process. For example, SLDL4 shared,

> I would say that the Superintendent is very solid in his design thinking approach. He deeply owns that--expansion and focus and expansion and focus. You know, looking at things in an iterative way. I think that our district leadership doesn't fully get it yet. Some administrators are there and some are not. And so I think we need to be very explicit with them. (personal communication, June 23, 2014)

All site and district level DDT leadership shared this notion of the district's Superintendent as a "design leader."

Maybe, Maybe Not

When speaking with the D13 teachers who agreed to be interviewed, it became evident that they did not all share the same view or understanding of how district leadership was using design processes as part of the district-wide implementation process. As indicated earlier, there were those teachers who reported a design thinking approach by leadership to be important but could not speak to how it was applied. Others answered with clear opinions that it was not used. For example, DDTT7 shared, "so design thinking and the process of the Design Team, I don't really see that those aligned" (personal communication, June 19, 2014). She pointed out, "I don't know that you could have run those meetings in a design-thinking sort of way, because they were still disseminating a lot of information to us" (personal communication, June 19, 2014). She goes on to qualify this a bit more: "we could collaborate, but we still had to receive, I guess. We still need to be somewhat kind of passive learners in a sense" (personal communication, June 19, 2014). According to this view, the design thinking process was not evident in the way leadership approached the DDT meetings as a part of the district-wide implementation process.

Other DDT teachers answered with statements that indicated they were unsure about how design thinking and how it might be applied to the DDT. For example, DDTT5 replied, "I don't know that they are, or, if they're trying to, they're skipping a lot of steps. And, you know, some aspects--I hear a lot of, 'Well, we don't know,' which would adhere, I guess, to the design-thinking process somewhat" (personal communication, June 10, 2014). Still another perspective was shared by DDTT4. She expressed that leadership was trying to build capacity for it: "I think they're trying to get

people on board with it and they're starting with the small group and training them. And I think they're trying to get a group of willing teachers, because some teachers are going to have a harder time with it than others" (personal communication, June 9, 2014). She reasoned, "I think they're trying to have teachers be kind of the leaders and then other teachers will be more willing to give it a try, I think, if they see their peers doing it than if it's coming from administration forcing it" (personal communication, June 9, 2014). Yet another perspective held by DDT teachers was that design thinking was talked about or used from a more instructional perspective not a leadership approach. DDTT2 commented, "well, I don't want to say that they didn't because we talked about it a lot. But as far as actually applying it, it felt like it was more instructional" (personal communication, May 30, 2014). This same Design Team teacher goes on to point out, "I think design thinking is a huge shift from what we're used to. …I almost feel like the way the people are being trained in PBL, they need to be trained in that type of thinking". She continues on to say, "And it needs to be a part of a curriculum that is not a choice. …But right now it's just like, 'Okay, if people are trying it, they're trying it'. But I think it needs to be grown in our district, absolutely" (personal communication, May 30, 2014). In general, it does seem that DDT teaches value the design learning approach, connected to design thinking in the classroom and would like to see it applied more explicitly to the implementation process.

Benefits and Frustrations With the Use of Design Thinking

All 18 members of the DDT talk about potential benefits of and frustrations with design thinking as part of the implementation process. The benefits, shared by the team, usually fit into two categories. One included more leadership process type benefits (i.e., a

shift in mindset or approaches to problem solving). The other included benefits that would impact the classroom and working with students. Frustrations with design thinking surfaced around the nonlinear thinking approach that design thinking requires, a lack of training on a specific approach, and frustrations around the application of design learning in the classroom.

Benefits

Mentioned most often by leadership, the perceived benefits of design thinking were connected to the communication skills design thinking helps to develop, the mindset it can create, and the brainstorming possibilities. In addition, the iterative, non-permanent aspect of the problem-solving approach was celebrated as a benefit within the DDT. For example, SLDL1 offered:

> I think you get better results, just because you don't make a plan and then just stick to it regardless of what. You make a plan, you move down the road a ways and you ask yourself, is this working, is this not working. You get feedback--could this be better? And then you've got the ability to maybe change something if you need to. (personal communication, May 14, 2014)

The Assistant Superintendent shared this appreciation for the inclusive problem solving approach. This comes through when she said, "I would just say problem solving and looking at what's the issue, what are the things that we need to figure out, and how can we go about it where everybody feels like they've had a part of the outcome, and it's positive, and it moves us forward and solves the problem? So for me, it's inclusive and forward thinking" (personal communication, May 19, 2014). DDTT5 took it a step further and praised the benefit of the brainstorming as a part of the process. She shared, "definitely brainstorming. And just trying to get all the cant's out of your mind" (personal

communication, June 10, 2014). She recognized the creativity that can come out of the process.

Benefits said to support the classroom application of design thinking included a connection to the 5Cs (creativity and innovation, communication, critical thinking, collaboration, and civic minded). DDT members also reported that they saw increased engagement levels from students. For example, DDTT5 observed, "I see that it's more engaging for students. I think it teaches them to think critically. It promotes collaboration" (personal communication, June 10, 2014). A final piece was related to building empathy. DDTT6 expressed, "So when we think about empathy-based design, incorporating tools that really get feedback from the kids and then adjusting what we're doing based on that is really important" (personal communication, June 18, 2014). Overall, members from each level of the DDT felt that design thinking could benefit the classroom.

Frustrations

Some of the frustrations reported by the DDT towards the design thinking process were around the nonlinear thinking that it involves. For example, SLDL4 explained this frustration well:

> But with design thinking, you can't go in a linear way, because you're always going to uncover information that you didn't know. And as you go, you kind of change course. You're going in a certain direction; you know where you want to head, but you might have to shift a little to be responsive to the needs of the people. (personal communication, June 23, 2014)

SLDL4 also shared this frustration. He made the point, "well, it's messy. And it takes more time and it takes more communication and input. And it's never the real nice, neat, straight line; it kind of bounces around" (personal communication, May 14, 2014). He

clarified, “and that can be frustrating sometimes, because especially in education, you know, we want things--we need everything yesterday” (personal communication, May 14, 2014). Another frustration, around this nonlinear thinking was expressed by one of the design team teachers. DDTT5 emphasized that she did not have any frustrations with the process other than many people within the DDT and the district had not been trained in this type of thinking. She explained, “So I don't think that's a bad thing. It's just you can't expect it to happen overnight. And it's important for it to be done well, that we have leadership that knows the process really well to help guide us on how to do that. It's just a different way of thinking” (personal communication, June 10, 2014).

Stemming from this notion of nonlinear thinking, frustrations around design thinking as a nonlinear change process, come into focus. For example, SLDL2 answered,

> I mean definitely there will be frustrations. There are and there will continue to be because I think that that process is not a linear change process. And we're so used to that in education. …It's organic. It goes haywire in all directions. You can't see with clarity at every moment where you're going. There are those moments where you're collecting the information and trying to figure it out. And you're testing ideas before you're really sure. You're sharing your work before you're really sure where it's going. And all of that is so unfamiliar and scary and not what we're comfortable with. (personal communication, June 18, 2014)

Members at all levels of the team seemed to share this concern.

On a related note, a frustration offered at the leadership level stemmed from the limitations caused by a lack of training in a design thinking process. This connected to the earlier finding that the district leadership has not settled on an explicit model to work from. The district’s Director of Learning and Technology provided the following illustration of this:

> Well first of all, it's kind of nebulous, so you have to settle on. …I don't think that we've put our stake in the ground on any one approach to design. It's just more of a general approach because we're familiar with many different ones. …And more

> than design, I think innovation is what we're trying to get to, design and innovation. (personal communication, May 13, 2014)

At the site level and teacher level, the decision by district leadership to refrain from explicitly identifying the design process caused frustration. SLDL2 suggested, "I think part of that might be that I notice a commitment to not commit to one model. I think that might backfire. I think I would like to see it becoming a little more front-and-center because how we think about that process is important. That's part of the tight-loose thing" (personal communication, June 18, 2014). She explained, "the teachers need to see, yes, this is something we're committed to because that's what we want for the kids" (personal communication, June 18, 2014). DDT members expressed the need for district leadership to be explicit in an approach to design thinking. All of these frustrations cited would seem to confirm that there is awareness within the DDT that district leadership uses a design thinking process as a part of the change process.

When asked about frustrations with design thinking, some of the DDT members cited examples around design learning in the classroom. Teachers were concerned that staff would feel "overwhelmed" by design thinking applied to teaching and learning. For example, DDTT2 shared, "I can see that people might feel like this is too challenging, this is too much. I can't just give my kids some materials and tell them, 'Okay, make a prototype for this or that'" (personal communication, May 30, 2014). She continued, "and with class size, … I don't know. I just worry that people are going to feel like that's not something that they can do" (personal communication, May 30, 2014). For her that possibility was a real frustration. While this concern is evident in responses of another D13 teachers, some viewed it as one that can be addressed with the right skills. DDTT6 shared, "oh, it is a process, so it's unnerving. And it could very easily unravel one way,

and you have to use your teaching skills to harness it if it goes south at one end. You just have to have the capabilities to see that and go, 'Oh, okay. Reset'" (personal communication, June 18, 2014). This connects back to the earlier frustration identified above around getting people trained in the approach. Finally, DDT members at every level reported some sort of benefit and frustration to using design processes as part of the district-wide implementation process.

Summary

The story of the District Design Team (DDT) began with a charge. A school district's charge to reimagine and reflect on best practices for instructing and facilitating student learning. After a two-year strategic planning process, which included feedback and participation from constitutes at all levels of the system, there became a need to begin actualizing the vision. An idea of a select group of educators that could represent this work started to take shape. During this time, the community had approved the idea of two new bridge schools for 4th and 5th grade students within the district. As preparations began, district leadership and the School Board considered the potential of these schools. In an attempt to bring elements of the newly adopted Strategic Plan to the first of these two schools, a small group of teachers and site level administrators from across the district were chosen. In the Summer of 2013-14 the team met for the first time. Three district level administrators supported this team of 13 teachers, one part-time TOSA (Teacher on Special Assignment), and two part-time site administrators/DDT Leads. The Director of Learning and Technology was intimately involved with the DDT and was considered as DDT Lead during year one. The Assistant Superintendent was often involved in the monthly DDT administrative meetings. Finally, while the Superintendent

had been involved in the conception of the DDT, he played a less direct role once the team was initiated. With that said, the DDT Leads accessed his vision, direction, and guidance at every turn.

Armed with a dual purpose, the DDT set out to operationalize the Strategic Plan and to provide support for the development of the fourth- and fifth-grade schools. Additionally, DDT members highlighted the role of "digging deeper" into teaching and learning as part of their purpose. The idea of "new ways of thinking" and concepts like project-based learning and design were all descriptors used by DDT members to explain their work. Important to note is the fact that members also mentioned that a shift in priorities had occurred prior to the first DDT meeting in August of 2013. Many on the team began that first year with the belief that more of a focus would be placed on the design and development of the fourth- and fifth-grade schools.

Time, money, human resources, partnerships with outside organizations and consultants, as well as professional development opportunities, were all used to support and design the DDT. In order to sustain the design and function of the team, a few key strategies were employed. Communication through the use of an accordion model, the use of teacher leadership from within the district, the district's Year One Implementation Plan, the type of training opportunities provided for the DDT teachers (D13), and the monthly DDT meeting structure were all celebrated strategies used to support the DDT. Key features that were said to have defined the artifact included the shared vision and leadership approach of administration, the weeklong Summer Intensive professional development, monthly DDT meetings, a feedback system, and the district's partnership with Buck Institute. Overall, these resources, strategies, and features along with the

preexisting conditions within the district have resulted in an increase of capacity within the DDT members.

The goals for the first year of the DDT were described to be the same as the purpose. One was to operationalize the Strategic Plan and the other was to provide input into the development of the new fourth- and fifth-grade schools. The increased capacity and work of the DDT in year one led to the second iteration of goals. The goals, described by members of the DDT, for year two were more acute. Members shared that the team was now going to be focusing in on designing learning environments, programs, and curriculum for the fourth- and fifth-grade schools. They also recognized a goal of supporting district staff in working with project-based learning, the 5Cs, design learning, and elements of technology-infused instruction. Also, DDT members recognized the importance of refining the accordion model to allow for more teachers to find a connection with elements in the Strategic Plan.

In order to understand how the DDT was able to complete their work during year one, and how they will continue to achieve their goals, both affordances and constraints need to be considered. The shared vision and leadership of DDT members was and is seen as an affordance. This theme included a clear vision for 21st-Century Learning as a result of the Strategic Plan. Further, the professional development opportunities offered to DDT members was highly valued. Additionally, the feedback loop, which is part of the accordion process, was cited as a supportive feature that aided the DDT in achieving its goals. Features that were perceived to have limited or hindered the work of the DDT included time and money as limited resources. In addition, communication breakdowns and/or misinformation exchanges occurring within the team and outside of the team were

viewed as constraints. Some members also identified a couple of additional frustrations. For example, several members of the D13 felt that they were not as appreciated or as supported as they would have liked. The general communication style was also viewed as a frustration at times.

With an understanding of these affordance and constraints, the use of the design team within the district becomes more comprehensible. Historically, members felt it was used to provide feedback on what to focus on moving forward. DDT members also perceived the modeling of 21st-Century Learning as critical and believed the DDT to be a "driver of change" within the district.

Despite the lack of resources, hiccups in communication, and other constraints, professional development opportunities and leadership at all levels of the system, allowed for a common vision for teaching and learning to become viable. Using the leadership capacity of the DDT, district leadership can continue operationalizing the Strategic Plan. After year one this includes supporting the integration of project-based learning, the CCSS, elements of technology-infused instructions, design learning, and the rest of the 5Cs into the system. Further, focused conversations at the each level of the district's grade configurations (pre-K-3, 4-5, and 6-8) are said to allow for a tighter alignment of the vision for 21st-Century Learning. The newest configuration also is said to allow for a focus on design and development of the fourth- and fifth-grade schools. Finally, the continued use and development of the accordion model is expected to allow for the continued flow of information and ideation into the larger system.

An interesting component of this implementation process is the mindset or "thinking" shared by leadership and some members of the DDT. The majority of the

DDT recognized that leadership was using a design process as a part of the district-wide implementation process. Most of the DDT reported it was important to the actual leadership approach of the administration although little description of this was provided. DDT administrators/Leads felt that the leadership style of the Superintendent was a key way in which design thinking was integrated into the district-wide implementation process. Though frustrations with the nonlinear thinking, and how it is being shared with the larger system surfaced, the perceived benefits are highly valued by DDT members. Benefits of design thinking were identified as the communication skills design thinking develops, the mindset it creates, and the brainstorming and problem-solving approach it utilizes. Considered a "powerful engine," leadership utilized design thinking to enhance the capacity of the DDT to understand their work in a novel way.

CHAPTER FIVE

SUMMARY, IMPLICATIONS, RECOMMENDATIONS, AND CONCLUDING REMARKS

In this chapter the purpose of the study is reviewed. Based on the data presented in Chapter 4, a summary of key findings, implications, and recommendations are provided. Connections and ties to the literature will be made as appropriate. In addition, future research is considered. This chapter ends with concluding remarks regarding the research endeavor.

Review of Purpose

This qualitative case study was designed to investigate how design thinking led to the implementation of 21st-Century Learning within a school district. Specifically, this study attempted to capture and understand how the strategic integration of design thinking through the form of a District Design Team (DDT) can promote innovation within an elementary school district. Three research questions were crafted in an attempt to capture the change process:

1. How have the features and conditions within the school district resulted in the design of the DDT?
2. How has the DDT been managed and used to produce the intended innovations within the district?
3. How have design processes contributed to the implementation of the intended innovations?

Summary of Findings

In exploring these questions, findings from the artifact analysis, described in Chapter 4, are revisited. In order to emphasize key understandings, six themes derived

from these findings are presented and discussed. While I remind the reader of findings from Chapter 4, the six themes presented are intended to be the deeper learning and analysis behind the work. The themes discussed in this section include the following:

1. Clarifying the DDT's role
2. Stress of Change
3. Need for Validation
4. Communication breakdowns
5. Implicit vs. Explicit Models of Design Thinking
6. Design Leadership

This practice is intended to provide order to the discussion and showcase the logic used to determine implications and recommendations for practice as well as implications for future research. It is important to note that due to the design and scale of this study, these findings are considered preliminary and are restricted to the particular population of educators who participated in the study.

How Have the Features and Conditions Within the School District Resulted in the Design of the DDT?

