AN EVALUATION OF LINKED LEARNING EARLY INITIATION ACTIVITIES AND PROFESSIONAL DEVELOPMENT PRACTICES IN SEVEN HIGH SCHOOLS IN ONE LARGE URBAN SCHOOL DISTRICT

A Doctoral Thesis Presented to the
Faculty of the College of Education
University of Houston

In Partial Fulfillment
of the Requirements for the Degree

Doctor of Education
In
Professional Leadership

by
Paula Fendley

December 2014

AN EVALUATION OF LINKED LEARNING EARLY INITIATION ACTIVITIES AND PROFESSIONAL DEVELOPMENT PRACTICES IN SEVEN HIGH SCHOOLS IN ONE LARGE URBAN SCHOOL DISTRICT

A Doctoral Thesis for the Degree

Doctor of Education

by

Paula Fendley

Approved by Doctoral Thesis Committee:

_____
Dr. Robin McGlohn, Chairperson

_____
Dr. Angus MacNeil, Co-Chairperson

_____
Dr. Robert Borneman, Committee Member

_____
Dr. Steven Busch, Committee Member

_____
Dr. Robert H. McPherson, Dean
College of Education

December 2014

Acknowledgements

I would like to express my gratitude and appreciation to the members of my doctoral committee: Dr. Robin McGlohn (Chairperson), Dr. Angus MacNeil (Co-Chairperson), Dr. Robert Borneman (Committee Member), Dr. Steven Busch (Committee Member). Thank you so much for your guidance and support through this arduous process. I would like to give a special thanks to Dr. Robin McGlohn, whose patience and detailed feedback pushed me to strive for excellence in my work. Her teaching methods coupled with her positive spirit make Dr. Robin McGlohn an inspiration to all with whom she comes in contact.

I would also like to convey my thanks to my colleagues/ friends at Eastwood Academy. Their technical expertise and moral support helped me persist through the difficult times. Thanks to Brandi Lira, Gene Platt, William Solomon and Dixie Morales for staying calm and rescuing me when formatting issues arose. I also want to acknowledge my secretary, Brenda Morales, for continually anticipating my needs and always "having my back". Thanks also to Marylan Eloja, without whose statistical expertise, I would have been "average". I am lucky to have such an extraordinary staff.

Finally, I would like to recognize my amazing family members, whose enthusiasm and encouragement fueled my journey through the doctoral program. I am so grateful for my mother, Bertie Simmons, who served as a role model, editor and friend, always believing in me and affirming my progress. Elyssa Schnurr, my biggest cheerleader, also spent many hours proofreading, editing, and rooting me on to the "finish line". Thank you for never giving up! I am also thankful for my exceptional children,

Brooke and Austin, whose technical skills and senses of humor saved the day on many occasions. I also want to thank my confidant, Sharon Koonce, and the Schnurr girls for their kindness and emotional support. Lastly, thanks to Trisha for selflessly sticking with me through the many hours of writing. I appreciate you all!

AN EVALUATION OF LINKED LEARNING EARLY INITIATION ACTIVITIES AND PROFESSIONAL DEVELOPMENT PRACTICES IN SEVEN HIGH SCHOOLS IN ONE LARGE URBAN SCHOOL DISTRICT

An Abstract
of
A Doctoral Thesis Presented to the
Faculty of the College of Education
University of Houston

In Partial Fulfillment
of the Requirements for the Degree

Doctor of Education
In
Professional Leadership

by
Paula Fendley
December 2014

Fendley, Paula K. "An Evaluation of Linked Learning Early Initiation Activities and Professional Development Practices In Seven High Schools In One Large Urban School District." Unpublished Doctor of Education Thesis, University of Houston, December 2014.

ABSTRACT

This study focused on evaluating the Linked Learning program in one large urban district. Linked Learning is a program linking students to rigorous college preparatory curriculum in a career-themed environment (Oakes & Saunders, 2008). As schools try to better prepare students for college and the workforce, more than ever districts are using programs such as Linked Learning as a solution to ensure student success. There is some research on the overall value of Linked Learning, and its ability to positively impact student success (Adams, 2012); however, limited research exists on the effectiveness and efficiency of the professional development and early initiation activities offered during the early phase of Linked Learning implementation. This program evaluation examined the effectiveness and efficiency of the professional development and early initiation activities in seven Linked Learning pilot high schools in one large urban school district through the use of surveys, focus groups, and cost analysis. General background information of the program was obtained through semi-structured interviews with central office personnel, and district documents were collected for further analysis. Survey and focus groups and were utilized to examine Pathway Design Team's (implementation team including teachers and administrators) perceptions of Linked Learning professional development and early initiation activities and the perceived impact on teachers' and administrators' sense of readiness to implement the program. Planning documents and cost sheets were reviewed and analyzed to determine the overall effectiveness and

efficiency in achieving intended professional development outcomes. Results from the study found team members to be relatively confident about their own skill level but uncertain about team preparedness and confidence about implementation. Findings also revealed that some professional development activities, such as the Pathway Design Institute, were viewed as more helpful than others, and effectiveness varied in terms of format, content and timing. The online tool, Connect Studios, was perceived as valuable but was under-utilized. Barriers to implementation included a perceived lack of support staff and teacher and administrator turnover, as well as fear associated with the impact accountability measures should test scores fall during implementation. Training needs were identified and included perceived needs for more training in designing and implementing cross-curricular projects, integrating state standards into the process, and the use of ConnectEd Studios. The cost-effective analysis indicated the Pathway Design Institute to be the most cost-effective form of professional development, with site visits, though more costly, receiving high ratings. Overall, members appeared to be at varying levels of readiness for implementation. Implications for school and district leaders were discussed and recommendations were provided for improvements in the early initiation and professional development of Linked Learning.

Table of Contents

List of Tables

Table Page

List of Figures

Figure Page

Chapter One

Introduction

There is no place to hide in today's fast-paced, hyper-connected society. We have grown to expect news to be zoomed to our phones, computers and television screens from all corners of the world with break-neck speed. Geographic boundaries have all but disappeared and we are personally connected to a global international grid, with the capability of transmitting our voices, images and personal information via satellite. What was known once as a factory assembly line has become a global supply chain of patchwork assemblies moving products throughout the world. Today's students have seen global boundaries swept away with a simple touch of one finger on an electronic screen. To prepare students to compete in the global marketplace, educators and educational institutions must change to keep pace with the demands of a world that is becoming flat at a remarkable speed (Friedman, 2005).

We are in the midst of a new era where globalization is shrinking the world from small to tiny and flattening the playing field so that individuals on every continent can collaborate and compete globally. The merging of the personal computer with fiber optic cable and the growth of work-low software make it possible for workers to collaborate on the same digital content regardless of distance (Friedman, 2005). Thomas Friedman (2005) predicts that although past globalization efforts were driven by the United States and Europe, with the empowerment of individuals around the globe, the future global economy will be increasingly driven by a more diverse, non-Western, non-white populace. We are in a time of exponential growth that is predicted to continue indefinitely. Moore's Law, named after Gordon Moore, co-founder of Intel and co-

inventor of the computer chip, purports that computer processor and storage capacities will double every 24 months (Roberts, 2000). As a result of this on-going progress, capacity for information storage has also increased, resulting in mounting information retrieval difficulties and the development of innovative computer systems to manage this tremendous amount of information (ciphercloud.com). Rapid technological change and growing economic globalization will influence the future workforce and workplace where non-routine cognitive skills such as abstract thinking and lifelong learning will be the norm (RAND, 2004).

Schools must educate children so they will possess the skills and character traits needed to be productive members of society and compete in an intricate global economy (Wagner, 2008). These critical skills encompass much more than the acquisition of knowledge, and are part of a national movement aimed at redesigning education so that the United States retains a strong presence as a world-leader. A focus on "21st century outcomes" includes the knowledge and skills students must master to flourish in creative problem solving and innovation and thrive in our ever-changing world (p21.org).

Currently, American schools seem more focused on teaching students to pass a multiple-choice test than teaching them to think critically, access information and apply new skills. In addition, most instruction does not adequately address the affective domain or encourage creative and innovative thinking (Wagner, 2008). It is critical that school leaders recognize the need and take action to sufficiently prepare students with the knowledge and skills necessary to engage in the highly competitive global discourse with competitors the 21st century. The Partnership for 21st Century Skills, a leading national organization which advocates for 21st century readiness for all students, and a number of

other education entities have identified the critical skills students will need and have provided a framework for curricular implementation in schools. Daniel Pink (2006) proposes that "right-brained" characteristics such as inventiveness, empathy, and meaning will be the assets needed to be successful in the future.