As established in the findings, four primary conditions and features were said to have resulted in the design of the DDT. These included (a) an iterative approach to the work, (b) a shared vision of leadership, (c) the use of an accordion model of communication, and (d) the investment in strategic professional development opportunities and partnerships. Two key themes are important to discuss in relationship to these findings. One is the need to clarify the DDT's role within the district. The second is around the perception that stress of change has created within the teacher population.

Theme 1: Clarifying the DDT's Role

Findings indicated that the use of an accordion model of communication, complete with a feedback system, was a critical feature of the DDT. Allowing for the transmission of information and ideas through the various levels of the system and allowing for feedback, the leadership communicated a shared vision of change for the district. The Strategic Plan, and the Implementation Plan, generated from the Strategic Plan, served as a way to begin operationalizing the intended innovations within the system. The DDT was considered the heart of this model and was responsible for many of the activities within the implementation plan. Further, as a result of the work DDT Teachers and Site Level/Design Team Leads modeled and explored the application of new initiatives at their school sites. Of importance is that fact that aspects of the DDT, mainly the purpose it served within the district, lacked clear definition within the larger system.

Described in detail within Chapter 4, the DDT teachers reported a lack of clarity around their actual roles within the district. The rest of the teacher population in the district also was reported to have been unclear about the role of the DDT. As a result of this ambiguity, additional pressure occurred during the first year of the team's development. DDTT2 shared, "at least I can speak for my school in that way. People don't really understand what I'm doing, and they feel like it's very separate" (personal communication, May 30, 2014). This notion that DDT teachers were perceived as conducting "separate work" from that of the rest of the teachers at their school site is an important consideration. Findings indicated that the investment in strategic professional development opportunities and partnerships was critical for the development of the team

and led to some of the innovations within the teaching practices of DDT Teachers. It was pointed out that because the members of the DDT were learning so much and experimenting with different things, it caused a feeling of isolation. DDTT2 captured this notion well:

> I also feel like people look at myself and the other teachers kind of in a different place, kind of disconnected, like we're on this ship that's sailing, and all these people got left behind. …It's sad to me because I feel like we can all learn from each other. (personal communication, May 30, 2014)

This needs to be addressed if this type of effective and celebrated investment is to be maximized.

It also became clear that the new practices that DDT teachers were being exposed to and experimenting with in their classrooms were not necessarily shared with other teachers at their school sights. A lack of understanding of what DDT teachers were responsible for doing within the district led to apprehension from DDT teachers and their colleagues. Finally, the rate at which the DDT teachers were being exposed to new and different ideas add to their feeling of isolation. A clear set of expectations for the work of DDT teachers at their sites, as well as a platform allowing DDT teachers to share the work they are involved in at the district level appears to be missing from this model.

Theme 2: Stress of Change

Another theme that surfaced from the data collected on the design and initiation of the DDT was the stress of the change process on the current system. Findings indicated that leadership identified that the work being done was not the incremental change that traditionally accompanies reform in education. The Director of Learning and Technology for the district explained this quality of the change process well:

> That kind of work is a lot of work upfront and a lot of stress upfront, and then once you have it happen, that's pretty good. But that's a different model than teachers are used to. So one, they had to become comfortable with that; two, they had to go through it once just to see if they could do it; and three, it was a lot of stress given all their other responsibilities. (personal communication, May 13, 2014)

The rate of exposure to "new ideas," paired with the feedback loop that was in place, allowed for an iterative motion to the work. This, in turn, created a faster pace. In addition, leadership modeled much of the 21st-Century Learning Initiatives during the weeklong Summer Intensive. That meant that heading into the 2013-14 school year, teachers on the design team had been frontloaded. An iterative and fast-paced change process as well as the number of new or different initiatives presented to the team produced stress. SLDL4 captured this:

> It is stressful for them because, you know, what we really want to do is create new understanding. …We're really trying to bust open a 150-year-old model, so we can't get stuck with the old. And it's so easy to fall into context that is the old way of doing things. But then that causes stress. It's good stress, though. I think it's necessary stress. (personal communication, June 23, 2014)

Her comments also help to bring into focus the depth of the work that was being asked of the Design Team Teachers. DDT members found it difficult to gauge what it would really take to get through all of the new initiative during the first time through. This was compounded by the fact that they were still responsible or felt responsible for their other roles at their school sites. Additionally, the Common Core State Standards (CCSS) were being introduced at each site. This showcases the level of work that is already being asked of teachers just due to the reforms at the national level. In this district, the first year of the implementation process for a 21st-Century Strategic Plan compounded this.

How Has the DDT Been Managed and Used to Produce the Intended Innovations Within the District?

From the research conducted around this question, four key components surfaced from the data. Findings from the artifact analysis suggested that (a) open communication and collaboration between DDT members, (b) an investment in human capital, (c) a responsive feedback system, (d) the impact of limited resources, and (d) communication breakdowns were important for understanding how the DDT was managed.

Findings indicated that the feedback system, as a part of the accordion model, was seen as critical to the function of the DDT. It enabled a responsive structure and added to the feeling of collaboration, giving the DDT adaptive qualities. Teachers reported feeling excited and energized by the collaborative nature of the DDT. DDT members also reported that their feedback was asked for an acknowledged by district leadership. Findings revealed that a primary use of the DDT, during year one, was to provide feedback on what technologies, curriculums, products, and design features to focus on moving forward. DDT members also perceived the modeling of 21st-Century Learning Initiatives (i.e., PBL, CCSS, the 5Cs, and tech-infused instruction) as critical and viewed the DDT as the "driver of change" within the district. This processes resulted in the emergence of a vision for 21st-Century Learning that is transmittable to the classrooms within the district.

Related to the use of the accordion model as a communication approach are two frustrations. The first can be described as a need from teachers to feel validated for all they were giving of themselves. The second frustration was around communication breakdowns or misconceptions that occurred within the DDT. These are two important

themes surfacing out of this change process as they directly impacted the function and evolution of the DDT.

Theme 3: Need for Validation

Findings indicated that a high level of investment was made towards the human capital aspect of the DDT, specifically, in regards to the compensations and training opportunities offered to teacher leadership and DDT leadership at the district and site level. Unfortunately, due to limited resources such as time and money, the strain of the workload placed on DDT teachers did not always seem to match the level of investment made.

Stemming from the level of stress and the amount of pressure teachers felt from working on the DDT, a need for validation from district and site level leadership surfaced. Findings suggested that some DDT teachers felt that the time commitment and the investment that they had made to the DDT were not being validated through compensation or actions. They did make it clear that district leadership and site leadership had verbally praised them and had asked them to protect themselves from burnout; however, they did not feel leadership had seriously addressed these concerns. To illustrate this further, a quote from DDTT1 was taken. In this statement, she reflected on a disappointment surrounding the fact that she and other teachers had invited district leadership to attend some of their events but no one had been able to attend:

> Everyone has their reasons, but to me that was a little deflating, I guess because here you're doing all this work. You're doing it for yourself, but you really are doing it for the district. And you're a representative of this team that's doing all of this groundbreaking work that the district has laid out in their strategic plan. That just didn't feel that great, and I know a lot of teachers expressed that feeling. (personal communication, May 27, 2014)

This captures the basic concern that actions from leadership were not supporting the validation of all of the work generated by the D13 at the different sites. Going deeper into this theme, what surfaced was a disconnect in the view of the leadership and the view held by the D13. DDTT11 had pointed out, “I think the district in general wanted to get information from us, and did listen. Again, I think it was perceived that maybe the Superintendent, as the leader, wasn't as involved, and so might have had a different view of what he wanted to have happen” (personal communication, June 18, 2014). Yet another D13 teacher, DDTT7, shared, “I think people were not feeling as supported as they needed. And that perhaps maybe ‘up above’ didn't really know how hard it was, the time it was taking, and how hard people were working” (personal communication, June 19, 2014). These quotes illustrate the disconnect in the communication between the leadership at the district level and the teachers and bring the importance of addressing it into focus. This notion carries over into the next discussion about communication breakdowns within the system.

Theme 4: Communication Breakdowns

The communication breakdowns that occurred during year one of the DDT acted as a constraint for the team. Examples were identified and referenced by all members of the DDT. For example, one problem that kept surfacing throughout the interview process with DDT members was the confusion surrounding the DDT’s priorities. Some teachers on the team did not understand that the main role of the team would be to operationalize the Strategic Plan. Many on the team who had applied in the Spring of 2013 thought the design and development of the fourth- and fifth-grade schools was to be the team’s priority. DDT teachers reported that other teachers, who had either applied and were not

accepted or those who had attended the meetings in the Spring of 2013, were also sometimes confused. Looking at the original document describing the DDT (See Appendix C), the team had always been charged with both goals; however, the 21st-Century Learning Initiative moved from a secondary role to a primary one for the 2013-14 school year. Adding to this, DDT teachers were asked to assist in the roll out of PBL for the district. Though this was one of the initiatives name within the Strategic Plan, no explicit conversation around how all of the initiatives explored by the DDT came together to create a framework for 21st-Century Learning within the district. As the year progressed and the DDT continued to engage in the change process, misconceptions were escaping out into the larger system. The stress of the change process and the incredible amount of time these dedicated educators were putting into their work on the team compounded the situation. The lack of clear understanding around expectations and the amount of work that DDT teachers were accomplishing for the district seemed act as constraint within the larger system.

How Have Design Processes Contributed to the Implementation of the Innovations?

Findings indicated that the majority of the DDT members regarded design thinking as an important process connected to the design and function of the team. Design processes were identified as having contributed to the implementation of the intended innovations in two ways. First, through the conceptualization of the team and secondly, through the leadership approach used by some of the DDT leaders. Both of these factors created a unique quality within the development of the DDT. Design thinking, as used by district leadership, was reported to have impacted the DDT's development through the innovative mindset it created and the collaborative space it

generated. According to district leadership, the Team was able to evolve and develop quickly, accomplishing more in the first year of the implementation process than expected. Overall, the flexible, iterative approach used in the design of the DDT was said to generate opportunities and ideas that fueled and energized the team. While constraints also surfaced out of this practice, the artifact's iterative design and collaborative nature, supported teachers in feeling innovative.

Theme 5: Implicit vs. Explicit Models of Design Thinking

One of the constraints identified around the use design thinking centered on the implicit or organic model of design thinking employed by district leadership at the time of the study. As presented in Chapter 4, DDT members debated whether an implicit or an explicit model would be more helpful for the development of the DDT. The decision was viewed by members of the DDT as having a direct impact on how design thinking is integrated into the system. To help set the stage for this part of the discussion, quotes from the Superintendent are used. In this first excerpt, it becomes clear that he believes in an organic, self-forming type of design process: "For the leadership component, the design process is used--but it's an organic kind of mindset-type process from having done it many times over" (personal communication, June 19, 2014). He went on to point out that trying to grab on to any one model can actually be misleading or confining:

> And I actually think that's an interesting sort of dilemma, if you will, about design learning--that you're trying to make a stagnant pedagogy for something, but in fact, the pedagogy itself is meant to not be stagnant. It's meant to be iterative, right? (personal communication, June 19, 2014)

This is an interesting view that may stem from his expertise with design thinking. His understanding allows for a more organic and fluid approach to conceptualizing a process. Of interest is that this approach may have prevented members of the DDT from being

able to explicitly identify principles of design thinking as a strategic approach to leading and working with the team. SLDL3 confirmed this:

> I think it was in mind. I think it was in conversation. But I can't tell you how much they actually used it at their meetings and in their conversations. I think the meetings were far enough apart that by the time the meetings had happened, there were significant agendas that were developed, which means I think there was a lot of pressure, which means I don't think you could actually get there the way you wanted it to. (personal communication, June 20, 2014)

Looking at the data, teachers identified that they had been able to work with a design process. For example, DDTT4 stated, "Yeah, we did some lessons and things. We did one where you had …to create something that solved someone's problem. So you had to meet with a person and they had to tell you their problem, and then you had to invent something that would help them with their problem. That was fun" (personal communication, June 9, 2014). This response helps to illustrate that while DDT teachers received some explicit training around a design cycle, design thinking was not explicitly identified by all members of the D13 as having been a part of the team's process. In most cases, when design teachers spoke about design thinking, it was in reference to design learning principles. A disconnect between the level of undersigning within some of the leadership, especially at the district level, and the teacher side of the team is evident.

In contrast to the Superintendent's and Director of Learning and Technology's viewpoints on the importance of integrating an organic type of design thinking model, DDT teachers and site level leaders held a perception that an explicit model of design thinking could be helpful to the design and function of the DDT. The general feeling among this side of the team was that using a more explicit model would orient all members of the team. Once there was a shared understanding of a design process, a more organic approach could be successful. Included in this was a reported need for principals

to be trained in a design process. The reasoning there was that in training principals with a common understanding of design principals, even more alignment within the system could occur. Teachers also called for more training and were vocal about wanting an explicit model that could be followed.

Resulting from the application of an implicit approach, the current integration of design thinking within the DDT occurred through an unbalanced approach. This quote from SLDL4 helps to capture this: “Right now we've got this disjointed approach where some are doing that and some are not and it creates havoc in the whole system because then the teachers start complaining…” (personal communication, June 23, 2014). She pointed out the need to involve the principals so that they can use this process too. This connects back to the earlier statement about how many members of the DDT argued for the use of an explicit design process model.

Theme 6: Design Leadership

What became clear after conducting this study was the influence that a few leaders had on the process of the DDT. The Superintendent has “had a long career in innovation and design” (personal communication, May 13, 2014). It was also recognized by members of the DDT that a few key members of leadership also had a background in design and were supporting the district’s work. This support was reported as a “philosophical commitment” to design principals. It was also pointed out that while “people are going to it, district leadership is coming from the design thinking approach”. (personal communication, May 13, 2014). This is a unique attribute of the DDT. It also supports the notion of the Superintendent as a design leader.

Site level Administrator/DDT Leads confirmed this perspective. For example, SLDL1 commented, “He has the process that he likes to do. It's, let's set a vision and then let's work on how we're going to get there and we'll learn a lot along the way.” (personal communication, May 14, 2014) SLDL2 shared this same thinking. She captured the empathy: “He listens and adjusts the course based on what he's hearing but not veering off-course. So I think that that empathy piece is really strong in his leadership and also in the original Design Team Leads” (personal communication, June 18, 2014). This quote referred to the original designers of the DDT, the Superintendent being one of them. As discussed earlier, at least three of the administrators supporting the DDT were considered to have a background in design. To illustrate this further, part of the Superintendent’s perspective on this topic is presented:

> I think that is just built into who we are and what we do, but I don't believe that has broadly gotten out there with everybody--which means we have to continue to be explicit about that process, so that eventually the entire system behaves in that way, without necessarily having to be called design thinking. It's okay if it is, but it doesn't have to be, because it just really is part and parcel to what teaching and learning is, just like teaching eventually became teachers standing up at the front of the room with a chalkboard. Right? And people didn't call it the blank model at the time; it was just, that's what teaching is. So eventually that's what we want: for a new way of what we consider to be more appropriate for teaching and learning just becoming a part of the ethos of the system, where everything you do would be an iterative design learning experience. (personal communication, June 19, 2014)

He went on to explain how he and his team built a pedagogy at the last organization that they worked at together. He shared,

> We built this whole curriculum, pedagogy, units--everything was based on that thinking, and we went out of our way to make it absolutely explicit that this is a design thinking and innovation learning model that we're putting forth. …For us, besides the fact that it's a huge system that we have here, we're worried about, what does that mean for reading? What does that mean for writing? What does that mean for science? What does that mean for social studies? What does that mean for P.E.? Right? There are so many elements. …I think that's one of the

> places where, when they go really deep into building the curriculum at the school site, I think that's where we're going to see more explicit terminology and discussion and commitment to a learning model that has design thinking at its core. (personal communication, June 19, 2014)

Clearly, the use of design thinking as a problem-solving approach is not new to the designers of the DDT. Even though the approach they have used is not explicit, it is strategic and is implicitly connected to the future planning for the district.

Implications for Practice

In this section, implications for practice are presented. These implications were determined by synthesizing some of the themes discussed above. They can be used to inform next steps for school leaders, especially within K-12 districts.

Increased Capacity Within the DDT Members

What is critical here is capacity building within the DDT. Through the concentration of funding and resources on human capital and a focused on the professional development of the design team members' capacity building took place. By providing paid time, staffing positions, and creating opportunities for exposure to different ideas and concepts, an intensive effort around understand and investigate the different 21st-Century Learning Initiatives occurred. Leadership and teachers alike were provided with the time and opportunities to become familiar with the different philosophies and curricular shifts being put forward by the Strategic Plan. Based on the team's feedback and learning curve, leadership adjusted as needed. Leadership was careful to focus most of the resources on building capacity within the DDT so that it could manage a leadership role within the district. As the work of strategic planning is a human-centered endeavor, it makes sense to strategically utilize what resources a district has to build capacity within all levels of the leadership. Additionally, by providing the

DDT members with these opportunities, the team was able to begin exploring the definition of 21st-Century Learning designed by the Strategic Plan. The work of the DDT involved applying what they were learning at their school sites. This allowed aspects of that definition to be molded throughout the organization.

According to the literature, building capacity and developing a shared vision for change within an educational organization depends on the capacity and vision of the employee's and other stakeholders who function within that system (Duffy, 2003; Duffy et al., 2006; Fullan, 2001; Joseph & Reigeluth, 2010; McCharen et. al., 2011; Schlechty, 2009). What has ultimately resulted from the work of the DDT is that school sites, within the district, are now beginning to understand how district initiatives such as PBL, Common Core State Standards, technology-infused literacies, and the 5Cs are linked to create a framework for 21st-Century Learning. While teachers and leadership from all six schools remain at varying levels of understanding, the hard part of defining it is done.

Moving forward, district leaders may naturally benefit from the results of the year one implementation process. Though stress on the system occurred, Design Team teachers now understand the expectations. Further, they can help to usher in new leadership. DDTT6 commented,

> So now that we know …that's kind of part of the gig, to let new people that come on know and have that conversation--I think also at the district level, it's huge. The Strategic Plan is huge and ambitious; and it's beautiful, because it is so… ambitious. And we all want to do it all, and you can't do it all. (personal communication, June 18, 2014)

This DDT teacher pointed out the need for strategic goals that break down the actions in the Implementation Plan even more. An activity that leadership might consider involving the DDT in during year two. Doing so may provide more buy-in from teachers who have

not yet experienced the same level of work that the DDT has with the new definition of 21st-Century Learning.

Unbalanced System

When the first four themes discussed in the Summary of Findings section are taken together, another implication for practice surfaced around the use of the DDT model. This is the idea that the current formation and use of the Team created an "unbalanced system". In chapter four, teachers identified this as a feeling of being "fragmented" or seeing inconsistency at sites. D13 teachers also mentioned the feeling of being isolated. Further, the different amount of support received by D13 teachers at the site level compounded this perception. Confirming this, DDTT8 observed, "teachers all compare notes. And they'll feel frustrated that they can do something at one site and there's all of these constraints at another site. And the principals don't even know that there's these huge differences between the sites" (personal communication, June 23, 2014). Site level administrators further validated this. SLDL2 commented, " I kind of think of the design team as the project-based learning part of the strategic plan, but I don't even know if that's totally true" (personal communication, June 18, 2014). This helps to reiterate that DDT teachers and site level leadership was not clear on the role of the DDT during year one. Furthermore, as discussed earlier, an inconsistency in support and communication hindered the development of the DDT.

Due to these conditions, a deeper constraint emerged. Leadership could not successfully implement a new system within the framework of an old one without first creating explicit space for the new growth. In other words, a clash occurred between the expectations of the current system and the intended innovations brought about by the

attempted actualization of the new one. This clash came about because teachers on the DDT were given the ability to try new things and to experiment as a member of the Design Team; however, the larger system did not necessarily recognize or support their work. As a result, leadership at the site level and other teachers within the schools did not make room for the DDT teachers to "do some things differently". DDTT7 reflected, "And I wished that there was at least some sort of, 'just be aware that this group is going to be marching to a different beat for a little while'" (personal communication, June 19, 2014). She went on to share, "It was like this thing we were given the room to do, but everybody around us didn't know we were given room to do this. And so I felt like I was letting down a lot of people" (personal communication, June 19, 2013). Design Team teachers were constrained by the old paradigm already embedded within the system. This contributed to the feeling of being overwhelmed and underappreciated for D13 teachers. Comments from DDTT8 validated this as a logical conclusion:

> And you just sort of assume, because you're on the train, that you're going to keep doing what you need to do--and then, 'Oh, I'm going to add this on, too.' But something has to give. And I think you could almost see, at the beginning, people were just so jazzed, and the products that would come out, and people were still jazzed, and oh, a lot of hard work, but still jazzed, the first quarter. And then by the second quarter or trimester, people were just like, 'Ahhh,' and starting to unravel and hitting a wall. (personnel communication, June 18, 2014)

One of the most interesting pieces here is the notion that the freedom and experimentation created by the embedded philosophy of the DDT was both a benefit and a constraint. Within the system, those on the DDT who were trying to innovate were still confined by the norms and workload already inherent on the system. As a result, attempting to deviate from that norm causes stress and strain not only for the member of the DDT but also those connected to their work.

Verbal allowances were given to DDT members to take on less, and to choose only what they wanted to experiment with; however, structural allowances for DDT members to utilize more space were not made. This resulted in the feeling that there was not enough time and that it was difficult to "go deep." It has also led to concern around pressure and the general perception that the work is too hard. Teachers and staff outside of the DDT are watching DDT people do the work expected of them and then go beyond. While innovation has occurred within the last year, the cost has been high.

Design Thinking and the DDT

Emerging out of this study about the use of design thinking as an approach to introducing innovations within the district are two implications for practice. These include the development of innovative mindsets and the structure of the Design Team meetings.

When asked why design thinking helps to achieve innovation the Director of Learning and Technology for the district replied, "because it really lends itself for creating a culture of ideas. And a safety and freedom to express your ideas" (personal communication, May 13, 2014). He explained that through the process, the team can "come up with a decision that, we're going to go down this avenue and try this and if that doesn't work we know have some other options" (personal communication, May 13, 2014). His statements capture the hopeful view of leadership that, through a design process, the team will discover what aspects of the latest reforms in education fit the district's needs. Overall, his comments help to illustrate the importance of creating an innovative mindset with in the DDT. Members at all levels of the Team reported that they valued the "mindset" that design thinking can create and found it to be compatible with

the change process in this district. This, in turn, validates the efforts by leadership to integrate a design approach into the work of the DDT. With that said, considerations should be made.

Design Team meetings provided the space for developing the innovative mindset within the DDT. During these sessions, teachers and leaders participated in collaborative experimentation and were exposed to new ways of thinking and teaching. Further, these meetings were used to promote and foster partnerships without side organizations. Architects, educational technology specialists, design consultants, and others were brought to enrich the DDT. This multidisciplinary approach to the team allowed for exposure to many types of expertize and ultimately supported creative decision making processes. Through this meeting process, feedback from the Design Team allowed leadership to make decisions about what partnerships to continue and what avenues to focus on. This model is similar to that of the design studio. Chance (2010) defined a design studio as "a laboratory for exploration and for solving problems in context. Studio classes involve hands-on experiential learning. They help students integrate art and science in the process of planning" (p.50). Though these meetings were not called design studio sessions, they provided a similar experience for the team. Overall, they proved beneficial for establishing an innovative mindset within members of the DDT. They also were effective in helping the leadership to follow an iterative planning process. Based on feedback from the DDT, decisions were made to invest in and team up with specific ventures. In turn, this process helped to further define and actualize the district's definition for 21st-Century Learning.

Recommendations for Practice

Recommendations for practice are organized by the same six themes presented in the Summary of Findings section of this chapter. Theme one and two correlated to the findings and discussion under research questions one. Themes three and four were discussed under research question two. Themes five and six were presented under the third and final research question.

Theme 1: Clarifying the DDT's Role

Designing a platform for DDT teachers to share their work with other teachers at their school sites as well as provide updates for the latest efforts of the DDT may help to demystify the role of DDT teachers within the district. Adding a platform into the accordion process, explicitly, could increase the rate at which the new framework for 21st-Century Learning can take hold within other classrooms. A suggestion is to provide release time to DDT teachers at the site level so that they can focus on delivering presentations or providing trainings to other teachers on their site. If staff meeting time or paid professional development time is in short supply, then having DDT teachers offer optional trainings after school may work to begin building the platform. This may alleviate this notion that caused some DDT teachers to feel alienated and disconnected to their school sites. Site level leadership should consider being explicit about the fact that DDT will need to be freed up to complete some of their work and to celebrate that as a feature of their role.

Theme 2: Stress of Change

Moving forward, in an effort to reduce stress, the amount of initiatives introduced in to the system at one time should be considered. To understand the health of the system

and to support the work moving forward it is also important to consider some of the constraints that resulted from the initiation of the change process within the system. Finding ways to mitigate or acknowledge them may also reduce the level of stress reported by DDT members.

Simple actions that can alleviate time and create space for the DDT members to focus on their craft will go a long way to reduce the strain: for example, finding other staff within the system to complete some of the basic responsibilities of the DDT educator's work. Someone else can proctor/administer assessments, evaluate students' progress on goals, attend nonessential meetings and provide notes to the DDT members, and arrange field trips and events for the DDT teachers. Such gestures may help the DDT to begin shifting away from traditional roles and responsibilities at the site level.

Theme 3: Need for Validation

Finding ways for leadership to exhibit appreciation and recognition for DDT teachers would be important moving forward. One suggestion is to having site level and district level leadership (including willing School Board members) sign up to attend different events throughout the district so that leadership is always in attendance. Creating platforms for sharing the work of the DDT teachers with the whole district community might be a way to show appreciation. For example, a page on the district's website might be dedicated to the DDT's work. Sending out regular updates and congratulatory type email blasts might also help to validate the work of the DDT teachers.

Theme 4: Communication Breakdowns

To avoid further communication breakdowns and misconceptions within the DDT, DDT leadership can focus on the accordion model for this year. Clearly defining it and communicating how the feedback loops are expected to work could dissolve some of the inconsistency of use seen within the organization. Further, both district and site level leadership can continue to align best practices in how and when to use the accordion model. For example is it only initiated at a district level or does site level administration use it to float ideas and solicit feedback as well. Also connected to the use if the accordion model is the pace at which new ideas or shifts in thinking/directions occur. Sensitivity to and practice with sending out messaging to all constituent groups orbiting the system, my help to develop the time of a fast-paced, iterative, and inclusive rate of information exchange. Already indicated as one of the team's goals for the 2014-15 school year, refining it should help to lessen some of the tensions from the miscommunications that occurred during year one.

Theme 5: Implicit vs. Explicit Model of Design Thinking

While the DDT was interested in the benefits of design thinking, there was reported disconnect between how it could be integrated into the function of the team. Based on the reports of the Site Level Design Leads and DDT teachers, district leadership may want to provide some explicit training for the novices within the Team. Once all members of the team have achieved a basic level of understanding of the design process, developing a more organic approach should be better received. On a whole, a more of a unified approach could improve the balance within the system.

Theme 6: Design Leadership

Clearly, the DDT has a unique quality in that at least three leaders have background in design learning. Further, the Superintendent as a design leader is perceived as greatly influencing the design and function of the Team. Leadership may benefit from considering Rosensweig's (2011) theoretical model, which identified how design becomes a dynamic capability for any organization when its promotion and support shifts from a person to a function. This may prove useful to leadership in addressing some of the imbalance reported within the organization.

Implications for Future Research

Some of the key findings from this study provided implications for conducting future research that connect to gaps in the literature identified in Chapter 2. Implications surfacing around the Implementation Plan, used by the DDT to guide the operationalization of the Strategic Plan, are considered. Additionally, implications connected to the design thinking literature as it relates to reform efforts in education are highlighted. Also included in this section are implications for future research in the area of implementing 21st-Century Learning Initiatives. Finally, a reflection on the conceptual framework used to organize the data analysis is offered.

Implementation Plan

Important to the discussion of implementation plans, as they related to strategic planning process, is the way in which this district's Implementation Plan allowed for the alignment of vision and the actualization of the tenants found in the Strategic Plan. For example, the three high level goals around 21st-Century Learning Initiatives found in the Strategic Plan are a) I: Aligning Curriculum and Instruction to a 21st-Century Model of

Learning; b) II: Aligning Human Capital to Support Staff as 21st-Century Educators; and c) III: Building Learning Environments for all [district] Schools that will Reflect, Support, and Sustain 21st-Century learners were translated into Year One Goals through the Implementation Plan (p. 4-7). These nine Year One Targets were presented in Chapter 4. From these nine targets, specific actions; including who was responsible, when the work should be completed by, and how it would be measured were designed (appendix F).

As established by the literature review, part of what makes a strategic plan effective is the ability for the plan to be implemented and for the organization to achieve the goals established during the planning process within a set period of time (Zandi, Sulaiman, Atiyat & Naysary, 2013). Further, "strategic plans have to be specific enough to provide strong direction, but must be flexible enough to be adapted to turbulence, or rapid change, because no one can predict exactly what the future will be" (Williams & Johnson, 2013, p. 355). Leadership and Design Team teachers alike reported on the structure and the alignment that the district's Year One Implementation Plan provided. The flexibility and autonomy around how to roll out the different steps and what to try out were seen as positive features of the design of the plan. It allowed Site Level Design Leads and Design Team Teachers to experiment with different initiatives at their schools and within their classrooms. Members on the DDT could then report back to the whole group and discuss next steps based on what they found. This feedback allowed for adjustments to the timelines, connected to the goals for implementation when necessary. This suggests a focused yet flexible strategic implementation approach. A research study designed to specifically evaluate how the implementation plan played a role in the

integration of the district's initiatives into the system may offer valuable information into strategic planning processes for schools. The literature in this area also warns that delayed implementation and poorly managed implementation processes, or those that are dropped, can lead innovations to fail (Crossen & Apaydin, 2010). In this light, barriers to innovation within educational organizations can be considered human-centered problems. As a result, they require a human-centered, creative, flexible, consistent, and practical approach to dissolving them. The use of the DDT exhibited many of these characteristics. A longitudinal research study that looks at the use and impact of the DDT would help to evaluate whether this type of artifact is successful at dissolving some of these common barriers to implementation in educational organizations.

Design Thinking and Educational Organizations

Established in the review of the literature, Johansson-Skoldberg, et. al., (2013) suggested two future areas of research in the design thinking discourse relevant to the application of design thinking within educational organizations. First, they called for ethnographic research that explores a manager's ability to use design thinking as a strategic approach to planning. Secondly, they indicate that it would be important to consider the work of multidisciplinary teams with connections to both design and management as an approach to achieving innovations within an educational organization. While this study's results may offer some insights to the research in both of these areas, more work is needed to verify the findings. Further, a study designed to focus on the specific problem solving processes of the DDT designers and used during the administrative DDT planning meetings would be valuable. Such a study could lead to a clear examination of the work of design teams with connections to both design and

management as an approach to achieving innovations within an educational organization (Chance, 2010; Johansson-Skoldberg, et. al., 2013; Rice, 2011; Seidel & Fixson, 2013). More research in this area is needed to capture exactly how design thinking as a function can build capacity for the organization.

Another area for future research includes the use of novice design teams in education. A difference between a traditional leadership team and the way the DDT was run did surface from the data. For example, DDTT7 responded, "It's a novice team, because …more of a leadership team would have felt like the end product came from one idea" (personal communication, June 19, 2014). DDTT9's comments further confirmed this opinion: "I can't speak to too much about design thinking, but in the broad sense, I think that's what we are. I think that's why they called it design team, because it is very much put everybody in a room, and let's figure out some solutions" (personal communication, June 26, 2014). Regardless, as this was not part of the interview protocol for all DDT members, more research is needed to understand why the District Design Team was named as a Design Team. Additional research also is needed to determine whether the DDT would be defined as a novice design team according in terms of the literature.

Somewhat related is Chance's (2010) theory that creating a design studio and using design teams can improve strategic planning processes. In this case study, the DDT was used as a mechanism for operationalizing the district's Strategic Plan. As discussed in the Implications for Practice section, much of the year one process for the team took on a feature similar to that of the design studio described by Chance (2010). A research study that attempts to capture the design and process of the DDT meetings, including the

particular leadership strategies used by DDT Leads, might prove useful for understanding why they were perceived as a key feature in the team's development.

The concept of design leadership and the approach followed by design leaders has become a focus of interest within the management literature and is considered an area for future research (Gloppen, 2011; Vogel, 2009). This study successfully captured the work of the Superintendent and the original DDT designers in implementing a District Design team. Also, it captures their approach to working with the DDT to implement the district's newly adopted strategic plan. This unique opportunity in public education provided both practical and theoretical insight into the systemic change process of a small suburban school district. More research is needed to determine the impact of design leadership approaches and design leaders on reform efforts in K-12 education.