In response to the need for school reform, a new approach, Linked Learning, is sweeping across California's high schools. With a focus on integrating core academic standards and Career and Technical Education (CTE), into the secondary curriculum, Linked Learning emphasizes project-based learning, real-life problem solving, and personalized learning providing a more engaging and meaningful educational experience. This research-based program is designed to meet the needs of all types of learners, resulting in higher academic achievement among graduates, higher rates of postsecondary participation, and ultimately, higher earning power (connectedcalifornia.org)

In a study of 100 diverse California high schools that subscribed to the Linked Learning approach, Brian Adams (2012) found these schools were collaborative in spirit and exemplified family atmosphere where student engagement was high and an increased percentage of at-risk students remained in school. Big District ISD, a large urban school district with a similar student population and set of educational concerns, has adopted the Linked Learning model and is currently piloting the program in seven comprehensive and non-traditional high schools. In an effort to create an organized, sustainable approach to the implementation of Linked Learning practices, each school selected a Pathway Design Team, made up of teachers and administrators and required they complete a year of planning and professional development prior to execution of the Linked Learning model. The significant financial investment and critical nature of this reform require that

pertinent readiness activities be effective and achieve desired outcomes. This study will focus on Pathway Design Team members' perceptions of the impact of Linked Learning, specifically, the early initiation activities and professional development designed to achieve staff readiness and the effective implementation of Linked Learning. The future success of the students throughout Big District ISD, requires they be prepared, creative, innovative, and have an entrepreneurial spirit. It is important that these students learn to work collaboratively to meet this charge, which is both exciting and daunting. In order for the workforce of the United States to compete effectively in the global marketplace, our current students, the future business executives, innovators and entrepreneurs must learn to work collaboratively (Friedman, 2005). Educational institutions must take action and fully implement sustainable programs that prepare students to tackle challenging problems and adapt to an ever-changing world (Pink, 2006). District and school leadership must be strategic and reflective as they implement school reform.

Background of the Problem

It happened quickly and without ceremony. The world shifted from an Industrial Age of production to an information-driven, globally networked Knowledge Age in the blink of an eye (Trilling & Fadel, 2009). Where industrial economies focus on using natural resources to create products we use in our everyday lives such as gasoline and automobiles, knowledge economies use information, expertise, and technological innovations to provide the services we need, like health care and cell phone communication (Trilling, et al.,2009). Manufactured products will continue to be needed but with the increase of automation, outsourcing, and offshoring, American workers will

need a special skillset and expertise to compete in the knowledge-based global economy (Pink, 2006).

The world's population is in a time of exponential change, and continuous advances in digital technology are creating what Thomas Friedman describes as a "flattening" of the world that challenges America's internal structures and the way in which the country interacts with its global constituency (Friedman, 2005). Digital tools, in existence for the last 60 years of human history, are transforming the way citizens communicate and conduct business so that physical boundaries no longer determine success. The beginning of the 21st century is plagued by excess; overpopulation, reckless consumption of resources, increased global competition, melting of the polar ice cap, financial meltdowns, wars and other threats to national security. A primary role of education is to prepare a workforce to effectively deal with these and other issues facing humanity.

According to Wagner (2008) the world is changing but schools are not responding, and we are placing our students at a distinct competitive disadvantage if we fail to develop the skills necessary for them to engage in a highly competitive global economy. Although some secondary schools are implementing programs that emphasize 21st century skills, they are in the minority and there is little consistency. Wagner (2008) also points out that curriculum and teaching practices have changed very little over the past fifty years and schools are often insulated from the world at large, teaching skills that are obsolete and not transferrable to today's workplace.

In general, the current American educational system still follows a model designed in the 20th century during the Industrial era, marked by the efficient

dissemination of knowledge where students sit in rows and receive information from the teacher (Wagner, 2008). Implied in this model is that the more information a student can acquire, the greater advantage he/she has over others. Wagner (2008) noted that most schools resemble the same brick and mortar school models of the 1890s and 20th-century practices endure with very little change in the school calendar, required seat time, tracking of students, and the organization of staff. Gardner (2006) proposes two compelling reasons to change the current educational system: First, the practices do not work; and second, rapid changes in the world are making the present educational system outdated. Teachers are no longer "gatekeepers" of knowledge and cannot control access to information. Knowledge deemed important in the 20th century holds little relevance in the 21st century (Zhu, 2009). In this Information Age students can obtain information on pocket-sized digital devices at an alarming rate. This development, along with global economics, a better understanding of learning theory, and widespread access to digital-learning is redefining pedagogy.

While an increasing number of business leaders, politicians, and educators are united around the idea that students need to be taught 21st century skills such as critical thinking, creative problem solving, information literacy and global awareness, these skills are not new (Rotherham & Willingham, 2009). What is essentially new is the fact that our collective and individual success depends on honing these 21st century skills in order to be successful in the changing global economy. Students fortunate enough to attend highly effective schools and those who are lucky enough to have an exceptional teacher are taught these essential skills, but there is no deliberate design for the American school system. The shift toward more effective instructional practices requires highly trained

teachers who are willing to take risks and are open to change. Most teachers are ill-equipped to teach "self-direction, collaboration, creativity, and innovation" (Rotherham & Willingham, 2009). Change can be anxiety producing and difficult for many and ongoing, job-embedded professional development is needed to support teachers, but can be costly and time consuming. Additionally, teachers are reluctant to engage students in meaningful discussions related to metacognition, reflective thinking and problem solving, fearing their students will be inadequately prepared for the rigors of standardized testing. Tony Wagner (2008) stresses that accountability has increased, and with high-stakes testing, schools must teach students the required content and must practice in the format for which they will be tested. However, in many instances, schools continue to try and do the same thing "better", rather than adopting new approaches to learning (Wagner, 2008).

Since the 1950's national policy makers have attempted to address the issue of education reform through the National Defense Education Act (NDEA), *A Nation at Risk*, and the No Child Left Behind Act (NCLB). The NDEA was signed in 1958 by President Dwight Eisenhower in response to a belief that American scientists were lagging behind their Russian counterparts. This federal legislation provided funding to institutions of higher education to encourage students to pursue mathematics, science, and modern foreign languages (Creager, 2014). Surrounded by controversy, the act was repealed in 1962, yet it illustrates an awareness of the need for American education to provide the skills necessary to compete in a global society.

In 1983, Ronald Reagan delivered *A Nation at Risk*, a report that discussed the failings of American education and called for widespread reform. The report detailed declining test scores, low teacher pay, and poor teacher training and voiced the fear that

other countries were threatening to outpace America's technological superiority (Graham, 2013). *A Nation at Risk* stated that an "incoherent, outdated patchwork quilt" of classroom learning caused an increasing number of students to be subjected to a "cafeteria style curriculum" that diluted the course material and permitted them to progress through their schooling with minimum effort (Graham, 2013). In the last 30 years, Graham (2013) acknowledges the efforts of schools across the nation but asserts that many of the problems discussed in *A Nation at Risk* remain issues of concern. In addition, he blames budget cuts and an obsession with standardized testing for narrowing the curriculum and "handcuffing educators' ability to utilize creative supplemental programs to support and engage their students" (Graham, 2013).

Efforts to provide a meaningful and comprehensive educational programs, have only been compounded by the Elementary and Secondary Education Act, reauthorized as the No Child Left Behind Act (NCLB) of 2001. Intended to improve reading and math scores and close the achievement gap between classes, NCLB required states to "develop and implement a statewide accountability system that will be effective in ensuring that all local educational agencies, public elementary schools and public secondary schools make adequate yearly progress" (U.S. Department of Education [DOE], 2002). Each state set its own standards and ranges of proficiency, and yearly progress is measured by standards-based assessments. Adequate Yearly Progress (AYP) is calculated for a school and district by factoring student performance on standards-based assessments, percentage of student participation, and school progress over time. In order to meet AYP, districts and schools must show continuous growth for all students, including student groups based on race/ethnicity, socioeconomic status, student disability, and language

acquisition for English Language Learners (ELLs) (Darling-Hammond, 2007). Schools are sanctioned when they fail to make AYP and the intricate formulas used to determine accountability are such that they inadvertently encourage schools to rid themselves of students who are not doing well to preserve the school's test scores. Linda Darling-Hammond (2007) claims that the law wastes insufficient resources on a "complicated test score game which appears to be narrowing curriculum, uprooting successful programs, and pushing low achieving students out of many schools" (p. 1).