Finally, researchers warned that if design thinking methodologies are not well understood by members of the team, the team and in time the organization may become frustrated and abandon design thinking as a mechanism for generating innovative ideas. Seidel and Fixson (2013) suggested to the field of design that more research is needed to assess this. Findings from this study suggest that the way that design thinking principles are being introduced into the system, may contribute to a feeling of the unbalanced system discussed above. A research study examining this further could be valuable for leaders interested in understanding the application of design thinking as a mechanism for generating innovative mindsets within a school or district.

Implementing 21st-Century Learning in Schools

This study added to the literature on 21st-Century Learning in two aspects. First, it explored a definition of 21st-Century Learning designed by a school district. Secondly, it

captured an example of how that school district took the definition and began disseminating it throughout the organization. Specifically, this study contributed to the literature by exploring the design process used by district leadership as they implemented 21st-Century Learning Innovations within the district. This study also added to the literature on using multidisciplinary teams to produce innovations in education. Of particular interest was the role of the DDT in the articulation and implementation of the district's newly adopted definition of 21st-Century Learning throughout the district.

The literature suggested that the constant challenges in education and pressures of student achievement will be guided by a well-developed strategic plan that serves as an integral part of day-to-day leadership and that strategic planning is needed to create new opportunities in the 21st-century (Snowden, 2002; Thompson & Kritsonis, 2009). The focus for leaders must be on how to overcome the barriers associated with developing and implementing strategic plans to allow for this innovation to occur. The investment in human capital, a strategic focus on building capacity, and using feedback loops to gather input from the larger system provided a strong foundation for the change process of the district.

Framework of Initiatives and "Deeper Learning"

While exploring the implications for future research in regards to the introduction of a framework for 21st-Century Learning, the concept of "digging deeper into teaching and learning" seemed to emerge from the findings. In listening to DDT members describe their goals and discuss the work that had been done by the end of year one, the idea of "deeper learning" can be interpreted as a shared understanding between team members. It was evident in the way members at all levels talked about "digging deeper into

curriculum" and about "new ways of thinking." Many spoke about the importance of the 5Cs as a "takeaway" from their work with the team.

In education, "deeper learning" is defined as (a) a deeper understanding of core academic content; (b) the ability to apply that understanding to novel problems and situations; and (c) the development of a range of competencies, including people skills and selfcontrol (AIR, 2014). According to the American Institute for Research (2014), the William and Flora Hewlett Foundation is the leader in the national initiative to promote deeper learning in schools. A three-year study is being conducted to examine the impact of these opportunities on how students develop five dimensions of deeper learning: *mastery of core content, critical thinking skills, collaboration skills, communication skills,* and *independent learning skills*. All 20 high schools selected for the study were part of any of 10 networks for deeper learning and had at least a moderately well-implemented approach to promoting deeper learning (ARI, 2014). Key "takeaways" from the current research indicated that ranges of approaches to proving deeper learning are needed. Project-based learning is often implemented in the schools' studied. A focus on interpersonal skill development is present, as well as a variety of structures and strategies to encourage the development of academic mindsets and learning-to-learn skills (AIR, 2014). Though this current research is focused on high schools, this framework may apply within this elementary school district. More research is needed to determine this. Such a framework may guide leadership in evaluating reform efforts. Further, it is not clear if this shared understanding of "deeper learning" has transmitted throughout the team completely or if it has gone beyond the team at all. A

separate study would need to be conducted to determine the role that this trend plays within the district's reform efforts.

Revisiting the Design Cycle Analysis Model

What became clear, almost immediately upon completing this study, is that the conceptual framework, the Design Cycle Analysis Model (Halverson, 2003), was successful in capturing the iterative properties of the DDT as an artifact. While initial features and purpose were built in to the DDT, constant feedback around goals and infusions of resources and strategies, help the Team's development as a "driving force" of change within the district. The affordances and constraints created tension, which in turn formed outcomes. These outcomes either inadvertently or advertently shape the team's development and capacity. The problem-solving approach utilized by district leadership provided the "engine" for this cyclical momentum. Further, the resulting feedback loops solicited input and output from members at all levels of the DDT and at times, involvement of constituents from all levels of the system. Finally, the timing of the study proved to be supportive in capturing the development of the DDT as it completed major cycles.

While Halverson's DCAM model (2003) successfully illustrates the working parts of artifact analysis, it could be argued that the application of design thinking as a problem solving approach by leaders successfully brought the feedback loops, involved in sustaining the design process of artifact development, into focus. Therefore, the conceptual model can be reconfigured to show how artifact construction and development iterates through a system of spaces. This shifts the idea that input and output occur at specific process points by implying that the input and output function is

continuous. This practice of consistent feedback throughout the system seems to validate Halverson's (2003) earlier work on the importance of interpersonal leadership during artifact construction. Additionally, this study may inform the research on the relation between artifact construction and the underlying forms of human capital that make change in a system possible.

Concluding Remarks

As both a student and practitioner in the field, I am curious about the current trend in reform movements influencing education on both a national and local level. Sparking true innovation within education systems is a necessary yet daunting task. I am interested in better understanding the philosophy, benefits, and best practices around integrating business solutions into the field as an effort to produce innovations. I initiated this study in order to examine the innovative change process of one school district.

By following the District Design Team, I was able to investigate the application of an implicit type of design thinking. I was also able to look at how leadership felt it was using design processes to create an impetus for innovation within the district. The design leadership approach of the Superintendent and some of the other designers of the DDT played an essential role in the success of the overall implementation plan for year one. This leads me to wonder whether applying design thinking to change processes in schools requires education leaders with backgrounds in design learning or design thinking in order for innovation to occur. If that is the case, what does that mean for administrators that do not have such a background?

Design processes did seem to allow for an innovative mindset and an iterative problem solving approach, which led to an increased capacity for change within the

DDT. Further, through the work of the DDT as a whole, the district was successful in communicating a definition of 21st-Century Learning within the district. This case study successfully illustrates a unique type of implementation plan, generated from a strategic planning process. Of course, since the school district was in the first year of a five-year strategic planning process, it is difficult to gauge how design thinking and design processes will interact to produce sustained innovations within the district. More research is needed to determine the value of integrating design thinking into school change processes and whether this approach, and others like it, should be entered into the larger discussion regarding how we approach leadership in education. Regardless, this research and the future research in the recommended areas could help to identify next steps for school leaders that wish to innovate within their organizations.

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APPENDICES

Appendix A

District Strategic Plan

Strategic Plan
2013-2018

The following Strategic Plan outlines the vision, strategy, direction and goals of the or the "District") and was created over a period of two years in collaboration with District staff and community members. While this plan is intended to serve as a guide for the District over the next five years, it is also intended to be an evolving, living document, and so will be reviewed and updated annually, as appropriate. This Strategic Plan was adopted on June 20, 2013.

A Vision for Our Children

The shall provide an innovative and engaging learning experience that fosters the development of the Whole Child to ensure all students are well prepared for success in the 21st Century, as evidenced by:

- Reaching their highest academic, social, emotional, intellectual, and physical potential; and
- Becoming problem solvers, critical thinkers, risk-takers, designers, collaborators, and innovators; and
- Developing into contributing, empathic citizens and leaders who are responsible stewards of their world and care about equity and justice, both locally and worldwide.

Context and Background

We are at a watershed moment in the history of public education. Nineteenth century conditions no longer constrain when, where and how learning takes place or how we organize our system—students, teachers, community members, facilities and resources. Current changes and trends are not fads or temporary states. If anything, their effects will magnify over time. We have a unique opportunity and responsibility to address structural challenges in an educational system that was designed for a very different time. The District's status of having mostly charter schools allows it more flexibility to implement many of the changes envisioned in this plan, but it still must comply with many state and federal education mandates.

Additionally, this Strategic Plan is written in the context of political and economic factors as well as demographic and social trends. As a Revenue Limit District, is dependent upon the state of California for its funding, and given current trends in policy, it is likely that state funding for will remain modest with continued uncertainty. As such, relies on local sources of funding, including monies raised by the as well as two parcel taxes currently in place, both of which would have to be

renewed over the next five years to maintain current levels of funding. In addition, relies on a very active, involved, and informed parent community to provide the educational experience for all children. In addition, is a feeder district for the and as such must continually work closely with the high schools to ensure smooth articulation of curriculum and transition for its students.

has gained a reputation for excellent schools, and it believes that adoption of this plan will further raise the profile and performance of our schools. Our successes to date have resulted in continually increasing enrollment (as many young families move to in part based on this reputation), and it is expected that this trend will continue for at least the next five years.

Emerging Trends

Our students will enter a world of work and social interactions that will be very different from those of their parents. In order to prepare them for the future and yet undefined careers, it is imperative to consider and address a number of emerging trends that provide the context and conditions for their future success.

A Connected and Borderless World

The technological world and its associated network of social interactions are undergoing enormous changes. They serve as drivers of change that present a suite of challenges, and more importantly, opportunities for rethinking the educational landscape. Children today are born into a world where digital access to information is commonplace. For these post-Millennials, such is not considered "technology," but rather the normal way of interacting with the world. Our increasingly networked world allows the connection of all human enterprises through information networks and unprecedented creation and sharing of educational and social content. This ubiquity and access present the challenge of how to educate children in a world where the sum of human knowledge is available instantaneously, for free, at their fingertips. All this is taking place in an increasingly global and "flattened" world where traditional barriers among countries – both literal and conceptual – have broken down. Information travels freely to all corners of the globe, and citizens around the world can participate in educational and political processes like never before. Furthermore, the tremendous advancement in manufacturing and information technology has allowed us to hold a device in our hand as powerful as most "computers," allowing it to be a primary information resource device for most citizens. We have been freed from "place" as a requirement for learning and sharing.

Workplace Requirements for 21st Century Skills

Parallel and intertwined with the changes taking place in the technological landscape is a rethinking of skills and conceptual tools that are critical for 21st Century learners. Partnership for 21st Century Skills calls for a focus on the 5Cs: Critical Thinking & Problem Solving, Communication, Collaboration, Citizenship (from local to global) and Creativity & Innovation. The 5Cs embody mindsets that

are critical for our students to successfully participate in the contemporary and evolving workforce. The successful development of these skills happens in school and home environments that adopt a whole child perspective which, in addition to building technology proficiency and adroitness with the information it accesses, engenders the development of each student's social-emotional, psychological, and physical well-being.

Need for Global Environmental Awareness
A third trend is the recognition that human activities are exerting an enormous influence on the designed and natural world. Unlike any generation before it, children today will face unprecedented challenges related to the Earth's environment, including climate change, deforestation, loss of habitat, human overcrowding, and growing shortages of natural resources. Accordingly, environmental awareness and stewardship are paramount. To a great extent we as humans are able to modify and design our surroundings. Design thinking and problem solving are key ingredients to improving the human condition and ameliorating our impact on our planet. Students will need the ability to understand their environment and responsibly manage their future.

Implications for Teaching and Learning

The implications of these trends for education are far-reaching and fundamentally "game changing". Although technology advances have catalyzed many of the above shifts, adding more technology into a 19th Century classroom does not in and of itself make a 21st Century learning experience. Rather, it is both the content of our curriculum and the process of teaching and learning that are shifting. The design of the physical environment both inside and outside of "school" needs to support new approaches to teaching and learning. Developments in technology and social networking have given us the opportunity to create new forms of collaboration and communication systems to change the way educators, students, and community members interact.

We also must recognize that the availability of these technologies presents certain risks and challenges, such as the increasing potential to isolate people, distractions from learning, as well as greater opportunities for making poor choices (e.g. cyber bullying). All of these have real implications on the development of basic social and communication skills, particularly for children. Schools must be cognizant of this and be encouraged to experiment with new approaches that are more aligned with research on brain science and innovative approaches to education, such as incorporating principles of gaming cognition and motivation theory, as well as innovative ways to support the healthy social-emotional development of our children in a tech-centered society. If anything, the ubiquity of technology and virtual interactions make more important a true 21st Century Education that focuses on "life skills" such as teamwork, problem solving, confidence, taking initiative and being resilient.

Specifically, the Who, What, Where, When, and How of educational endeavors will undergo a process of transformation, including:

- **Who**: Bringing together a team of educators, broadly defined, from the community and across the globe as well as challenging traditional "sorting" mechanism of students
- **What**: Emphasizing the Whole Child, focusing on the 5Cs of 21st Century skills outlined above, and embodying design and innovation thinking - reinforced by and built upon the foundation of the Common Core Standards
- **Where/When**: Extending and redefining the school day, leveraging the exploding opportunities afforded by blended learning, and redefining the notion of the "classroom" and "school"
- **How**: Developing a project-based, technology-infused approach to teaching and learning, featuring real-world, meaningful design challenges, including a deep appreciation for and exploration of the creative expression found within the arts

California's adoption of the Common Core Standards (CCS) brings these new elements of teaching and learning to the forefront and helps address the opportunities and challenges we currently face. CCS provides a more student-centered approach to assessment and gives teachers, schools, and the District a richer set of formative data to inform teaching and learning, while allowing students to self-monitor their progress in real time. Student collaborative and conversational skills cannot simply be practiced as teaching strategies but instead need to be second nature to our students, as they participate fully in this new academic experience.

Achievements and Milestones

has many ongoing and important goals, obligations and commitments that have always been and will continue to be priorities for the District. These include, for example, ensuring that all schools are safe places for students and staff, that all students will be instructed in core curriculum (Math, Science, Language Arts, etc.), and the District is managed with financial prudence ensuring fiscal solvency and health.

The District will aggressively pursue alternative sources of funding from foundations, individual and business donors, and other philanthropic organizations to financial support the innovative programs contained in this plan. In order to expand and fulfill the Vision above, the District will focus on the following high leverage goals:

I Align Curriculum and Instruction to a 21st Century Model of Learning

A. Articulate and implement a coherent and innovative PK–8 curriculum founded on the Common Core and subject-specific standards (e.g. Next Generation Science Standards) while leveraging powerful 21st

century approaches to deepen and accelerate teaching and learning (e.g., blended learning, technology-infused project based learning, and design and innovation learning)

B. Align curriculum to emphasize new, effective practices in Whole Child, Common Core Standards, STEM, and health/wellness with an emphasis on formative rather than summative assessments. Ensure that the requisite training/professional development and support and educational materials are used.

C. Create greater emphasis on a relevant, real-world, global curriculum that builds extended learning experiences and choices/electives (relevant to the Whole Child approach), including integrating environmental stewardship, equity and justice, and related topics into the curriculum and an expansion of physical, social, and emotional wellness programs.

D. Place greater emphasis on Project-Based Learning to focus on problem-solving, collaboration, critical-thinking, and time management skills, thus allowing greater student engagement and "ownership" of their own learning. Additionally, students will have personalized learning plans that ignite their passions and adapt to their particular learning styles and needs. These personalized learning plans will be collaboratively designed among educators, parents, and the students and will outline individualized goals and measurements.

E. Continue and expand the District's emphasis on the arts, including vocal music, instrumental music, and visual and theater arts.

F. Implement a comprehensive, district-wide Technology Plan outlining learner outcomes and effective use of technology for teaching and learning, data collection and analysis, and district-wide operations.

G. Experiment with "blurring the lines of time and place" on all campuses such that some students may experience a modified school day, outreach work in the community, and learn from first-hand resources (including expansion of SMART-E). This may include the use of Blended Learning approaches, integration of "non-traditional" activities into the school day, a greater integration of community activities and resources into the learning process, and redefining the boundaries of "school." In addition, the District shall experiment with the traditional "sorting" mechanism of students with the goal to focus on achievement and mastery rather than time spent on task.

H. Partner with a cogent set of support providers (parents, program/community partners, elective teachers, design schools,

subject matter experts working virtually, etc.) working with students in and out of school environments

I. Support learners across the continuum including those with exceptional needs on both ends of the learning spectrum such as those with accelerated learning needs and those requiring specialized intervention and differentiation.

J. Create new rubrics and measurements of student, school, and district success, including measuring Whole Child outcomes (e.g. physical wellness, character development, etc.); a practice for collaborative review, including self-review, and Authentic Assessment of student work; and a district-wide longitudinal data system and protocols to support collaborative and personal assessment of student performance.

K. Build internal mechanisms to allow for "rapid prototyping" of new approaches to quickly learn successes and failures, and use the measurement of such approaches to inform future strategies.

II. Align Human Capital to Support Staff as 21st Century Educators

A. Pursue a path to more greatly professionalize the role of the educator by providing a greater level of autonomy, responsibility, and support

B. Build a robust professional development ("PD") plan to provide all staff with ongoing professional development to support their ability to teach in new ways and with new, emerging tools, including PD related to Common Core. Emphasize Professional Learning Communities and build a culture of learning and embracing of change.