Schools can no longer focus solely on the dissemination of facts, and teachers simply teaching to the test. ASCD (formerly the Association for Supervision and Curriculum Development), an educational leadership organization, believes that schools must address the needs of the whole child by providing a 21st century curriculum, considering health needs as they relate to learning expectations, and ensuring just and comprehensive assessments (Laitsch, Lewallen, and McCloskey 2005). The current atmosphere of high-stakes testing and punitive accountability forces educators to limit the curriculum at the expense of the needs of the whole child. In *A Framework for Education in the 21st Century*, Laitsch, Lewallen, and McCloskey (2005), stress that meeting the needs of all students is a moral imperative that must become a priority. The authors acknowledge that this all-encompassing, whole-child view of education imposes added duties on teachers, schools, policymakers, and the larger community. However, the authors suggest that through a conscious effort by educators, policymakers, and the general public, it is possible to design and sustain schools in which "all members of the school community develop ethically, physically, emotionally, and civically—as well as academically" (Laitsch, et al. 2005, para. 1).

It is essential that schools adjust and teach the skills and attitudes necessary to compete for jobs, some of which have not yet been created, as well as teach students to contribute to society. President Barack Obama recognized the need to strengthen and reform the American education system for success in the 21st century. His 2013 Race to the Top initiative promoted college and career readiness through the pursuit of rigorous standards, the improvement of teacher effectiveness, the effective utilization of data to drive instruction, and the implementation of new strategies to improve struggling schools. The initiative provided competitive grants to encourage and reward states that are involved in innovative educational reform (whitehouse.gov). Districts around the nation, including Big District ISD, have been awarded millions of dollars to implement school reform. This district is using these grant funds to make school more relevant for students by focusing on project-based learning and career pathways in high school and utilizing the California-based Linked Learning high school improvement approach (Mellon, 2013).

President Obama's Blueprint for Transformation of the Carl D. Perkins Career and Technical Education Act aimed to reform and update Career and Technical Education programs to address the educational and economic needs of youths and adults in an effort to better prepare them to compete in the knowledge-based, global marketplace of the 21st century (U.S. DOE, 2012). Additionally, President Obama's "Change the Equation" effort aims to improve student performance in math and science and is part of the *Educate to Innovate* campaign intended to elevate U.S. students to the "top of the pack" in math and science achievement (changethequation.org). The commitment of funding and programming by the Obama Administration illustrates the

sense of urgency and need for action in education reform. President Obama supports school reform and is dedicated to being certain that every student in our country graduates from high school prepared for college and a successful career so that they can make a significant contribution to the rejuvenation of the American economy and assure a more prosperous economic future for all Americans (whitehouse.gov). The world is rapidly changing and the strength of the American economy is dependent upon the strength of American education. School reforms must be carefully planned and implemented and principals must be more than instructional leaders (Fullan, 2002). Noted expert on educational reform, Michael Fullan (2002) asserts that school improvement is contingent on principals who can foster the environment necessary for "sustained education reform in a complex, rapidly changing society" (p. 16).

Statement of the Problem

The United States has experienced over six decades of education reforms, yet far too many American schools are failing their students, and these students are not leaving high school with the skills needed for success in college, career, and citizenship (Wagner, 2008). With increased access to the Internet and other forms of rapidly evolving technology, the world is changing at a startling rate. In this new digital age, information has become a free commodity and global competition is fierce. High school graduates in the United States are not graduating from high school with the skills needed to compete in the 21st century; too few are enrolling in college and the ones who do, are not prepared (broadfoundation.org). In addition, a significant number of students, especially students of color, are dropping out of college. Students in the United States trail their peers in other industrial nations (TIMSS, 2011). Obsolete systems of education, which still prevail

in American schools, must be reinvented in order to prepare students to effectively compete in a highly technical, complex, global society (Wagner, 2008).

For the last 25 years, the United States of America has attempted to address the issue of "failing" schools by implementing a variety of school reforms to address the achievement gap. The current education system has created an even greater problem, what Tony Wagner (2008) calls the "global achievement gap - the gap between what even our best suburban, urban and rural schools are teaching and testing versus what all students will need to succeed as learners, workers, and citizens in today's global knowledge economy" (p. 8). When even our "best students" are not adequately prepared for a changing world, consider the plight of our low income and first generation students of color.

The No Child Let Behind Act of 2001 (NCLB) is based on standards-based education reform and aims to lessen the achievement gap by supporting states in setting high standards and administering assessments of basic skills to students at select grade levels. However, the focus on high stakes testing, back-to-basics curriculum and closing achievement gaps through greater accountability measures fails to meet the needs of all students. In an effort to meet NCLB accountability requirements some schools have encouraged higher dropout and push-out rates for low-achieving students, especially English Language Learners (Darling-Hammond, 2010). NCLB has also created obstacles in staffing that allow for greater personalization, and discourage performance assessments that cultivate higher-order thinking and performance abilities (Darling-Hammond, 2010). With such an intense focus on standardized tests, Wagner (2008), points out that the overall structure of schools has remained the same with more testing

and more teaching to the test. Schools must focus on more than preparing students for an endless series of multiple-choice tests, as this deflects schools from teaching the skills that really matter (Wagner, 2008). Current practices and policies create increasingly segregated and underfunded schools and these schools are failing our children (Darling-Hammond, 2010).

Educational practitioners are calling for schools to change to meet the demands of a rapidly changing world. An emergent reform by ConnectEd, Linked Learning, claims to not only address the multitude of issues facing high schools today, but also cultivate 21st century skills. This relatively new approach integrates the academic core and Career and Technology Education (CTE) through cross-curricular, thematic coursework and provides all students with equitable preparation for college and careers. This collaboration among teachers, challenges the traditional model of education where students are placed into "college" and "career" tracks based on perceived aptitude and potential (connectedcalifornia.org). As a result of this shift, educators, researchers and policymakers are re-envisioning the fundamental structures of schooling and Linked Learning has been chosen by Big District ISD as a mechanism to effect change in its high schools.

In preparation for Linked Learning implementation, ConnectEd requires that schools participate in a year of planning and professional development. This planning phase is supported by the work of world-renowned change expert and Harvard Business School professor, John Kotter (1996), which indicates that organizations must take the time to complete each phase of preparation for effective change implementation. However, most new initiatives—installing new technology, restructuring, or trying to

change organizational culture—have had low success rates and in fact about 70% of all change initiatives fail (Kotter, 1996; Beer & Nohria, 2000). Beer and Nohria (2000) suggest that most organizations fail because they try to implement too many initiatives too fast. Leadership and change guru, Dr. John Kotter (1996) claims, over 40 years of research demonstrates organizations fail to effect change because they do not utilize a consistent, holistic approach to changing themselves, nor do they involve their workforces successfully. Most change efforts do not achieve desired outcomes, resulting in a heavy toll, both human and financial (Beer & Nohria, 2000).

Professor Emeritus and Director of the Institute for Behavioral Research and Psychology professor at Texas Christian University, Dwayne Simpson (2002), advocates for a systematic approach to change and emphasizes that organizations must be prepared for readiness and possess essential factors within the institutional infrastructure. He suggests a four-stage change process model with sequential steps including training, adoption, implementation, and practice (Lehman, Greener, Simpson, 2002). The district must be strategic with the implementation of Linked Learning and ensure it is implemented with fidelity to enhance success and increase sustainability.

Purpose of Study

Prior to the full program implementation, ConnectEd required that schools participate in a year of planning and professional development activities. Eight pilot schools planned for implementation from the summer of 2013 through the spring of 2014. Implementation of the program followed in the fall of 2014 and the district's intention is to eventually implement the program in all its high schools. Considering the significant financial investment and importance of the initiative, it is crucial that desired outcomes

are achieved. The purpose of this program evaluation was to examine Pathway Design Team (implementation team) members' perceptions of the early initiation activities and professional development of Linked Learning and their perceived impact on readiness for implementation. The study also identified factors that were perceived to contribute and hinder implementation efforts. A program evaluation was conducted using mixed methods to gain a deep understanding of participants' perceptions of the early initiation activities and professional development involved during the planning phase of Linked Learning. General background information of the program was obtained through semi-structured interviews with central office personnel and documents were collected for further analysis. An exploration of insights was conducted through the use of record analysis, surveys, and focus groups, to determine the Pathway Design Team's perceptions of readiness for implementation. Additionally, a cost analysis of readiness activities and professional development was conducted to determine cost effectiveness. The evaluation identified perceptions of effectiveness, barriers to successful implementation, and needed revisions so procedures can be adapted and refined (Fitzpatrick et al., 2012). Information obtained by the evaluation of the planning phase can serve to ConnectEd, district personnel, future Linked Learning school staff, and the school board with valuable insight to inform future programming and decision-making.