C. Create time for teachers to engage in professional learning and collaboration by developing programs and utilizing support staff (music, health educators/counselors, Librarians, Technology Associates, etc.) to work in teams

D. Build social-based forums for staff collaboration and learning

E. Expand the definition of "educator" to include larger community-based and worldwide resources, including parents, other community members, and experts from afar (through virtual connections) and integrate such resources into the curriculum.

F. Establish a new system of evaluation for all staff (e.g. teachers, administrators, classified staff, etc.) that is based on professional growth, coaching and mentoring. Such a system will include multiple

measures, including feedback from peers, students, and parents, student performance, and robust and frequent subjective evaluations by qualified administrators and master/mentor teachers. The District recognizes that it will need to make a significant investment in resources to do such robust evaluations.

G. Create new system of career path, roles, and compensation that reflect the increased professionalism of our staff (including master teachers, mentors, coaches, resource specialists, etc.) and the modern requirements of the role, including adjusting work rules to match with reality of modern borderless environments. Build an appropriate hiring plan with job requirements relevant for these new and changing roles.

III. Build Learning Environments for all Schools that will Reflect, Support, and Sustain 21st Century Learners

A. Meet timelines of Facility Master Plan to build new schools and update existing schools -- within the principles of sustainability -- with flexible learning and collaboration spaces for student and educators, including spaces that are for: (a) individual, (b) small group/large group, (c) indoor/outdoor, (d) whole campus use, and (e) collaboration work

B. Establish learning spaces as sustainable and natural environments

C. Ensure spaces have robust technology infrastructure and flexibility for future growth and technological developments. Such infrastructure shall provide capacity for one-to-one computing, a platform for district-wide collaboration and sharing, and sufficient training for staff, students and parents in its use.

D. Build spaces and develop other programs (e.g. transportation) to minimize traffic flow and improve student safety

E. Involve each school's staff, students, and community in the design of these new environments

F. Secure additional sources of funds above Measure H bonds to support more comprehensive parts of the Facility Master Plan, including from grants, donations, matching funds, etc.

Measurement and Communication

The District will develop measures to monitor and support its continuous improvement in implementing the Strategic Plan and its programs and systems toward student learning. This will include data analysis and engagement of all constituencies. The District acknowledges that a communications plan must be outlined and implemented to ensure that all staff and parents are informed and educated on both the Strategic Plan as well as progress made toward its objectives as well as to receive relevant feedback from all constituents. Communication shall be ongoing, integrated and disseminated broadly such that school and district leadership can both communicate plans and monitor progress for accountability.

Annually, each school site will develop goals as part of their Single Plan for Student Achievement (SPSA) which will outline campus actions to improve student outcomes aligned with the District's strategic plan. In addition, parent and student input will be solicited as to how we are succeeding in meeting our goals at a site and student level. Each summer, the governing board and district administrative council members will undertake a review of collected data in order to monitor progress in achieving intended outcomes.

Measures for monitoring progress of this Strategic Plan included, but are not limited to, the following:

STUDENT

- Solicit student input regarding their experience in 21st Century Learning environments and Whole Child development
- Create portfolios of Authentic Assessments, including but not limited to standardized testing information & selected exemplary work products subject to longitudinal review
- Establish exit criteria for 3rd, 5th and 8th grade and review achievements of students against the criteria

STAFF

- Outline a strategy for staff to review student data using integrated and comprehensive tools and undertake longitudinal review of student work and exhibits in an electronic and/or physical portfolio format
- Survey staff, summarize findings, and implement action plans regarding personalized professional learning, curriculum, teaching and learning environment, health and wellness, etc.
- Establish and annually review processes for evaluation, training, mentoring, and coaching
- Create measures of progress in collaboration and Authentic Assessments

COMMUNITY

- Solicit parent input, report findings, and create action plans regarding student experience, growth and whole child well-being and understanding of 21st Century Learning practices

- Explore, establish and evaluate community relationships and partnerships with non-profit organizations, industry, local businesses as well as state and federal governmental agencies

GLOSSARY OF TERMS

- **Authentic Assessment** - The measurement of intellectual accomplishments that are worthwhile, significant, and meaningful, as compared to multiple choice standardized tests. Authentic Assessment can be devised by the teacher, or in collaboration with the student by engaging student voice. When applying Authentic Assessment to student learning and achievement, a teacher applies criteria related to construction of knowledge, disciplined inquiry, and the value of achievement beyond the school.

- **Blended and Personalized Learning** – An educational experience that combines effective virtual learning (often done at home in form of a video "lecture" or something similar) with a more robust and interactive experience with a qualified educator who can better personalize instruction and support for each student. This is most effectively facilitated in a "one-to-one" computing environment where every student has access to a mobile device to allow for individualized work using independent computing power and internet access. Students learn through online delivery of content and instruction with some element of student control over time, place, path, and/or pace and at least in part at a supervised location away from home.

- **Common Core State Standards (CCSS)** - A national education initiative to align state education standards. CCSS was sponsored by the National Governors Association and the Council of Chief State School Officers and adopted by 46 states, including California, which intends to implement CCSS in 2014-2015. Generally most educators are optimistic about CCSS as it offers a robust and real world curriculum that aligns with the District's vision of providing learning experiences that promote the development of academics, problem solving and critical thinking skills necessary for success in a global world.

- **Environmental Stewardship (Sustainability)** - Taking action to promote sustainability in our schools and community and delving into science-based health and environmental issues will positively impact the whole person and community over time. The District adopted a sustainability policy in February

- **Facility Master Plan** - A plan adopted by the District in March 2013 to outline the plans for building and renovation of facilities throughout the District, including the building of two new 4th-5th grade schools.

- **Global Curriculum** -- A curriculum that recognizes the interconnected nature of the world and focus on a greater understanding of world history, culture, foreign language, civics, and politics.

- **Health/Wellness** - Educating students on how to interact with the people around them and how to make well-informed decisions with regard to nutrition, physical fitness, interpersonal relations and conflict resolution, and social and emotional well-being leads to healthy and productive lives.

- **Professional Learning Communities (PLC)** -- An extended learning opportunity to foster collaborative learning among colleagues within a particular work environment or field. It is often used in schools as a way to organize teachers into working groups.

- **Project-Based Learning-** Students learn by engaging in rigorous projects (usually in teams) that are carefully planned, managed, and assessed to help students learn key academic content, practice 21st Century skills, and create high-quality, authentic products and presentations. Students are often the catalysts for project ideas and design.

- **Single Plan for Student Achievement (SPSA)** -- A document that represents a school's cycle of continuous improvement of student performance. The annual process of developing, reviewing, and updating the SPSA includes a comprehensive review of data and the development of actions necessary to achieve school goals. The plan also addresses funding and proposed expenditures related to state and federal categorical programs.

- **STEM** -- Students learn Science, Technology, Engineering, and Mathematics in sequences that build upon each other and can be used with real-world applications and projects promoting creativity and innovation.

- **Whole Child** -- the notion that learning needs to go significantly beyond the traditional basic subjects and cover areas such as music and the arts (fine arts, theater, etc.); sustainability; physical, social, emotional wellness; leadership skills and community involvement; and communication and collaboration skills. Students are encouraged to examine their own thoughts and actions and be sensitive to others' feelings and needs. Within the context of guided activities and peer feedback, children acquire the tools to be successful within the interpersonal domain, as well as to develop personal resiliency and awareness in the intrapersonal domain.

Appendix B

21st-Century Learning Frameworks

Table 2

21st-Century Learning Frameworks

Author(s)	Framework	Cited as a Framework for 21st Century learning in these sources:
Six Senses from A Whole New Mind: Daniel Pink (2005)	*Six Senses from A Whole New Mind:* Design Story Symphony Empathy Play Meaning	(Jerald, 2009; Kereluik et al., 2013)
Five Minds for the Future: Howard Gardner (2008)	*Five Minds for the Future:* The Disciplinary Mind The Synthesizing Mind The Creating Mind The Respectful Mind The Ethical Mind	(Gardner, 2010; Kereluik et al., 2013)
Seven Skills from The Global Achievement Gap: Tony Wagner (2008)	*Seven Skills from The Global Achievement Gap:* Critical Thinking and Problem Solving, Collaboration across Networks and Leading by Influence, Agility and Adaptability, Initiative and Entrepreneurialism, Effective Oral and Written Communication, Accessing and Analyzing Information, Curiosity and Imagination	(Snape & Fox-Turnbull, 2011)
Five assumptions: Zhao (2009)	*Five assumptions:* The first assumption is that educators must cultivate skills and knowledge within students that cannot be reduced and reproduced by machines or outsourced overseas. The second assumption asserts that creativity and adaptability are essential for living in a new globalized and digital age. The third assumption is that the ability	(Zhao, 2009; Kereluik et al., 2013)

	to effectively communicate and collaborate is essential for living in a global society. The fourth assumption is that complex cognitive skills are more important than memorization. The fifth and final assumption is that emotional intelligence is an essential component to effective communication and collaboration.	
The CPE- Developed by Jerald, C.D. (2009) of The Center for Public Education's	*The CPE identifies three realms of necessary knowledge and skills:* Foundational knowledge in subject matter, Literacy or ability to apply academic knowledge to real world problems, The competence to call on knowledge and literacies as needed in both personal and professional realms.	(Jerald, 2009; Kereluik et al., 2013)
Framework for 21st Century Learning: Developed by The Partnership for 21st Century Skills or P21 framework (2007)	*Framework for 21st Century Learning:* Learning and Innovation Skills, Creativity and Innovation, Critical Thinking and Problem Solving, Communication and Collaboration, Digital Literacy Skills, Information Literacy, Media Literacy, ICT Literacy, Career and Life Skills, Flexibility and Adaptability, Initiative and Self-Direction, Social and Cross-Cultural Skills, Productivity and Accountability, and Leadership and Responsibility	(Bellanca & Brandt, 2010; Dede, 2007; Dede, 2010**;** Jerald, 2009; Kereluik et al., 2013; Leh, Kouba, & Davis, 2005; Silva, 2008; Snape & Fox-Turnbull, 2011; Voogt & Roblin, 2012)
Learning outcomes for college education necessary for 21st century success: Developed by The American	*Learning outcomes for college education necessary for 21st century success:* Knowledge of human cultures, physical, and natural world, Intellectual and practical skills, Personal and social responsibility,	(Dede, 2007; Kereluik et al., 2013)

Association of College and Universities (AACU) (2007)	Integrative learning.	
enGauge 21st Century Skills model: Developed by The North Central Regional Educational Laboratory (NCREL) and the Metiri Group (2003)	*enGauge 21st Century Skills model:* Effective Communication: Teaming, collaboration, and interpersonal skills. Personal, social, and civic responsibility, interactive communication. High Productivity: Prioritizing, planning, and managing for results. Effective use of real-world tools, and the ability to produce relevant, high-quality products. Inventive Thinking: Adaptability, managing complexity, and self-direction, Curiosity, creativity, and risk taking. High order thinking and sound reasoning skills. Digital Literacy: basic, scientific, economic, and technological literacies. Visual and informational literacies. Multicultural literacy and global awareness.	(Dede, 2007; Dede, 2010; Kereluik et al., 2013; Silva, 2008; Voogt & Roblin, 2012)
Developed by the International Society for Technology in Education or ISTE **(**2007)	*The National Educational Technology Standards and Performance Indicators for Students:* Creativity and Innovation, Communication and Collaboration, Research and Information Fluency, Critical Thinking, Problem Solving, and Decision Making, Digital Citizenship, and Technology Operations and Concepts	(Dede, 2010; Kereluik et al., 2013; Voogt & Roblin, 2012)
Assessment and Teaching of 21st Century Skills or ATC21S: Sponsored by	*Assessment and Teaching of 21st Century Skills or ATC21S* Ways of thinking: Creativity, critical thinking, problem-solving, decision-making and learning	(Kereluik et al., 2013; Voogt & Roblin, 2012)

Cisco, Intel, and Microsoft (2012)	Ways of working: Communication and collaboration Tools for working**:** Information and communications technology (ICT) and information literacy Skills for living in the world: Citizenship, life and career, and personal and social responsibility Collaborative problem-solving: Working together to solve a common challenge, which involves the contribution and exchange of ideas, knowledge or resources to achieve the goal. ICT literacy: learning in digital networks. Learning through digital means, such as social networking, ICT literacy, technological awareness and simulation.	
OECD Framework: Developed by The Organization for Economic Cooperation and Development or OECD (2005)	*OECD Framework:* Information: Typical skills include research and problem solving skills and they involve the defining, searching for, evaluating, selecting, organizing, analyzing, and interpreting information. Information as source: searching, selecting, evaluating and organizing information Information as product: the restructuring and modeling of information and the development of own ideas (knowledge) Communication: development of skills of coordination and collaboration between peers. Effective communication: sharing and transmitting the results or outputs of information is very important for the	(Ananiadou & Claro, 2009; Dede, 2010; Jerald 2009; Silva 2008; Kereluik et al., 2013; Voogt & Roblin, 2012)

	impact of this work. Collaboration and virtual interaction: ICT supplies tools to support collaborative work among peers inside and outside school. Ethics and Social Impact: Globalization and multiculturalism Social responsibility: implies that individuals‟ actions may have an impact on society at large, both in a positive sense (i.e. there is a responsibility to act), but also in a negative one (i.e. responsibility to refrain from certain actions). Social Impact: refers to the development of a consciousness about the challenges in the new digital age.	
The LEAP Model: Developed and proposed by the National Leadership Council for Liberal Education and America's Promise (2007)	*The LEAP Model:* Knowledge of human cultures and the physical and natural world; Intellectual and practical skills Personal; and social responsibility Integrative learning	(Dede, 2010)
Key Competences for Lifelong Learning: Recommendation of the European Parliament and of the Council (2006)	*Key Competences for Lifelong Learning:* Communication in the mother tongue, Communication in foreign languages, Mathematical competence and basic competences in science and technology, Digital competence, Learning to learn, Social and civic competences, Sense of initiative and entrepreneurship, Cultural awareness and expression	(Kereluik et al., 2013)
Innovative Teaching and	*Innovative Teaching and Learning Research Model (ITL):*	(Microsoft Partners in Learning- ITL, 2011)

Learning Research Model (ITL): Designed by Microsoft Partners in learning School Research or PILSR (2011)	Integration of ICT Learning beyond the classroom: global awareness, extended classroom community Student centered pedagogy: personalized learning, collaboration, knowledge building, self-regulation Education system change: School leadership and culture, Innovative teaching practices	
The 3P Learning Model: Developed and proposed by Chatti, M. A., Jarke, M., & Specht, M. (2010)	*The 3P Learning Model:* Personalization, Participation, and Knowledge-Pull build the cornerstones of this model.	(Chatti, Jarke, & Specht, 2010)
The MOE framework: The Singapore Ministry of Education's framework (2010)	*The MOE framework:* A confident person, who has a strong sense of right and wrong, is adaptable and resilient, knows himself, is discerning in judgment, thinks independently and critically, and communicates effectively. A self-directed learner, who questions, reflects, perseveres and takes responsibility for his own learning. An active contributor, who is able to work effectively in teams, is innovative, exercises initiative, takes calculated risks and strives for excellence. A concerned citizen, who is rooted to Singapore, has a strong sense of civic responsibility, is informed about Singapore and the world, and takes an active part in bettering the lives of others around him. Social and Emotional Competencies;	(Ministry of Education Singapore, 2010)

	skills necessary for children to recognize and manage their emotions, develop care and concern for others, make responsible decisions, establish positive relationships, as well as to handle challenging situations effectively. 21st century skills necessary for the globalized world we live in. These are: Civic literacy, global awareness and cross-cultural skills Critical and inventive thinking Information and communication skills	
The 7 C's: Learning, Technology, and Education Reform in the Knowledge Age framework in conjunction with WestEd (1999)	*The 7 C's:* Critical thinking and doing: problem-solving, research analysis, project management, etc. Creativity: New Knowledge Creation, "Best fit", Design Solutions, Artful Storytelling, etc. Collaboration: Cooperation, compromise, consensus, Community-building, etc. Cross-cultural understanding: Across diverse ethnic, Knowledge and Organizational Cultures Communication: Crafting messages and using media effectively Computing: Effective use of electronic information and knowledge tools Career and learning self-reliance: Managing change, lifelong learning, and career redefinition	(Kereluik et al., 2013)
Digital Transformation: A framework for	*ICT Literacy Framework:* 5 Major Components: Access-knowing about and knowing	(Dede, 2007; Dede, 2010; Kereluik et al., 2013)

ICT literacy-Educational Testing Service (ETS) (2007)	how to collect and/or retrieve information. Manage-applying an existing organizational or classification scheme. Integrate-interpreting and representing information. It involves summarizing, comparing and contrasting. Evaluate-making judgments about the quality, relevance, usefulness, or efficiency of information. Create-generating information by adapting, applying, designing, inventing, or authoring information. The Three Proficiencies: Cognitive Proficiency: the desired foundational skills of everyday life at school, at home, and at work. Literacy, numeracy, problem solving, and spatial/visual literacy demonstrate these proficiencies. Technical Proficiency: the basic components of digital literacy. It includes a foundational knowledge hardware, software applications, networks, and elements of digital technology. ICT Proficiency: the integration and application of cognitive and technical skills. ICT proficiencies are seen as enablers; that is, they allow individuals to maximize the capabilities of technology. At the highest level, ICT proficiencies result in innovation, individual transformation and societal change.	
Participatory Cultures Framework	*Participatory Cultures Framework:* Participatory Cultures: Affiliations: Memberships, formal and	(Dede, 2010; Kereluik et al., 2013)

(2006). Proposed by Jenkins, H., Clinton, K., Purushotma, R., Robinson, A. J., & Weigel, M.	informal, in online communities centered around various forms of media, such as Friendster, Facebook, MySpace, message boards, metagaming,or game clans. Expressions: Producing new creative forms, such as digital sampling, skinning and modding, fan videos, fan fiction, zines, or mash-ups. Collaborative problem solving: Working together in teams, formal and informal, to complete tasks and develop new knowledge, such as through Wikipedia, alternative reality gaming, or spoiling. Circulations: Shaping the flow of media, such as podcasting or blogging. New Skills: Play: The capacity to experiment with the surroundings as a form of problem solving. Performance: The ability to adopt alternative identities for the purpose of improvisation and discovery. Simulation: The ability to interpret and construct dynamic models of real-world processes. Appropriation: The ability to meaningfully sample and remix media content. Multitasking: The ability to scan the environment and shift focus onto salient details. Distributed cognition: The ability to interact meaningfully with tools that expand mental capacities.