Theoretical Framework

Federal and state governments, along with other interested educational organizations have implemented school reform efforts for the last 60 years. However, research indicates that most of the efforts have failed to achieve the desired results. A sense of urgency exists for schools to change with the speed at which the world is

changing. Thus, educators must make well-informed decisions about curriculum and instructional practices to ensure the educational programming matches what students need to be successful in the future. Innovative programs must be more than just quick fixes publicized by headline-seeking politicians, school administrators and self-proclaimed education gurus (Welsh, 2013). To do so, educators should consider theories about the new Information Age, learning, leadership, and organizational change. Perhaps a better understanding of the theoretical underpinnings will cause educators to see the urgent need for school reform and a structure for implementing change.

Recently, we have witnessed an information explosion that is predicted to continue at the same rate indefinitely. Ray Kurzweil (2001), American author, inventor, futurist, and director of engineering at Google claims that in the 21st century, the world is likely to experience close to 20,000 years of progress (at today's rate). Also known as the Law of Exponential Growth and the Accelerating Change Law, this phenomenon is a powerful change agent and has immense implications for our education system and the American economy. Schools must prepare students to compete in this ever-changing world (Kurzweil, 2001).

In *The World is Flat*, Thomas Friedman's (2005) theory of a "flattening world" is helpful when considering how schools should best prepare students for the future. Friedman claims that historical and geographical boundaries are becoming less and less relevant. The title of the book serves as a metaphor, describing the world as a "level playing field" in regards to business where all competitors have equal access and opportunity through the use of digital platforms and the internet. The United States is not keeping up with its competition and American schools are not adapting to this need for

change (Wagner, 2008).

In light of these massive changes in the way people interact and do business, one of the most influential theories on learning and development serves as a basis for reforming educational practices. Albert Bandura's Theory, (also known as Social Cognitive Theory) suggests that people learn from one another, through observation, imitation, and modeling (Bandura, 1977). Social learning theory, in short, posits that learning is a social activity, which implies that teachers will learn more by modeling the behavior of other teachers and collaborating with administrators and one another. The theory is particularly relevant when considering professional development and effecting change in a school setting. It is through modeling and collaboration with one another and administration that teachers gain the confidence and knowledge to enhance their practice. Collaboration among adults and students is a key component of the Linked Learning approach.

Also based in Social Learning Theory is the notion of self-efficacy which Bandura (1977), defines as the belief in one's ability to organize and perform the courses of action required to manage prospective situations. In other words, self-efficacy is a person's perception that he or she has the ability to succeed in a specific situation. These attitudes determine how people think, behave, and feel and Bandura proposes that self-efficacy originates from four sources and the most effective way to build self- efficacy is through mastery experiences where an individual completes a task successfully.

Social modeling, another component of Social Learning Theory, is helpful when examining changing behavior during change implementation (Bandura, 1977). As innovative programs, like Linked Learning, are introduced in schools, teachers should be

given opportunities to experience success at all stages to build confidence for effective implementation. This social modeling increases self-efficacy by providing teachers the opportunity to observe peer teachers achieving success. Social persuasion occurs when teachers and other staff encourage a teacher and help him/her believe that success is possible. Lastly, Bandura (1977) proposes an individual's own psychological responses to stimuli can affect self-efficacy. Socio-emotional factors, such as mood and stress, which can have a negative impact on one's perception of self, should be addressed so that self-efficacy is enhanced. High levels of self-efficacy are essential in creating sustainable change (Bandura, 1977).

Adult learning theories are useful when evaluating effective adult professional development. Malcolm Knowles (1980) promoted andragogy ("the art and science of helping adults learn") and contrasted it with pedagogy ("the art and science of teaching children"). He postulates a set of assumptions claiming adult learning differs from children's learning in that it is self-directed, problem-centered, experience based, and more often relevant to life. Knowles stressed that adults need to know why learning is important, need to learn experientially, approach learning through problem solving, and learn best when the topic is of immediate value (Knowles, 1980). Linked Leaning claims to promote this type of learning experiences for students, so it is critical that teachers are provided with appropriate learning experiences so they, too, can effectively provide the same type of meaningful, engaging learning environments for students.

David Kolb's (2005) Experiential Learning Theory operates under the premise that individuals learn best through experience and emphasizes personal involvement and acquisition of knowledge and skills through relevant experiences (Sternberg & Zhang,

2001). The experience of the learner occupies a central place in all considerations of teaching and learning and it is essential that the process include time for the learner to analyze, reflect on and evaluate the learning experience. The learner's own experience and reflections, rather than lecture are the primary approach to learning. Experiential learning is particularly effective in adult education because it addresses the cognitive, emotional and physical aspects of the learner (Foley, 2000).

Linked Learning is a departure from the traditional high school model, and to impact sustainable and widespread reform, Transformational Learning Theory, is helpful in designing and supplying readiness and professional development activities to effect change. Originally developed by Jack Mezirow (1991), Professor Emeritus of adult education at Columbia University, the theory defines transformative learning as a rational process where individuals through reflection and discussions of their assumptions about the world, experience a shift in frame of reference, or world-view. For this shift to happen, individuals engaging in reflective discourse need to challenge each other and encourage each other to consider various perspectives in a safe atmosphere (Mezirow, 1991). If teachers are to meet the 21st century needs of today's students they must adopt a new perspective on the need for change and understand and accept the need for a shift from traditional lecture to more facilitative instructional approach.

School leadership for this type of innovative reform should also be facilitative in nature and distributive leadership is preferred (Hamilton, 2011) This model reflects staff members' full participation in the school's decision-making processes, encourages meaningful collaboration and pleasant work relations, engenders passion for accomplishing goals, and boosts student and teacher productivity (Natsiopoulou &

Giouroukakis, 2010). A distributed perspective is not a blueprint for leading and managing, but rather a framework for researchers and practitioners to employ in analyzing the practice of leading and managing and designing improvement strategies (Timberley, 2005). The development of this distributed perspective aims to cultivate knowledge about leading and managing, especially knowledge for practice, the knowledge of the how of leading and managing (Timberley, 2005). This alternative approach to school governance has great potential for success and involves thinking about leadership in terms of activities and interactions distributed across multiple people and situations (Natsiopoulou & Giouroukakis, 2010).

Over the years there have been numerous efforts to reform schools, but organizational change is complex and requires careful planning. Change management guru, John Kotter (1995) proposed an eight-step change model in which continues to be a key reference in the field of change management (Appelbaum, Habashy, Malo, and Shafiq, 2012). Kotter (1995) suggests that implementing change is much easier and more successful when it is planned carefully and a strong foundation is built. The stages include creating a sense of urgency, forming a strong coalition, building a vision and effectively communicating it, removing obstacles, creating quick wins, and building momentum. Following this process makes change part of the institutional culture (Kotter, 1995).

Dwayne Simpson (2002), Director Emeritus of the Texas Christian University Institute of Behavioral Research, agrees that organizations must be prepared for change and follow a sequence of activities to maximize success, and stresses organizational readiness and institutional infrastructure. His conceptual framework with sequential

elements includes training, adoption, implementation, and practice, all of which can be impacted by organizational attributes (Lehman, et al., 2002). Simpson (2002) presents a four-stage program model for change, which involves action steps, along with factors that may promote or inhibit success. Linked Learning readiness and initiation activities were evaluated through the lens of the elements needed for effective and lasting organizational change.

Significance of Study

Noted education scholars such as Sir Ken Robinson, Daniel Pink, Linda Darling-Hammond, and Tony Wagner agree that 21st century skills like the ones fostered through the Linked Learning approach are vital for our students' success and the success of American education. Employers all over the world state that recently hired workers, including college graduates, are ill-prepared in basic knowledge and in many of the skills crucial for effective work in the 21st century (Trilling et al, 2009). Resulting from an emphasis on teaching students to pass high stakes tests, a wide discrepancy exists between what is currently taught and assessed in most American schools and what skills students will need for college, work and life in the 21st century. Big District ISD recognizes this urgency for school reform and has invested a substantial amount of money and time in the ConnectEd's Linked Learning initiative. As the seven schools prepared for full implementation, it was crucial that these schools were well-prepared and ready to effect change.

This study focused on qualitative and quantitative findings to gain an in-depth understanding of the teachers' and school leaders' perceptions of Linked Learning early initiation activities and professional development and evaluate its perceived impact on

readiness for full implementation. Existing Linked Learning research revolves around leadership styles and program effectiveness in regards to improved students outcomes. The effectiveness of program implementation hinges on effective planning, preparation and professional development. There is no research available evaluating the effectiveness Linked Learning's efficacy in addressing this crucial beginning stage of effecting change.

The results from this program evaluation will contribute to the knowledge base and fill a gap in knowledge by providing valuable information to ConnectEd, district personnel, current and future Linked Learning educators, and to School Board Trustees as the district moves forward to implement the approach in all high schools district-wide. The resulting data can assist ConnectEd with enhancing existing professional development plans and inform other schools as they begin the journey to becoming a Linked Learning school.

Research Questions

What are the Pathway Design Team members' (implementation team) perceptions of the Linked Learning early initiation activities and professional development and their perceived impact on readiness to implement Linked Learning?

What are Pathway Design Team members' perceptions of the factors that contribute to and/or hinder implementation?

How cost effective is Linked Learning in achieving its professional development outcomes and early initiation activities?

Definition of Terms

Achievement gap. The discrepancy in educational outcomes and access between various student groups in the United States, in particular African American, Native

American, certain Asian American, and Latino students on the low end of the performance scale, and their White and certain Asian American counterparts at the higher end of the academic performance scale is called the achievement gap (Howard, 2010).

School administrators. School staff including principals, assistant principals, instructional coordinators, and deans are defined as school administrators.

Capstone research project. The capstone project is a multifaceted assignment that serves as a concluding academic and intellectual experience for students, usually during their final year of high school, or at the end of an academic program or learning-pathway experience (edglossary.org).

Career Pathway. A career pathway is a comprehensive program of study that links learning in the classroom to real-world applications outside of school (irvine.org).

Collaboration. Collaboration is the process of listening, analyzing, challenging and sharing ideas to reach consensus and problem solve with others.

Community of practice. A community of practice is defined as a group of people who share a profession and through sharing information and experiences members learn from each other, and have an opportunity to develop themselves personally and professionally (Wenger, 1998).

Creative thinking. The process of having original ideas that have value in creating something is called creative thinking (Robinson, 2009).

Critical thinking. Critical thinking involves the ability to gather, analyze, and objectively evaluate information and ideas to problem solve.

Efficacy. Efficacy is the ability to produce a desired or intended result.

Exemplary. The highest Texas Education Agency rating a Texas school could receive which was based a high scores on the TAKS (Texas Assessment of Knowledge and Skills), high numbers of students completing high school in four years and a low number of students who drop out of school was Exemplary. This rating was used from 2003-2012 (Texas Education Agency).

Habits of mind. Dispositions that are skillfully and mindfully employed, by characteristically successful people, when confronted with problems, the solutions to which are not immediately apparent are defined as Habits of Mind (Costa & Kallick, 2000).

Job-embedded professional development. The "job-embedded" signifies a direct connection between the teacher's work in the classroom and the professional development the teacher receives (Hunzicker, 2011).

Interdisciplinary. Interdisciplinary involves two or more academic, scientific, or artistic disciplines (merriam-webster.com).

Literacy. Competence or knowledge in a specific context is defined as literacy.

No Child Left Behind Act (NCLB). NCLB is current federal education policy requiring schools and districts to meet quantifiable goals for student achievement based on overall performance and for subgroups to ensure that all students achieve state level standards.

Offshoring. The practice of establishing some of a company's processes or services overseas, in an effort to take advantage of lower costs is called offshoring (Wagner, 2008).

Organizational readiness for change. This multi-level, multi-faceted construct

refers to organizational members' shared commitment to implement a change and shared belief in their collective ability to do so (Weiner, 2009).

Outsourcing. The practice used by companies to reduce costs by relocating portions of work to outside suppliers, often overseas, rather than completing it internally is called outsourcing (Wagner, 2008).

Parallel thinking process. A structured protocol where each individual shares his or her thoughts in parallel with the thoughts of others in a non-judgmental way without attacking the thoughts of others is called a parallel thinking process.

Program for international student assessment. The Program for International Students Assessment is a system of international assessments that measures 15 year-olds' capabilities in reading, mathematics, and science literacy (p21.org).

Project based learning. Project based learning is a teaching approach, a mindset, and a framework for teaching skills and content which engage students' interest and motivation and answer an essential question (Markham, Larmer, Ravitz, 2003).

Readiness. Readiness for change refers to an individual's resolve to implement a change and belief in his/her capability to do so (Weiner, 2009).

Seat time. When used in the context of education reform, the term refers to the use of academic credits based on a time based measurement which measures the amount of time students have sat in a classroom rather than what students have actually learned or failed to learn (edglossary.org)

Self-efficacy. Self-efficacy is the belief that one can effectively produce a behavior for a desired outcome (Bandura, 1997).

Standards. A written list of knowledge and skills students should acquire in a given school year is a list of standards. These exist for grades kindergarten through 12th grade.

Standards-based reform. Educational reform based on academic standards that identify specific skills and levels of competency that all students must possess in order to move through the educational system is referred to as standards-based reform. It suggests that through maintaining high academic expectations, which are assessed through formal tests, students will perform at higher levels. Additionally, it proposes that having set standards will encourage schools, teachers, and students to become more responsible for the learning and achievement of the students (Stanford.edu).

Traditional high school. Teacher-directed classrooms, with the instructors serving as the "gatekeepers" of knowledge and information are characteristic of traditional high schools. Courses are separated into various departments with little if any interdisciplinary lessons. Students are tracked in levels and placed in homogeneous groupings for most classes. The school day is divided so that a certain amount of minutes are allotted to each class so "seat time" requirements are met.

21st century school. A school that provides 21st century education where 21st century skills are learned through curriculum, which is interdisciplinary, integrated, and project based is a 21st Century School (Dede, 2012; p21.org).

21st century skills. Skills, knowledge and expertise students must master to succeed in work and life; a blend of content knowledge, specific skills, competencies, and literacies are known as 21st Century Skills (p21.org).

Limitations

There are several limitations inherent in this study. Data collected were limited to seven schools in a large urban school district and each school varies from one another on a number of levels including student demographics, teacher composition, accountability measures, and current 21st century programming. As a result of principal and teacher turnover, the sample size was smaller than originally intended all participants did not partake in all activities. In addition, fewer participants volunteered to participate in focus groups and they were also smaller than expected.

A limited set of organizational readiness factors were measured and, with the exception of ConnectEd Studios, readiness activities were assessed with one survey item each. The study focused solely on the evaluation of the Linked Learning early initiation activities and professional development prior to implementation. Hence, the full effectiveness of Linked Learning on student outcomes will not be measured, given it's the early phase of implementation.

Participation in the study was voluntary, and therefore limited to those who completed the survey and/or agreed to be interviewed. Because of the small number of participants and the current district culture, the survey did not distinguish between administrators and teachers to protect confidentiality. The researcher's school was part of the pilot cohort but participants from her school did not participate. The data were analyzed based on the constructs presented by the Organizational Readiness for Change (ORC), and were subject to researcher interpretation. Transferability of findings may be limited to similar districts that are similar in size, philosophy and organizational dynamics.

Assumptions

There were several assumptions made when conducting this program evaluation. Data relating to Linked Learning early initiation activities and associated costs collected from the school district were complete and accurate. Survey respondents and interviewees shared honest perceptions without fear of political or job-related repercussions. Additional organizational change readiness factors, other than the ones measured through this study, played a role in participants' perceptions of readiness to implement Linked Learning.

Organization of the Record of Study

The record of study is divided into five chapters. Chapter 1 is an overview of the study. It contains an introduction, a statement of the problem, purpose of the study, research questions, theoretical frameworks, the significance of the study, operational definitions, and the limitations and assumptions.

Chapter 2 is a review of the literature related to Linked Learning, organizational change, and the need for schools to foster 21st Century skills. The chapter addresses the changes brought about by the 21st century, the current state of American education, descriptions of 21st century frameworks and an in depth explanation of the Linked Learning approach to education.

Chapter 3 is an outline of the methodology used for this study. Chapter sections include: purpose of the study, research design, research questions, selection of participants, setting, procedures, instrumentation, data collection and analysis, and limitations.

Chapter 4 presents the findings of this qualitative program evaluation. Chapter 5 is a summary of the entire study. Conclusions are presented in this chapter followed by recommendations for future planning and professional development.