	Collective intelligence: The ability to pool knowledge and compare notes with others toward a common goal. Judgment: The ability to evaluate the reliability and credibility of different information sources. Transmedia navigation: The ability to follow the flow of stories and information across multiple modalities. Networking: The ability to search for, synthesize, and disseminate information. Negotiation: The ability to travel across diverse communities, discerning and respecting multiple perspectives, and grasping and following alternative norms.	
The Engineer of 2020 Framework (2004). Developed by the National Academy of Engineering	*Engineer of 2020 Framework:* Strong analytical skills, Practical Ingenuity, Creativity, Communication Skills, Leadership skills, High ethical standards, Strong sense of professionalism, Dynamic	(Kereluik et al., 2013)
The New Zealand Curriculum (Ministry of Education, 2007) was developed to set a clear direction for teaching and learning in the new millennium.	*Curriculum Framework:* Vision: young people who are: confident, connected, and actively involved, lifelong learners Principles: high expectations, cultural diversity, inclusion, learning to learn, community engagement, coherence, future focus and Treaty of Waitangi awareness Values: excellence; innovation, inquiry and curiosity; diversity; equity;	(Snape & Fox-Turnbull, 2011)

	community and participation; ecological sustainability; and integrity Key Competencies: thinking; using language, symbols and texts; managing self; relating to others; and participating and contributing	
21st century learning involves five types of interactions: Developed and proposed by Leh, A. C., Kouba, B., & Davis, D. (2005)	*5 types of Interactions:* Learner–content Learner–teacher Learner–learner Learner–interface Learner–community	(Leh, Kouba, & Davis, 2005)
Revised Bloom's Taxonomy: Silva (2008)	*Revised Bloom's Taxonomy:* Create Evaluate Analyze Apply Understand Remember	(Jerald, 2009)
The UNESCO ICT Competency Framework for Teachers or ICT-CFT (2008)	*ICT-CFT Framework:* *Three Approaches to Teaching:* Technology Literacy, enabling students to use ICT in order to learn more efficiently. Knowledge Deepening, enabling students to acquire in-depth knowledge of their school subjects and apply it to complex, real-world problems. Knowledge Creation, enabling students, citizens and the workforce they become, to create the new knowledge required for more harmonious, fulfilling and prosperous societies. *Addresses 5 aspects of a Teachers Practice:*	(Voogt & Roblin, 2012)

	Understanding ICT in education, Curriculum and assessment, Pedagogy, ICT, Organization and administration, Teacher professional learning	
Key competences for lifelong learning, a European reference framework (2006)	*The Reference Framework sets out eight key competences:* Communication in the mother tongue, Communication in foreign languages, Mathematical competence and basic competences in science and technology, Digital competence, Learning to learn, Social and civic competences, Sense of initiative and entrepreneurship, Cultural awareness and expression	(Voogt & Roblin, 2012)

Appendix C

District Design Team Document

Design Team 4th – 5th Grade Bridge Schools

A Design Team will be assembled to focus on the construction and curricular design of two new 4th – 5th Grade Bridge Schools. The Team will be comprised of teachers, administrators, and support personnel to accomplish two major goals: 1) to serve as an interface with the Facilities Master Plan activities and Steering Committee in the coming months, and, 2) to begin the first phases of planning for the research, design, implementation, and professional development of staff of the 21st Century Learning curriculum, scope and sequence and teaching approaches in the new schools. The theory of action in support of this endeavor is to invest time and resources in our teachers and staff to collaborate and serve as co-creators of curriculum, learning from each other, and seeking internal and external expertise to realize our 21st Century Strategic Plan.

This brief will sketch the first three phases, duties and resource needs of the Design Team over the next 18 months:

Phase 1 – Remainder of the 2012-13 School Year
Phase 2 – Summer 2013 planning and professional development
Phase 3 – 2013-14 school year planning, curriculum and teaching

Phase 1 – During the remainder of the 2012-13 school year a process and support structures will be put in place for future work. Three areas need to be addressed in this regard: First, we need to define and establish a process of identifying the composition of the teachers that will be members of the Design Team and mechanisms for these teachers to free up their colleagues to participate in the Design Process. Second, Design Team leaders need to identify and visit exemplary schools exhibiting important attributes of 21st Century Learning that will serve as proof of concept sites to return to as more teachers and staff become involved in design process. Third, the Design Team will plan professional development activities for this summer. Prior to summer, there will be a series of professional development activities for school librarians and an introduction to Google Applications and Gmail for all faculty. We envision a minimum of a three-day 21st Century Professional Development Institute with representative faculty from all schools. Some supports that are immediately needed include:

A. Up to 10 release days for Assistant Principal to visit sites and plan professional development (look into arrangement with administrator in

B. Stipend for a teacher with specialty in 4-5 multiage teaching and learning to engage teachers and help with logistics
C. Release time for the initial Design team and district teachers to develop a set of criteria and recommendations for Design Team members

Phase 2 – During the summer of 2013 we plan to hold a Professional Development and Planning institute for approximately eight faculty members. This cadre of teachers will help design and implement a comprehensive professional and curriculum development strategy for the 2013-14 school year. The Director of Instruction and Educational Technology and Assistant Principal will have primary responsibility for designing and delivering the summer institute. Examples of key topics will include the following with presentations by internal and external experts:

- Co teaching and Differentiation
- Design Thinking (science standards)
- Thoughtful and innovative integration of technological tools in teaching and learning
- Common Core Planning/ Implementation
- Listening /Speaking strategies across the curriculum (per Common Core)
- Informational Thinking
- Writing across the Curriculum
- Blended Learning

As an outcome of the summer institute the Design Team will develop an online Professional Development planning and learning community featuring PD resources, exemplary curriculum and a discussion forum. A second discussion community comprised of parents and interested community members will take place both face-to-face and online.

As in all phases, the Design Team will interface with QKA architects and FMP Steering Committee to ensure staff and community input.

Phase 3 – Much of the activity that will take place in this phase will be contingent on the planning in Phases 1 & 2. A list of highlighted activities follows:

- Continued interface with QKA architects and FMP Steering Committee
- Coordination with middle schools, as well as the future PK-3's will be critical as the new schools are being built and the curriculum is designed.
- Curriculum planning embodying strategic plan and 21st Century Learning is classroom ready for school opening.
- Ongoing professional development is phased and scheduled to match the developed curriculum and opening of school year
- Process in place and scheduling for meeting with incoming parents in grades 4 & 5
- Curricular and learning materials ordered and technology support and mobile computing in place
- Continued dynamic communication with community and staff regarding progress and evolution of school design.
- Finalization of scheduling process and hiring for new school.

- Data and evaluation processes articulated and enacted.
- Planning and working together built in
- Create a safe, inspired environment to encourage all stakeholders to innovate and feel supported in some risk taking.
- Recognition that many unanticipated challenges will emerge

Composition of Design Team

- Existing .5 Assistant Principal (in operating budget)
- Existing .5 Technology Director (in operating budget)
- New 1.0 Assistant Principal - $125,000 (.05 to free up existing principal and .05 to support Design Team efforts)
- New 1.0 Highly Qualified Teacher or Teacher on Special Assignment - $110,000 (perhaps 2 X. 05 Teachers)
- New .5 Coordinator + Support for /Sustainability - $55,000
- Substitute support for teachers to provide Design Team input - $50,000

The Team would have a finite life as new buildings are created and staffing is identified for opening. Funds supporting these new positions (approximately $340,000) would come from sources outside the general fund.

Appendix D

Letter of Invitation to Participate in the Study and Consent Agreement

INVITATION TO PARTICIPATE (Sent via Email)

Dear _____

As a member of the District Design Team, you are invited to participate in a research project that I am conducting with the approval of _____, District Superintendent. This research will be used for the purpose of writing a doctoral dissertation for the University of San Francisco's School of Education. The research results may also be used in conference presentations or published professional journal articles.

Through this project, I am interested in understanding the role of the District Design Team (DDT) and the relationship it has with the implementation of 21st-Century Learning within the district. By studying the DDT, I hope to understand how the strategic application of design thinking by district leadership is shaping the implementation of a vision for 21st-Century Learning and resulted in innovation within the organization.

I am requesting your permission to interview you for about one hour. I am interested in your view of the role that the newly formed (DDT) has played in regards to implementing 21st-Century Learning within the district. The interview will be conducted at your school site or a designated place of your convenience. I will be recording the interview and taking notes as we meet. I guarantee that I will be providing a pseudonym for you in order to protect your identity throughout the study. After the interview is transcribed, it will be stored in an electronic file that will be password protected and accessible only by the researcher. You will receive a transcription of your interview to check the accuracy and clarity of your statements. You will have an opportunity to change or add to your answers in writing or by email within a week of receiving the transcript. You may withdraw from the project at any time, should that prove necessary.

If you choose to participate, please respond to my email as soon as possible and follow the link to the Doodle page in order to set up an interview appointment. There will be an *Informed Consent Form* that you can sign at the time of the interview. I have also attached a copy of the *Informed Consent Form* for you to complete and print prior to the interview, if you prefer.

I am looking forward to working with you!

Warm Regards,

Loraine Rossi De Campos
Doctoral Candidate at the University of San Francisco
lcrossi@dons.usfca.edu
Cell# (650) 279-2126

INFORMED CONSENT AGREEMENT

Purpose and Background
Loraine Rossi De Campos, a graduate student at the School of Education at the University of San Francisco, is conducting a study in order to better understand the extent to which the use of a District Design Team (DDT) has created an impetus for innovation within the district and what functions of the team have allowed this to happen. Of particular interest is the role of the DDT in the articulation and implementation of the District's newly adopted definition of 21st-Centruy Learning throughout the district.

I am being asked to participate in this study because I am a member of the District Design Team (DDT) or I am closely affiliated with the DDT through a leadership and or oversight capacity.

Procedures
Should I agree to be a participant in this study, the following shall occur:

1. I will agree to meet with the researcher for an audio recorded, one-hour interview to discuss my experience with the DDT. Four demographic questions will also be asked at the beginning of the interview. The location and the time of the interview will be arranged at my convenience.

2. I will agree to review the analysis of my interview for accuracy of the interpretation of my information.

3. I may also be recorded during a Design Team meeting or other type of meeting relevant to the research study. I will be given access to any of my information that is recoded in order to review it for accuracy of representation.

Risks and/or Discomforts
Risks associated with participation in this study are considered minimal. In the event that any interview questions make me uncomfortable, I may decline to answer them. I may also withdraw my participation in this study at any time.

I understand the researcher will maintain my confidentiality to the best of her ability; however, I realize that loss of confidentiality is a possibility. No individual's identity will be used in the reporting of findings or within any publications that may result from this study. The researcher will keep all hardcopies of information and documents in a locked cabinet and all softcopies in password protected computer files. Only the researcher will have access to these files.

Benefits
An anticipated benefit of this study is a better understanding of the extent to which the use of a District Design Team (DDT) has created an impetus for innovation within the

school district. Should I agree to participate in the one-hour interview session, I will receive my choice of either a pair of Movie Tickets (comparable to a monetary value of $15.00), or a $15.00 gift card to *Peet's Coffee and Tea*, which is another benefit of my participation in this study.

Personal Costs/Financial Considerations
There will be no financial costs to me as a result of taking part in this study; however, a one-hour segment of time will need to be dedicated for the interview.

Payment/Reimbursement
I will receive a $15.00 gift card for participating in the interview portion of this study. There will be no reimbursement or payment for participating in a meeting that may be observed for the purpose of this study.

Questions
I have been offered the opportunity or I have already communicated with Ms. Loraine Rossi De Campos about this study and have had my questions answered. If I have further questions about the study, I may call her at (650) 279-2126. If I have any questions or comments about participation in this study, I should first talk with Ms. Loraine Rossi De Campos; however, if I do not wish to do this, I may contact the IRBPHS, which is concerned with protection of volunteers in research projects. I can reach the IRBPHS office by calling (415) 422-6091, e-mailing IRBPHS@usfca.edu, or by writing to the IRBPHS, Department of Counseling Psychology, School of Education, 2130 Fulton St., San Francisco, Ca. 94117-1080.

Consent
I understand that participation in research is voluntary. I am free to decline to be in this study, or to withdraw from it at any point. I have been given a copy of this consent form to keep.

I, _____ **agree** to participate in this study as indicated by my signature, below.

_____

Participant's Signature Date of Signature

Appendix E

Interview Protocol and

Table 8: Interview Questions Organized by Research Questions

Interview Protocol

Instructions: I am a researcher from the University of San Francisco's School of Education. I am interested in understanding how the District Design Team (DDT) has facilitated the implementation of the district's vision of 21st- Century Learning and how the District's leadership has used the DDT to promote this vision throughout the district. I will begin this interview with four demographic questions. I will then be asking you some questions about your work with or affiliation with the (DDT).

Questions

Demographics:

1. What is your name:
2. What is your current position:
3. How many years have you spent in your in current position:
4. How many years have you worked in Education?

Themed Questions:

1. Why was the DDT initiated?
2. Who were/are the designers?
3. What resources were drawn upon to design the DDT?
4. What strategies were used to design the DDT?
5. What features are built into the DDT?
6. What are the current goal(s) set for the DDT by the designers?

7. What feature(s) within the current organizational structure of the school district have helped to support the DDT in achieving its goal(s)?
8. What limitations within the current organizational structure of the school district have help to constrain the DDT in achieving its goal(s)?
9. How is district leadership using the DDT throughout the district?
10. How has the use of the DDT evolved over time?

11. How important is the design thinking process to the design and function of the DDT?
12. How is the district leadership using design processes as part of the district-wide implementation process?

13. Who else should I talk to about the design of the DDT and its role in the implementation of the District's vision for 21st-Century Learning?

Thank you statement: I want to thank you for your time. I will make the content of your interview available to you shortly. If you have any questions regarding this research, please feel free to contact me.