Chapter Two

Review of Literature

The 21st Century: A Whole New World

The American education system must prepare students with the 21st century skills to be competitive in the current global economy (Wagner, 2008). There are a set of crucial skills, college teachers say are critical and so often missing, that all young people need today and in the future if they are to be productive and self-sustaining in adult life (Wagner, 2012). In order to achieve this goal, schools need to utilize curriculum and instructional practices aligned to the current and future needs in the workplace and community (Wagner, 2008). Schools must focus on consistently incorporating relevant knowledge and skills to produce students who are marketable in a highly competitive global economy. The following contributions pose valuable insights into the need for these 21st century skills, the components of effective school reform, and the challenges associated with organizational change. Schools must change to adjust to a changing world (Friedman, 2005).

The American economy has changed over time, transitioning from its largely agricultural origins in the 18th century to an industrial power in the 19th and 20th centuries, inclusive of service and technology components. By the end of the twentieth century, the United States economy shifted from a focus on production to one of information and business which necessitated urgent changes to business operations and processes in an effort to keep up with changing times (Dede, 2012). The notion of "human capital" has become particularly significant in recent years. Economists, social scientists, and other academics have become aware of the importance of this resource to a

nation's economic success. No longer is the concept of capital solely relegated to hard assets that can be lucrative over time, such as factories, farm equipment, and manufacturing centers.

Human capital consists of the collection of talent, skill, know-how, intelligence, education, and experience rooted within individuals that aid them in producing income (Schulz, 2012). Over time, sophisticated technology has penetrated to the heart of economic life, and human capital has become even more critical in the American economy. Greater amounts of human capital are needed to create and facilitate the technology that drives the economy. Schulz (2012) emphasizes that the American economy has shifted from one that relies on physical strength to one that depends on intellectual ability.

A Flattened World and Education

As the world propels forward into the 21st century, it has become dramatically more hi-tech, interconnected, sophisticated and globalized. In *The World is Flat*, Thomas Friedman (2005) proposed the theory that historical and geographical separations are becoming less and less relevant. He quotes an Indian entrepreneur who stated, "The global economic playing field is being leveled and you Americans are not ready" (Friedman, 2005, p. 78). The title of the book serves as a metaphor describing the world as a "level playing field" in regards to business where all competitors have equal access and opportunity and United States is not keeping up with its competition.

As a result, outsourcing has become popular with companies wishing to reduce costs by assigning portions of their daily work to outside suppliers, often overseas, rather than internally. It often entails firing American employees and shifting the work to under-

developed countries where wages are lower and tax laws are lax (Pinto, 2009). It is not only manufacturing jobs that have been outsourced overseas, but service oriented higher-skilled jobs such as information technology (IT) and customer service have been affected. Technological advancement including high-speed computer networks make the physical location of the employees all but insignificant (Pinto, 2009). Friedman (2005) contends that the ease and availability of outsourcing and international trade allows corporations to find productive and efficient workers all around the world to fill jobs. Industries face fierce competition and with the increase in trade flow and international production, many will lose jobs.

Globalization has caused Americans to compete with people around the globe and it is more critical than ever that they have the necessary skills (Pink, 2006). Approximately 70 percent of U.S. jobs now require specialized knowledge and skills, as compared to only five percent during the last century (Darling-Hammond, 2010). The Bureau of Labor Statistics estimates that occupations requiring a master's degree will grow 21.7 percent between 2010 and 2020 (Darling-Hammond, 2010). Job openings for educated healthcare practitioners as well as qualified IT professionals should increase by 25.9 percent. Of the top 10 professions listed on *U.S. News* list of Best Jobs of 2012, nine require at least an associate's degree. It is more important than ever that students graduate from high school college-ready and seek specialized degrees from post-secondary institutions.

In the Best Jobs of 2012, *U.S. News* also describes a diverse group of occupations that cross several industries. In the business sector, market research analysts, financial advisors, and accountants are top-scoring occupations. Creative services' occupations

include public relations specialists, architects, and art directors. Healthcare positions continue to be in demand with registered nurses, dentists and pharmacists topping the list. The social service industry continues to need school psychologists, interpreter/translators, and substance abuse counselors. Science and technology jobs require computer systems analysts, database administrators, and software developers (Graves, 2012). Overall, the top 10 job demands are in healthcare and technology, both of which are projecting a substantial hiring demand. These specialized jobs offer competitive salaries and provide job satisfaction for workers (Graves, 2012). Considering current and future workforce demands is essential as educators develop and implement instructional programs to ensure American graduates have a competitive edge in the global marketplace (Wagner, 2008).

The Generation Gap

Schools today consist of a generational "melting pot". In many cases, the adults teaching students today grew up in a very different world devoid of sophisticated technology and many of the issues currently facing our nation. Conflicts between youth and adults have always existed and the 1960's saw a generation gap between adult and youth, revolving around differences over values, lifestyle, and ideology (Alch, 2008). As a result of the exponential rate of change, today's generation gap is even greater, and students currently sitting in rows of desks, listening to teachers dispense information, compose a unique group of individuals who are the first to grow up exclusively in the digital age. As a result, these individuals need a new type of educational program, which will cultivate a specific set of skills to be successful in today's world (Prensky, 2001).

People born between 1980 and 2000 are known as the Net Generation, Millennials, Generation Y or Digital Natives. Children of the Net Generation have a huge advantage over the Baby Boomer generation (people born between 1946-1964) in the area of information technology. Having grown up understanding society's impact on the electronic economy, the newest generation is informed and media-savvy, as well as comfortable with the communications revolution, which is transforming all aspects of our society (Alch, 2008).

In the "Get Ready for a New Type of Worker in the Workplace: The Net Generation", Mark Alch (2008) suggests that the "netters" exhibit several major differences from the two previous generations. Alch believes that this new generation has been overindulged less than the Baby Busters, those born between 1965 and 1976, and shows greater responsibility by holding part-time jobs during high school and college. He contends that the "netters" hold a global perspective and understand the need for interconnectivity with the growing worldwide economy. In addition, the concept of how family is defined has radically changed. As recently as fifty years ago, the portrait of the "normal" family consisted of a working father and a mother who remained at home to raise the children. Today only 15 percent of homes resemble this description and the Net Generation views all the many forms a family can take as normal (Alch, 2008). This group has also seen many of their parents laid off as a result of the changing economy and view their training and skills as their ticket to a successful career. Lastly, the "netters" are accustomed to rapid and turbulent change, and in turn, are more adaptable, making needed adjustments easily (Alch, 2008).

Marc Prensky (2001) likens this phenomenon to speaking a foreign language. He

calls the Net Generation “Digital Natives” because they are “native speakers” of the digital language of computers, video games, and the Internet. Those who did not grow up in the digital age are called Digital Immigrants, and like all immigrants, some learn faster than others and always, to some degree, retain their “accent” (Prensky, 2001). Prensky (2001) states the “accent” is evident when immigrants first seek to look up information in places other than the internet and read manuals instead of assuming a new program will teach the user how to use it. These Digital Immigrants are in the process of learning a new language and scientists propose that a language learned later in life accesses a different part of the brain. Some find it almost comical when someone calls to see if an e-mail was received or when editing, prints out a document instead of making corrections directly on the screen (Prensky, 2001). However, the problem facing education today is serious. The Digital Immigrant teachers, who speak an outdated language, (that of the pre-digital age) are having an extremely difficult time teaching a population that speaks a completely new language (Prensky, 2001).

To illustrate, Prensky (2001) proposes that Digital Natives are accustomed to receiving information quickly and they prefer to parallel-process and multi-task. He claims this group likes to have graphics before text and favors random access like hypertext, where hyperlinks are displayed in a selection and the reader can access additional information immediately through the link. In addition, Prensky (2001) suggests these youth function best when networked, thrive on instant gratification and frequent rewards, and would much rather play games than do “serious” work.

Digital Immigrants have little understanding of the mindset and experience of a Digital Native and often exhibit little patience with their “typical” characteristics and

skills. Most Immigrants took learning seriously and learned through a slow, step-by-step linear process. They don't believe learning needs to be fun, or that their students can learn effectively while watching television or listening to music because they did not have the same learning experience (Prensky, 2001). Clearly, both generations can benefit from the understanding and acceptance of each group's unique qualities, values, and sources of motivation.

Many educators, marketers and policymakers agree that digital technologies have created a new generation of students, consumers, and citizens who view the world in a different way and employers will be required to consider the qualities and values of their culture to retain employees (Alch, 2008). Greater in number than previous groups, this Net Generation of 80 million, has grown up with the Internet and computer games, affecting their preferred learning styles, patterns of social interaction and general technology use. John Palfrey and Urs Gasser (2008) argue that youth today prefer to express themselves in creative ways with digital technology, where their parents may have preferred to write an essay. Prensky (2012) claims today's students are not the same type of people our educational system was designed to teach.