Table 8

Interview Questions Organized by Research Questions

Research Question	Corresponding Interview Questions
Problem Setting: How have the features and conditions within the school district resulted in the design of the DDT?	1. Why was the DDT initiated? 2. Who were/are the designers? 3. What resources were drawn upon to design the DDT? 4. What strategies were used to design the DDT? 5. What features are built into the DDT? 6. What are the current goal(s) set for the DDT by the designers? a. Have you seen or do you see the role of the DDT changing?
Problem Solving: How has the DDT managed to use and to produce the intended innovations within the district?	7. What feature(s) within the current organizational structure of the school district have helped to support the DDT in achieving its goal(s)? a. What has been beneficial or positive about being a part of the DDT or working with the DDT (goals achieved, lessons learned, problems solved)? 8. What limitations within the current organizational structure of the school district have helped to constrain the DDT in achieving its goal(s)? b. What are some of the challenges/ frustrations that have occurred as a result of working on or with the DDT? 9. How is district leadership using the DDT throughout the district? c. What does this look like? 10. How has the use of the DDT evolved over time?
Design thinking: How have design processes contributed to the implementation of the intended innovations?	11. How important is the design thinking process to the design and function of the DDT? 12. How is the district leadership using design processes as part of the district-wide implementation process? a. What do you see as a benefit to using design processes as part of the district-wide implementation process? b. Do you have any frustrations with the use of Design thinking?

Appendix F

Observation Protocol

Observation Protocol

Descriptive Notes:

Participants:

Description of Physical Setting:

Event(s)/Activities:

Vocabulary and or Elements of Design Thinking (empathize, define, ideate, prototype, test)

Elements of the District's Definition of 21st-Century Learning *(blended learning, technology-infused instruction, 5C's [Critical Thinking & Problem Solving, Communication, Collaboration, Citizenship (global and local) and Creativity & Innovation.], STEM learning, Project Based Learning, and design and innovation learning)*

Reconstructed Dialogue:

Reflective Notes: *(ideas, problems, impressions, hunches)*

Appendix G

Draft of The Year One Implementation Plan

[redacted] 2013-2018 Implementation Plan [DRAFT 8/5/13]

[This document is a living document aimed at creating and continuously improving an effective framework for charting key implementation initiatives and actions to the goals and sub-goals of the [redacted] Strategic Plan 2013-2018. Initial drafts were shared on June 5 and on June 26 with the Strategic Plan Implementation Committee. Input and feedback from the committee on the framework design and on initiatives/actions are incorporated into this current draft and will be reviewed a[redacted] on [redacted]

The [redacted] Strategic Plan 2013-2018 aims to provide an innovative and engaging learning experience that fosters the development of the Whole Child to ensure all students are well prepared for success in the 21st Century, as evidenced by:

- Reaching their highest academic, social, emotional, intellectual, and physical potential; and
- Becoming problem solvers, critical thinkers, risk-takers, designers, collaborators, and innovators; and
- Developing into contributing, empathic citizens and leaders who are responsible stewards of their world. The plan will realize this vision by these strategies: I: Aligning Curriculum and Instruction to a 21st Century Model of Learning II: Aligning Human Capital to Support Staff as 21st Century Educators III: Building Learning Environments for all [redacted] Schools that will Reflect, Support, and Sustain 21st Century learners [redacted] will also measure its progress on strategic plan implementation and communicate it to all district stakeholders. During the 2011-2012 and 2012-2013 the district prepared the foundation for this implementation plan by engaging its stakeholder community and implementing initial activities to prepare teachers, administrators, and staff. These included 3 Community Forums in Spring, 2012, to build public and stakeholder awareness in 21st Century Learning, followed by a series of 2012-2013 initiatives:
- August 2012 Summer Institute -- 5 days, 7 teachers, 3 of 4 elementary principals, 2 MS APs
- CCSS Awareness -- Training for all teachers in the [redacted] Modules 1-3
- Technology Pilots -- iPads at all schools and Chromebooks at the [redacted]
- Technology Infrastructure -- Network Upgrades -switches/ servers/wireless access points
- Cloud Migration -- Google Docs, PowerSchool
- Partnerships -- Oracle, Edmodo, Foss, Google
- Launch of 4-5 Design Team -- RFP, selection
- Leadership Development -- Napa Valley Education Exchange (April 18-20); Startup Weekend: NextGen Schools (June 7-9)
- Wellness -- [redacted] A number of themes and lessons learned emerged from the 2012-13 school year initiatives. Design learning, as

implemented in pilot classrooms and project-based learning as observed at the Napa Valley Education Exchange, together provide a powerful vehicle for 21st Century Learning. Moving forward with systematic professional development for staff with these learning models coupled with training in the implementation of the Common Core State Standards will be crucial to the realization of the Strategic Plan. The move from lab-based to mobile classroom- based computing required a robust, seamless and wireless tech infrastructure, successfully in place by spring 2013. It was determined from the piloting of mobile devices that iPads were a good match for K through 2nd grade students while Chromebooks fit well with 3rd through 8th

grade students. The cloud-based, free resources Google Docs and Edmodo will have a large roll to play in granting access to students to communicate and share in the creation of documents and presentations. Work with the [redacted] emphasized a need to expand the district focus on health and wellness for both students and staff. All of the above ground work and much more are captured in this Implementation Plan to guide our work for the next five years and beyond.

Year One Implementation, 2013-2014

I: Aligning Curriculum and Instruction to a 21st Century Model of Learning

1. Authentic Assessment/Exhibitions

The Strategic Plan envisions new rubrics, Personal Learning Plans (PLPs) and measurements of student, school, and district success that reflect the depth, quality and higher order displayed in student learning outcomes. Assessments will also include measures of Whole Child outcomes, (e.g. physical wellness, character development, etc.), a practice for collaborative review, and authentic assessment of student work. [redacted] Plan 2013-2018, page 5).

Year 5 Target: Students at all grade levels will establish Personal Learning Plans and exhibit work as examples of deep, high quality learning (the Five Cs of 21st Century Skills and Whole Child outcomes) using district rubrics that measure content knowledge, authenticity, and levels of engagement.

Year 1 Target: District-wide development and piloting of draft rubrics to authentically assess depth of student content knowledge and mastery of the Five Cs of 21st Century Skills and craft student learning objectives.

Action

1.1. Draft District exit rubrics for 3rd, 5th, and 8th grades that incorporate and measure authentic audiences and levels of engagement

1.2. Student Presentations and Exhibitions

1.3. Explore and pilot Student Digital Portfolios online platform and format

1.4. Research, draft and pilot rubrics for the 5 C's for grades TK-3, 4-5, and 6-8

1.5. Establish scheduled assessment feedback to parents via conferences and online platforms

1.6. Research, pilot and recommend procedures and platforms for implementing and tracking student Personal Learning Plans and Project Based Learning

When

By end of 2013-2014 school year

Year-long January, 2014

By end of 2013-2014 school year

By end of 2013-2014 school year

By end of 2013-2014 school year

Who

Admin Leadership and Design Team (11)

Self-selected staff and students

[redacted] Design Team

Design Team (11) Design Team (11)

Administrative Council in consultation with Design T eam

Learner Outcome: Not applicable Year 1

Educator Outcome: Design team will generate a summary report based upon their pilots and volunteer teachers' pilots to summarize recommendations on modes of exhibiting student work for the 2014-2015. Report and share with the administrative team by June, 2014.

Systemic Outcome: Draft rubrics for the 5 Cs and exit outcomes for grades 3, 5, and 8 will be completed by June, 2014

2. Common Core State Standards (CCSS)

Our students will enter a world of work and social interaction that will be very different from those of their parents. In order to prepare them for the future and yet undefined careers, it is imperative to consider

and address a number of emerging trends that provide the context and conditions for their future success. These trends include a Connected and Borderless World, Workplace Requirementsfor21st Century Skills, and the Need for Global Environmental Awareness. California's adoption of the Common Core State Standards (CCSS) brings these new elements of teaching and learning to the forefront and helps address the opportunities and challenges we currently face. CCSS provides a more student-centered approach to assessment and gives teachers, schools, and school districts a richer set of formative data to inform teaching and learning, while allowing students to self-monitor their progress in real time[redacted] Strategic Plan 2013-2018, pages 2-4).

Year 5 Target: CCSS, NGSS (Next Generation Science Standards), and Smarter Balanced assessments are fully implemented integrated with technology infused, Project Based Learning units, Blended Learning platforms, and authentic assessments in all grade levels.

Year 1 Target: All staff will demonstrate increased understanding of CCSS for their grade level or subject matter area, and collaborate with their colleagues to pilot and refine representative Mathematics and English Language Arts lessons. All teachers teaching science will develop a foundational understanding of the Next Generation Science Standards (NGSS).

Action

2.1 K-8 Educators will instruct students using English Language Arts (ELA) and Math CCSS

2.2. District and sites will provide targeted, practical professional development in CCSS throughout the school year allowing for staff to complete training in depth over time through strands of ongoing professional learning opportunities

2.3. District to support educators participation in Next Generation Science Standards (NGSS) Training through[redacted] to enhance awareness/knowledge

2.4 District to offer Project Based Learning (PBL) training in implementing CCSS to core early implementing group including Design team and select group of Project- Based Learning (PBL) "leaders"

2.5. District will investigate and promote use of Blended Learning environments in support of CCSS objectives

When

Ongoing 2013-2014

Ongoing 2013-2014

[redacted] offerings on: 8/29, 9/12, 9/24, 10/29, 10/22

3-5 days during month of September, 2013 and then ongoing throughout the school year

Ongoing 2013-14

Who

Educators; Principals

[redacted] in coordination with in- house and outsourced staff

[redacted] Content Science Teachers

Buck Institute with Design Team Members, Administrators and non- selected design team applicants

Design Team working with pilot teachers

2.6 District will gather and analyze baseline data via surveys and interviews following every Professional Development opportunity to assess efficacy of training and for future planning

2.7 District to host collaboration "forums" for middle and elementary to share about CCSS which could include the following: video, photos, blogs, online resource, PLC share outs, impromptu site meetings, cross school opportunities, etc.

2.8 District will create a lively, interactive repository of lessons, reflections and comments for ongoing learning

2.9 Communication with staff and parents around CCSS and Smarter Balance via website, news blasts, Changing times, etc.

2.10 District staff will work collaboratively to align curriculum K-8 to integrate the CCSS

Ongoing 2013-2014

Ongoing 2013-2014

Ongoing 2013-2014

Ongoing 2013-2014

Ongoing 2013-2014

Design Team

Design Team; [redacted] and Self-Selected staff

[redacted], Design Team; self- selected staff

[redacted]

[redacted] Principals and District Staff

Learner Outcome: Not applicable year one.

Educator Outcome: All staff will demonstrate increased knowledge and initial implementation of CCSSs and will report they are fully prepared to implement CCSS for 2014-2015, as measured by processes established by principals

Systemic Outcome: A lively repository online of lessons, reflections and as a resource for staff will be created and used.

3. 21st Century Skills and Whole Child

In order to develop relevant, real-world, global curricula that builds extended learning experiences and integrates both the Whole Child approach and Environmental Stewardship, the Strategic Plan seekstoaligncurriculatofocuson21st CenturySkills,especiallythe5Cs--CriticalThinking& Problem Solving, Communication, Collaboration, Citizenship (Global) and Creativity & Innovation. In addition, the Strategic Plan emphasizes new, expanded practices in Whole Child learning and teaching, Physical, Social, and Emotional Health and Wellness Programs, CCSS, and Science, Technology, Engineering and Math (STEM). ([redacted]Strategic Plan 2013-2018, page 2-4).

Year 5 Target: All aspects of teaching and learning will integrate 21st Century Skills and the Whole Child practices as implemented by a collaborative team of educators.

Year 1 Target: All staff will demonstrate increased awareness and explore implementation of diversification beyond traditional academics; including Social-Emotional Learning, the Arts, Health and Wellness and the Five Cs of 21st Century Skills. Rubrics will be developed, piloted, and refined for application by all staff in Year 2.

Action

3.1. Design Team will develop and pilot Learning Outcomes for Grades 3, 5, and 8

3.2. Design team will pilot Five Cs and Whole Child projects and design rubrics; Design team will disseminate with all educators;

3.3. All educators will implement at least one lesson explicitly incorporating the Five C's and share with principals

3.4. District staff will identify effective practices currently being used internally and research new promising practices, pilot and compile a resource to be used to draft an aligned P-8 social-emotional learning curriculum in the 2014-2015 school year.

3.5. All teachers will collaboratively plan at least one activity that is integrated across curriculum including, but not limited to, music, art, etc .

3.6 Staff and students will increase their awareness and ability to embed improved health and wellness choices into their daily lives including physical fitness, healthy nutrition, etc, through implementation of the Health and Wellness Initiative and selected goals

When

Ongoing by Spring, 2014

Ongoing 2013-1014

Ongoing 2013-14

Research, Awareness & pilots Ongoing 2013-2014

Ongoing 2013-2014

Ongoing 2013-2014

Who

Design Team

Design Team

All staff

[redacted] and potentially outside partners

All staff including elective teachers in coordination with principals

[redacted]

3.7 Staff and students will increase their knowledge and awareness of environmental education opportunities (e.g. recycling programs, trash reductions)

Learner Outcomes:

Ongoing 2013-2014

[redacted]

[redacted]; Principals; Educators; The Lunch Masters and Recology; C/CAG

All students (whose teacher is participating in the Project-Based Learning institute) will demonstrate through portfolios and/or exhibitions of projects their ability to integrate subject matters across multiple disciplines (art, language arts, math, etc.)

Educator Outcome:

An online repository of educator-designed, units/themes and lessons reflecting integration of the arts, design and health education across the curriculum will be created, posted and accessible by district staff.

Systemic Outcome:

A tool will be developed to measure the Five C's and social emotional learning.

4. Project-Based Learning (PBL)

The Strategic Plan envisions greater emphasis on Project-Based Learning (PBL) to focus on problem-solving, collaboration, critical-thinking skills, and time management skills in order to develop greater student engagement and ownership of their learning. The district will contract with a PBL trainer or training organization to build district capacity for effective PBL instruction that enables the implementation of the CCSS, the 5 Cs, and technology-infused Boundless Learning. [redacted] Strategic Plan 2013-2018, pages 4-5).

Year 5 Target: All students Grades Pre through 8 will be engaged in multiple PBL projects as common aspects of learning.

Year 1 Target: Expand district capacity to lead implementation of PBL: (1.) Train Design Team of Teacher/Admin leaders, and (2.) Prepare principals to lead instructional transformation; and 3) Design team members will bridge from current "projects" to more formalized PBL model.

Action

4.1. Intensive K-8 Summer Institute -- PBL, Design Learning, Learning Environments, Mindset will be provided to selected teachers

4.2. Staff will select PBL Training Organization/Trainers and PBL model of instruction for school year and develop a "PBL Master Plan"

4.3. PBL awareness training will be offered during Professional Development before school

4.4. PBL "Leader" Training

4.5. Administrator Leadership Development for PBL

4.6. Teacher Readiness Survey for PBL Skills

4.7. School PBL Implementation Rubric

4.8. PBL Sharing Community to showcase examples of Pre-8 PBL units

Learner Outcome:

When

August 12-16

August 5-9, 2013

August 21-22

September, 2013; 3 days and then ongoing 2013-2014

Year-long cohort meeting monthly

Fall, 2013-Baseline May, 2014

Fall, 2013 Spring, 2014

One district-wide meeting per trimester and ongoing participation in an online community

Who

Design Team (13 Teacher Leaders selected) and [redacted]

[redacted]

District staff and Outsourced staff

PBL Organization, All site Administrators, Design Team facilitate with 10-12 teacher leaders/ volunteers

All school-site Administrators

[redacted]

[redacted]

Design Team plus select teachers piloting PBL

Learners participating in PBL pilot projects will demonstrate their learning through (yet to be developed) sharing their units with the greater group and online in a repository

Educator Outcome: Not applicable in this first year. **Systemic Outcome:** Not applicable in this first year.

II: Aligning Human Capital to Support Staff as 21st Century Educators

5. Collaborative Teaching Models

Many district teachers are either planning co-teaching pilot classes or have started to implement them fully, as envisioned in the Facility Master Plan to utilize flexible learning and collaboration spaces for students and educators. ([redacted] Strategic Plan 2013-2018, page 6).

Year 5 Target: Learning environments will feature collaboration, multi-age groupings, inclusion, and co-teaching models to differentiate instruction for students.

Year 1 Target: Implementation of Collaborative Teaching models will take place [redacted], and pilot projects will be launched at several elementary schools. All staff will become aware of and explore models of multi-age grouping, inclusion and differentiation. As a result, a cadre of 20 staff making up multiple groups of representative groups at each school will develop professional learning committees to share and report their work and outcomes to their site and district colleagues.