The Global Achievement Gap and Need for Innovators

From educators to government officials to business experts, Americans are greatly concerned about the performance of the nations' students in science, technology, engineering and math, also known as STEM education (Bennett, 2012). Based on scores from the 2009 Programme for International Student Assessment (PISA) for 34 countries, the United States ranked 14th in reading, 17th in science and 25th in math. The United States continues to lag behind South Korea, Finland, Singapore, and Hong Kong,

countries that claim the top rankings (Banchero, 2013). Bennett, former secretary of Education and a senior adviser to *Project Lead the Way*, a nonprofit organization dedicated to providing STEM education's curricular programs, fears that the United States is on the verge of disaster unless changes are implemented. A report released in February 2012, from the *President's Council of Advisors on Science and Technology*, found economic forecasts suggest a need for generating, over the next decade, approximately one million more college graduates in STEM fields than expected under present assumptions (Bennett, 2012). Some experts recommend importing highly skilled workers by increasing visas and expanding citizenship quotas, while many believe that the United States should cultivate its own set of highly skilled workers with 21st century skills ready to tackle a complex global market.

Inherent in STEM is the need for creative, innovative thinking. In a TED Talk entitled, "Do Schools Kill Creativity?", Sir Ken Robinson (2009) proposes that all people are born with natural capacities for creativity and that linear education tends to suppress these important abilities. He states that throughout the world education systems are reforming, but Robinson claims it is not enough, that these attempts only entail improving a broken model. He makes an urgent call for an "educational revolution" to rethink approaches to education, and transform education into something else where developing creativity is a priority. Robinson claims human communities hinge on a diversity of talent not a singular concept of ability (Robinson, 2009). He describes human resources as often being talents that are hidden and must be discovered. Robinson believes that schools should be a place that creates the circumstances where these talents will show themselves.

Robinson goes on to explain that the dominant education system is based on three philosophies that are at odds with the way human lives are actually lived. First, these systems promote standardization and a limited vision of intelligence when human talents are diverse and personal. In addition, they cultivate compliance and cultural advancement that depends on the nurturing of curiosity and originality. Lastly, they are linear and inflexible which is contrary to the fact that human lives are organic and often unpredictable (Robinson, 2009). Robinson states, "As the rate of change continues to accelerate, building new forms of education on these alternative principles is not a romantic whimsy: it's essential to personal fulfillment and to the sustainability of the world we are now creating" (Robinson, 2009, p. 37).

Daniel Pink (2006), author of several best-selling insightful books about the shifting world of work, discusses the type of thinking that will be needed in the future. He describes how quickly the world is changing and stresses the need to change. Pink believes it is imperative that we prepare ourselves, and our children, for the Conceptual Age by becoming proficient in right-brained thinking. Pink also suggests that, to remain competitive, we must be have to ability to complete essential tasks that outsourced employees cannot do cheaper, a computer cannot do faster. In *A Whole New Mind: Why Right-Brainers Will Rule the Future,* Pink (2006) proposes the importance of six senses that we must cultivate in order to compliment the left brained-directed reasoning. The author defines and explores design, story, symphony, empathy, play and meaning and claims that anyone can master these Conceptual Age senses, but the people who master them first will have a great advantage (Pink, 2006). This shift in thinking must be examined as schools begin to re-invent themselves and prepare students for the future.

Thomas Friedman and Michael Mandelbaum (2011) support the need for our students to become innovators in their recent book, *That Used to Be Us.* They maintain that for our young people to succeed in the new global-knowledge economy, they must bring innovation to their work or their jobs may be moved off-shore or automated. Although policymakers, economists, and business people may violently debate over specific solutions for the current worldwide economic crisis, most agree that our nation's long-term economic health hinges on innovation (Friedman, 2011).

In *Creating Innovators,* Tony Wagner (2012) proclaims if educators are to equip students with the necessary knowledge and skills to compete and be successful in the 21st century, they must nurture the innovative spirit. Wagner (2012) some exceptional high schools, colleges and graduate schools are doing an extraordinary job of cultivating students to be innovators. He praises High Tech High in San Diego, California, the New Tech High network of schools around the country, Olin College in Needham, Massachusetts, the Institute of Design at Stanford University, and the media lab at the Massachusetts Institute of Technology. The atmosphere of learning in these successful schools is vastly different from the culture in most classrooms. Wagner details what he describes as five essential practices that make these schools radically different (Wagner, 2012).

Wagner (2012) suggests schools must stress collaboration over individual achievement. Additionally, he states traditional schooling in the United States typically values and rewards individual achievement and provides few meaningful opportunities for real collaboration. He illustrates that, in general, grades and tests are used to rank students, and consistent collaboration is not a real expectation for students or faculty. The

afore-mentioned schools realize the innovation process is enhanced by the deliberate juxtaposition of diverse perspectives. Teamwork and collaboration are the norm in every classroom and valued as a crucial outcome. For example, ninth graders at High Tech High must work in teams to develop a new product or service, write a business and marketing plan, and develop a budget. Teams then present to a group of business leaders who partner with the school to evaluate the student projects. In addition, seniors must work in teams to complete a service-learning project as a requirement for graduation (Wagner, 2012).

Secondly, multidisciplinary learning is favored over specialization. Wagner (2012) acknowledges that expertise and specialization play an important role and the act of learning is valuable in and of itself. However, he emphasizes that the process of creating something new requires a multidisciplinary approach to problem solving. Wagner (2012) cites Google as an example of a company that values and recruits individuals who have experienced a multi-disciplinary approach to problem solving. High schools and colleges that foster a culture of innovation understand this, and create opportunities for students to solve problems and answer questions across disciplines. Students at Olin College have the capacity to create their own interdisciplinary majors.

Tony Wagner (2012) notes the most successful companies celebrate failure, and suggests a model which values trial and error rather than risk avoidance: “Fail early and often” is the motto of one such company, IDEO, a design and consulting firm often recognized as one of the most innovative businesses in the world. Often conventional high schools and colleges penalize failure with few grades and students are left with few options except repeating the course, and this discourages students from taking intellectual

risks (Wagner, 2012). At Olin College, students do not talk about failure; they talk about iteration. Students at Olin often become interested in a problem, study it in depth, and propose solutions as part of a class. They continue improving their project though other classes with feedback from peers and faculty (Wagner, 2012).

Most high schools and colleges continue to focus on the acquisition of knowledge often through students passively listening to teacher lectures and watching Power Point after Power Point presentation, and Wagner (2012) claims students should be creators, not simply consumers. In schools with a culture of innovation, the main objective is for students to gain knowledge and cultivate skills while solving problems, creating products, or generating new ideas (Wagner, 2012). Here, project-based learning is implemented to the fullest degree. For example, Wagner cites a young woman from High Tech High who created an elementary curriculum about the ecology of San Diego Bay. At Olin, he found a team of ten students who designed and constructed a remote-controlled model sailboat for an international competition, learning advanced skills in engineering, computer science, weather, and sailing in general. Wagner (2012) concludes that students gain a deeper understanding of content and retain more of what they learn, because they learn in an applied context.

Lastly, Wagner (2012) discusses what he feels is perhaps the most important finding of his research; "young innovators are not primarily motivated by external incentives" (Wagner, 2012, p. 123). He views conventional classes as relying heavily on extrinsic incentives as motivators for learning and attending class. He asserts even students from homes where families have struggled economically and otherwise, are intrinsically motivated. Wagner (2012) connects childhood play to deep-rooted interests,

which can be channeled into meaningful career goals, and he proposes that play, passion, and purpose are the dynamics that drive young innovators. Schools that do the best job of educating students, according to Wagner (2012), help them to identify and pursue their passion, which cultivates a deeper sense of purpose.

In *The Element,* a book about talent, passion, and achievement, Sir Ken Robinson (2009) discusses the conditions necessary for people to be in the "Element" where they feel inspired and most like themselves and are able to achieve at their highest levels. In addition, Robinson (2009) explains the conditions that stifle our possibilities for greatness. He believes all children are born curious and creative and traditional schools contribute to the "killing of creativity" (Robinson & Aronica, 2009, p. 26). Robinson, one of the world's leading thinkers on creativity and self-fulfillment, demonstrates that age and occupation are not barriers and suggests this strategy is the key to transforming 21st century education, businesses, and communities (Robinson & Aronica, 2009). Daniel Pink (2006), the *New York Times* best-selling author, speaker and former chief speech writer for Vice President Al Gore, encourages people to examine what they do during their leisure time, tap in to their strengths, and passion will take care of itself. Pink (2006) also encourages schools to assist students in finding a career path in line with their strengths, talents, and values. In turn, students will be intrinsically motivated to work and find meaning and purpose in their journey. There is an urgent need for American educational institutions to respond to the call for change (Robinson & Aronica, 2009).