Action

5.1. Self-selected school-sites and teams will begin new co-teaching pilot projects

5.2. Middle school-sites will expand current co-teaching implementation to a broader group of students

5.3. Selected sites will pilot inclusion models for intervention continuum (RTI, SPED)

5.4 District and school sites will provide differentiation coaching and/or co- teaching training and/or professional growth opportunity for staff

5.5 District staff in coordination with school sites will create a student-focus group to solicit input on collaborative teaching models (e.g. student council, leadership, etc.) to gather baseline data

When

2013-14 school year

2013-14 school year

2013-14 school year

At least once/year 2013-14 school year

2013-2014 school year

Who

[redacted]

Administrators and staff will co-develop the "how"

[redacted]principals and students

Learner Outcome: Not applicable in year one. **Educator Outcome:** Not applicable in year one.

Systemic Outcome: By June, 2014 district staff will report to the Board and annual report which includes teacher and student reflections of teacher findings.

6. Professional Growth and Evaluation

The Strategic Plan aims to enhance and professionalize the role of the educator by providing a greater level of autonomy, responsibility, and support. The two main avenues for achieving this model include: (1) Building a robust professional development ("PD") plan to provide all staff with ongoing professional learning to support their ability to teach in new ways and with new emerging tools; (2) Establishing a new system of evaluation for all staff (e.g. teachers, administrators, classified staff, etc.) based on professional growth, coaching and mentoring. [redacted] Strategic Plan 2013-2018, pages 5-6). The district has increased its ability to implement the strategic plan effectively through the launch of a district Admin Design Team ([redacted]nd Educator Design Team.

Year 5 Target: Full implementation of a Professional Growth and Evaluation Model that incorporates new roles and responsibilities, Professional Development (PD), Coaching, and Mentoring for all staff – certified, classified, and administrative.

Year 1 Target: The Professional Growth and Evaluation Model will be developed by the District- Union Committee and readied for piloting in Year 2.

Action

6.1. A new, multiple measure Educator Evaluation Measure model will be created in collaboration of all stakeholders

6.2. District and school-sites will provide professional development (PD) growth opportunities via staff meetings, Wednesday early-release afternoons and selected PD Days

6.3. School sites will send staff on "study tours" to exemplary 21st Century Learning districts, schools, and programs to develop further understanding of programmatic and facility opportunities

6.4. Site principals will facilitate increased time for teachers for professional learning (e.g[redacted] "time", Wednesdays, staff meetings, etc.)

6.5. District staff in collaboration with educational and Human Resource (HR) staff will develop a "new teacher" induction training to be implemented at the onset of the 2014- 15 school year

6.6 Staff will set personalized professional growth goal(s) (formal or informally as determined by site

When

Ongoing

Agreed to by 10/1/13 at each site and August 21-22 as well as integrated throughout 2013-14 School Year

Ongoing; 2013-14 School Year

Ongoing; 2013-14 School Year;

Spring, 2014

August 2013

Who

District-Union Committee

All schools; [redacted] and District Staff

Teachers, administrators

Teachers, administrators

District Union Committee in coordination with HR and CTA

Admin and Staff

administration)

6.7 Online registration system will support self-selected staff development

6.8 Students of self-selected pilot teachers will provide feedback on a targeted activity, project, etc. to refine teaching practices

August-September, 2013 and ongoing reflection

Spring, 2014

Staff and Administrators

Students of selected subgroup and selected staff

Learner Outcome: Does not apply in year one. **Educator Outcome:**

A summary of staff feedback will be documented (Yet to be determined by AC).

Systemic Outcome: A professional growth and reflection tool and system of evaluation will be developed and piloted.

[redacted] *Implementation Plan 2013-2018 Draft 08-5-13* Page 13 of

7. Parent & Community Partnerships & Education

The district is committed to ensuring all staff and parents are informed and educated on the Strategic Plan as well as progress made toward its objectives. Additionally, parent and student input will be solicited as to how we are succeeding in meeting our goals at site and student levels. During the implementation years, the district will solicit parent input, report findings, and create action plans regarding student experiences, growth and Whole Child well-being and understandingof21st Century Learning practices. [redacted] 2018,pages7-8).

The district aims to explore, establish, and evaluate community relationships and partnerships with non-profit organizations, industry, local businesses as well as state and federal government agencies in order to engage external partners and funders for the implementation of the Strategic Plan. The district will aggressively pursue alternative sources of funding from foundations and other related organizations that may help fund innovative programs contained in this plan. [redacted] Plan 2013-2018, pages 5, 8).

Year 5 Target: [redacted] Is recognized as an exemplar of school innovation and a center for professional development and visitation in which boundaries between home and school are blurred, parents, community members and global partnerships are engaged co-participants and contributors in meaningful 21st Century Learning activities both in and out of school.

Year 1 Target: A formalized resource of and for parents and community partners (industry, non- profit, etc.) will be developed that supports the implementation and evolution of the Strategic and Facilities plans, and expands the parent and community knowledge base in 21st Century Learning.

Action

7.1. Staff will identify, categorize, and disseminate a rich resource of parental and community supports available to support 21st century learning for students

7.2. District staff will design and deliver an enhanced parent education series including a variety of workshops, forums, meetings, etc. on targeted topics to ensure parents have access to learning opportunities around 21st century learning.

7.3 District staff will develop a comprehensive communication plan to ensure ongoing communication occurs through various media including, but not limited to, ~website development, ~district and school site newsletters ~e-communications

7.4 District staff will explore possibilities in social media as a means to enhance communication and information dissemination to all stakeholders (e.g. Facebook, Edmodo, Twitter, etc.)

When

Ongoing 2013-2014

Ongoing, 2013-2014 Year; evenings

December, 2013; ongoing

Ongoing 2013-2014

Who

[redacted] in coordination with administrators, educators, parents and community partners

[redacted] in coordination with administrators, educators, parents and community partners

[redacted]

[redacted] *Implementation Plan 2013-2018 Draft 08-5-13*

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7.5 District staff will create a fund development plan to explore promising partnerships and develop a small cogent set of targeted partners to support 21st Century learning

7.6 District staff will explore possibilities of grant writing as means for fiscal support of our work

7.7 District staff to develop a Partner Development Plan

Ongoing 2013-2014

Ongoing 2013-2014

Ongoing 2013-2014

[redacted]

District Staff

Learner Outcome: Not applicable during year one. **Educator Outcome:** Not applicable in year one.

Systemic Outcome: District staff will develop a comprehensive communication plan *and* resource of parents and community partners which yields financial, in kind donation, human capital increases thus, providing resource-rich support to all learners and educators.

III: Building Learning Environments for all [redacted] Schools that will Reflect, Support, and Sustain 21st Century learners

8. Facility Master Plan for 21st Century Learning Environments

The Facility Master Plan envisions flexible learning and collaboration spaces for students and educators, including spaces designated for: (a) individual, (b) small group/large group, (c) indoor/outdoor, (d) whole campus use, and (e) collaboration work. ([redacted] Strategic Plan 2013- 2018, pages 2-5).

Year 5 Target: Opening of two new 4-5 schools and completion of 21st Century redesign of existing schools.

Year 1 Target: Successful piloting of innovative classroom learning environments and library/media centers. District will evaluate pilots and employ lessons learned into next phase of facility planning.

Action

8.1. The Facility Master Plan will be implemented and progress as stipulated will be achieved per the plan.

8.2. Encourage staff to pilot new classroom learning environments qhich support different teaching models

8.3. Encourage district staff to pilot new models on how to use new spaces including furniture, equipment, etc. in PD Center/Board Rooms, Maker Space, etc.

8.4. District staff to complete a variety of "study tours" to exemplary facilities, sites and programs

When

Ongoing

Ongoing

Ongoing

Roll Out Fall, 2013 Ongoing 2013-2014

Who

Design Team

Subset teachers

Design Team

Selected sub groups

Learner Outcome: Not applicable during this first year. **Educator Outcome:** Not applicable during this first year.

Systemic Outcome: Review of the data collected from participants in pilots, study tours, and equipment trials will identify best practices for 21st Century learning environments and share recommendations with the Facility Master Plan Committee and these will be reflected in Annual report and measured by the Facility Master Plan.

[redacted] *Implementation Plan 2013-2018 Draft 08-5-13* Page 16 of

9. Technology Infusion, Integration, and Infrastructure for Boundless Learning

The Strategic Plan sees great potential through developments in technology and social networking that have given us the opportunity to create new forms of collaboration and communication systems to change the way educators, students, and community members interact. The plan aims to implement a comprehensive, district-wide Technology Plan outlining learner outcomes and effective use of technology for teaching and learning, data collection and analysis, and district-wide operations. The Technology Plan shall include a robust infrastructure, capacity for one-to-one computing, a platform for district-wide collaboration and sharing, and sufficient training for staff, students, and parents in its use. ([redacted] Strategic Plan 2013-2018, page 5).

Year 5 Target: Technology integration in classrooms, and connections with the outside world will be seamless and robust. Students will have ubiquitous access to boundless learning 24/7.

Year 1 Target: Implementation of a fully functioning, robust network and infrastructure across all schools, both in school and after school, with all staff

Action

9.1. Provide professional development and rollout cloud-based environments to support student experimenting in a host of tech platforms in support of student learning (Edmodo, Google Docs, Gmail, and Blended Learning).

9.2. Continue to upgrade Network Infrastructure to bring all schools to 1 GB connectivity over the internet (Currently 250 MB Bandwidth)

9.3. Completion of comprehensive technology plan/roadmap for the next 5 years that outlines how to achieve ubiquitous access to technology in and out of school.

9.4. Create Project/Lesson Repository and Discussion Platform for Teachers

9.5. Create a plan to redesign Tech Associate Position to support Boundless Learning

9.6. Pilot Mobile Computing/ Media Center model

9.7. Establish a district technology committee that will meet a minimum of four times a year.

9.8 Staff to complete a "needs

When

August 21-22 and Monthly ongoing

Ongoing and 1GB by June 2014

First Year Draft September, 2013

Final 5 Year Draft June, 2014

Roll Out, January, 2014 & ongoing

February, 2014

August, 2013 and ongoing

September 2013

2013-2014

Who

[redacted], parents, board

District staff

assessment" around student's broadband afterschool access and develop a "device access plan"

Learner Outcome: Every student in the district will experience high quality technology enabled learning and access to computing platforms

Educator Outcome: All teachers will use a technology tool or system to enhance student learning and will demonstrate competency via _____ (tbd)

Systemic Outcome: A robust, reliable network infrastructure and student access to technology will be in place across the entire district to support 21st Century educator and learner. A comprehensive technology plan subject to annual review and revision will also be in place by June 2014.

Measurement, Fund Development and Communication NEEDS TO BE RE- VAMPED [redacted]

Measurement and Metrics

The District will develop measures to monitor and support its continuous improvement in implementing the strategic plan and its programs and systems toward student learning. This will include data analysis and engagement of all constituencies. [redacted] Strategic Plan 2013-2018, page 7-8).

The district will publish an Annual Progress Report (APR) for the Strategic Plan 2013-2018 including documented progress on and participation in all actions of the Implementation Plan. The APR will be reviewed annually by the School Board and inform the development of the successor year Implementation Plan.

The district will form a Measurement Committee charged with finalizing measures, tools, and baseline data in SY 2013-2014. The Measurement Committee will also design a Data Systems/Dashboard that captures all district-wide longitudinal data systems and protocols to support collaborative assessment of student work

The Measurement Committee will evaluate and make recommendations regarding current and potential assessments and surveys of student achievement and engagement, use of climate surveys and focus groups, other system tools and periodic events, including but not limited to:

Current Student Achievement and Engagement Assessments

-- SBAC starting 2014-2015): Increase % of students scoring at "proficient" or above in reading and math -- [redacted]

-- Progress on Exit Data from rubrics for 3rd, 5th, and 8th grades -- Holding Data: Student Attendance; other

Ideas Discussed/Things to consider from Board:

Dashboard for Mock-up for FMP Translate Implementation Plan to dashboard Facebook Increase parent education Back to School night Improve website PTA-CCC K-social Changing Times Teacher Communication Show how prepared for workforce (Beth)

Other Possible Data tracking:

-- Future: track longitudinal data on HS, College, and Career Persistence -- Torrance Creativity Index (see The Creativity Crisis, Torrance® Tests of Creative Thinking (TTCT) -- PISA-Based Test for Schools (also see Fairfax County results) -- Survey of Student Engagement (Fort Worth ISD 2012, Hope Survey from EdVisions, Gallup Student Poll)

-- Classroom-Based performance assessments from SBAC, PBL-Multimedia project (see Penuel_1 and Penuel_2), and developed by [redacted] teachers and administrators

Surveys and Focus Groups (Teachers, Students, Parents)

-- Climate Surveys -- Focus Groups -- Surveys of student interest in STEAM

Systems and Culture

-- Single Plan for Student Achievement (SPSA); School Accountability Report Card (SARC) -- Annual (or more frequent) Student Exhibition Nights -- Annual Teacher Practice Showcase -- Online teacher Project and Lesson Sharing Community

External Evaluation

-- Formative Evaluation of Strategic Plan Implementation

Communications

The District acknowledges that a communications plan must be outlined and implemented to ensure that all staff and parents are informed and educated about the Strategic Plan, as well as progress made toward its objectives, and receive relevant feedback from all constituents. Communication shall be ongoing, integrated and disseminated broadly such that school and district leadership can both communicate plans and monitor progress for accountability. [redacted] Strategic Plan 2013-2018, pages 7-8).

District communications will include:

- General news of Strategic Plan implementation
- District Website publication of all news and documents related to Strategic Plan implementation
- Email Newsletters and Email Alerts
- Changing Times
- One page Strategic Plan summary-Hard copy distribution & posting at schools

Appendix H

Interviewee System of Identification

Table 9

Interviewee System of Identification

Identification System	Type of Interviewee	Date of Interview	Length of Interview (Hrs:Min:Sec)
DDT1	District Design Team Teacher	May 27, 2014	0:46:30
DDT2	District Design Team Teacher	May 30, 2014	0:49:53
DDT3	District Design Team Teacher	June 9, 2014	0:30:09
DDT4	District Design Team Teacher	June 9, 2014	0:22:26
DDT5	District Design Team Teacher	June 10, 2014	0:38:44
DDT6	District Design Team Teacher	June 18, 2014	0:33:45
DDT7	District Design Team Teacher	June 19, 2014	0:51:38
DDT8	District Design Team Teacher	June 23, 2014	0:29:45
DDT9	District Design Team Teacher	June 26, 2014	0:33:20
DDT10	District Design Team Teacher	June 26, 2014	0:30:14
DDT11	District Design Team Teacher	July 7, 2014	0:33:23
SLDL1	Site Level and District Design Team Lead	May 14, 2014	0:31:27
SLDL2	Site Level and District Design Team Lead	June 18, 2014	0:33:45
SLDL3	Site Level and District Design Team Lead	June 20, 2014	0:45:38
SLDL4	Site Level and District Design Team Lead	June 23, 2014	1:18:45
Title	Superintendent	June 19, 2014	1:03:29
Title	Assistant Superintendent	May 19, 2014	0:51:29
Title	Director of Learning and Technology	May 13. 2014	0:47:34

Appendix I

Composition of the District Design Team (DDT)

Composition of the District Design Team (DDT)

The DDT was composed of administrators and teachers from across the district. All six schools had representation and both district level and site level administrators also were represented. The configuration of the District Design Team went through a few different iterations from the time it was conceived of to the time this study was concluded.

In the spring of 2013, the DDT was to include the following composition (See Appendix A):

- 0.5 Existing Assistant Principal
- 0.5 Technology director
- 1.0 New Assistant Principal
- 1.0 New, highly qualified teacher on special assignment (TOSA) or perhaps 2 teachers at 0.5
- New 0.5 Coordinator

The team came together for the first time during the summer of 2013. In April of 2014, when this research began, the following composition was in place:

- 0.5 Existing Assistant Principal
- 0.5 Technology director
- 0.5 New Assistant Principal
- 0.5 Teacher on special assignment (TOSA)
- 13 Teachers from the district (seven district elementary teachers and six middle school teachers)

By the October 2014 (year two) launching of the 2014-15 DDT, the composition included the following participants:

- 1.0 Principal on Special Assignment (POSA) and DDT Lead
- 2 site level administrators as Co-DDT Leads (unclear how much time has/will be allocated for this role)
- 0.5 Teacher on special assignment (TOSA)
- 7 teachers teaching at the Preschool- 3rd grade level
- 9 teachers teaching at the 4th-5th grade level
- 3 teachers teaching at the 6th-8th grade level

Of importance to note, is the fact that DDT leads collaborate with and report directly to the; Director of Learning and Technology, Assistant Superintendent, and Superintendent through cabinet level meetings.