Linked Learning: Preparing 21st Century Citizens

ConnectEd: The California Center for College and Career Teaching understands the need for schools to change and has responded with a new a new approach, Linked

Learning, that is spreading throughout California's high schools. The groundbreaking approach to school reform aims to prepare students for both college and career by making connections between learning and the workplace through a personally relevant, engaging curricula (connectedcalifornia.org). Students enrolled in a Linked Learning pathway participate in a four-year program of study that provides a curriculum embedded with 21st century skills and links core academic content with career and technical education within an industry-based theme, such as engineering, culinary arts, or green technology (Rogers-Chapman & Darling-Hammond, 2013). With a focus on project-based learning and real world application in the workplace, the research-based approach claims to meet the needs of students of all levels and abilities, regardless of their background. A report by the Career Academy Support Network suggests that Linked Learning schools see an increase in academic achievement, a decrease in dropout rates, higher rates of postsecondary participation and greater earning power in the world of work (Stern, Saroyan, and Hester, 2012).

Viewed as an approach rather than a program or model, the flexibility of Linked Learning is valuable especially in the implementation phase and (Cain, 2012). The approach can be implemented using a variety of models and may look very different, depending on the educational setting. Large schools may implement Linked Learning through small learning communities or academies where small schools may opt to have one themed pathway in which all students participate (Cain, 2012). In a multiyear evaluation of the California Linked Learning District Initiative, SRI International's Center for Education Policy (SRI) found students in Linked Learning schools are making more progress toward high school graduation and college eligibility than their peers in

traditional high school settings (sri.com). The revolutionary approach allows for schools to integrate the essential components into existing structures and enhance current programs rather than starting from scratch (connectedcalifornia.org).

Four key components

Four key components must be present in order to fulfill the requirements of being a Linked Learning school. First, rigorous academic courses are essential, including college preparatory core offerings. Secondly, three or more challenging Career and Technical Education (CTE) courses must be included so students can gain the knowledge and real-world technical skills that provide them with an advantage towards a successful career. In addition, the school must offer a sequence of learning experiences that begin with mentoring and job shadowing that will eventually develop into opportunities such as internships, school-based enterprises, and virtual apprenticeships. The fourth component involves personalized support services including counseling and supplemental instruction to help students achieve mastery in the academic and technical courses (connectedcalifornia.org).

Aside from the key components, each pathway is grounded in a set of four guiding principles:

1. **Linked Learning prepares students to succeed in college, career, and life.** Pathways are designed to support college and career objectives without students having to make a choice. Linked Learning encourages students to increase their earning potential by obtaining as many skills, credentials, and degrees as possible.
2. **Linked Learning prepares high school students for a full range of post-secondary opportunities.**

Each pathway offers rigorous academics and focuses on student proficiency in critical areas such as critical thinking, problem solving, media and information literacy, and collaboration. Exhibiting competence in these essential skills make students attractive to potential employers as they pursue postsecondary education.

3. **Linked Learning connects academics to real-world applications.**

   Students in Linked Learning schools understand how their high school education impacts their future in college and in their career. Students master core subjects through an integrated approach that provides opportunities for problem solving in a real-world context.

4. **Linked Learning improves student engagement.**

   Linked Learning provides all students with exciting, personally relevant learning experiences that inspire them to consider previously unimaginable college and career paths and options.

Linked Learning is a comprehensive initiative that, when fully implemented, can transform a high school, positively impact student achievement and provide students with opportunities to develop the knowledge and skills necessary to thrive in college, career, and life (connectedcalifornia.org).

Organizing a district for sustainable linked learning reform

The Linked Learning approach to school reform is becoming more popular and must be well-designed and implemented to achieve the desired student-outcomes (Stern, Saroyan, and Hester, 2012). ConnectEd partners with school districts and individual schools to provide a variety of services that support schools through the planning and implementation of the approach. Once a school district commits to adopting the Linked

Learning approach, ConnectEd facilitates a year of planning and professional development that must take place before school-level implementation can begin (connectedcalifornia.org). District coaches provide insight and guidance when shifts in policies, structures, and practices are needed to facilitate the creation of quality pathways. Participating schools form pathway design teams to serve as pioneers in the planning and design process. Pathway coaches and other support personnel assist school leaders and pathway teams beginning with the design process, through full implementation, and ultimately, to pathway certification. (connectedcalifornia.org).

As outlined in their website (connectedcalifornia.org) ConnectEd also assists districts and schools through the change process by providing job-embedded professional development where administrators and teachers come together as a community of practice with an intent to make learning continuous, collaborative and directly related to the work. Communities of practice are similar to what Richard Dufour (1998) calls professional learning communities in which a shared vision, mission and set of values guide the work of educators to achieve results. Although there is some lecture style presentation, training also provides teams with the time and autonomy to design and implement career pathways unique to each school setting (connectedcalifornia.org).

Initially, pathway team members participate in exploratory activities to learn as much as possible about Linked Learning. ConnectEd representatives lead a number of informational meetings, like the "Readiness Assessment and Asset Mapping" to introduce the Linked Learning concept, assess district needs, and generate interest in the innovative approach. Experiential site visits are also offered as a way for pathway teams to see Linked Learning in action, first-hand. The visits are intended to give participants

an understanding of the features of a mature Linked Learning pathway and how they fit together to provide a four-year program of study for students. ConnectEd aims to increase participants' understanding of interdisciplinary, real-world projects and work-based learning experiences work together to change the nature of student learning. Participants should leave with a strong sense of the leadership and structures needed for effective Linked Learning implementation and sustainability (connectedcalifornia.org).

Additionally, Linked Learning participants are offered an online infrastructure, ConnectEd Studios, which supports the development of integrated curriculum with project-based learning activities and the posting of student work. The online tool also serves as a resource for teacher professional development and networking with industry professionals (connectedcalifornia.org). ConnectEd Studios is introduced in several ways at the beginning of the year of training and participants are encouraged to log in regularly and collaborate with each other through this online version of a community of practice.

District and pathway leadership teams also participate in an ongoing Leadership Development Series that begins with a week long summer institute focused on training for effective teaming and designing cross-curricular, project-based learning opportunities related to the Career and Technical program offered at each school. A multi-disciplinary team attends the hands-on workshop and principals attend the last day of institute to view team presentations of their ideas for interdisciplinary projects (connectedcalifornia.org).

Collaborative planning meetings are held to address challenges and remove barriers. Through a more formal workshop setting, pathway teams are led to establish a vision and a set of desired outcomes they hope to achieve through Linked Learning. During the workshop, teams are also asked to consider changes that may be needed in

systems and structures such as the bell schedule, the master schedule, and course offerings. A capacity and needs assessment is conducted to direct this strategic planning (connectedcalifornia.org). Once a multi-year implementation plan is developed, the pathway team is charged with generating support for the initiative through the creation of a broad-based partnership to monitor progress and share responsibility for results. In addition, teachers are trained to use performance mapping and, through collaboration, generate a high-quality integrated curriculum consisting of meaningful, hands-on learning experiences (connectedcalifornia.org).

Leadership for Linked Learning schools

In order for Linked Learning to be fully and implemented with fidelity, school leaders must demonstrate their commitment to a shared vision and support the act of reinventing public schools. A study by Erica Hamilton at the University of California, Los Angeles, explored leadership practices in Linked Learning schools and found that leadership models that distributed leadership among multiple individuals and provided bottom-up supports were preferable when implementing Linked Learning components. Hamilton (2011) noted the principal helped create and reinforce the instructional vision, but teachers at the sites visited, had a significant amount of autonomy to create and deliver instruction. Teacher leadership and collaboration were critical in the instructional design and execution and top-down, authoritative models, were not compatible with Linked Learning implementation tasks (Hamilton, 2011).

Richard Elmore (1999), one of the nation's most prominent educational thinkers, also promotes distributive leadership for successful school reform. Elmore (1999) views the primary goals in school improvement are to build capacity building and allow people

to develop specialties based on interest, aptitudes, and skills and capitalize on individual strengths to build effective teams. Elmore (1999) argues, however, building a broad base of capacity is not possible when control is limited to a few individuals. The solution, he argues is a broader distribution of leadership where leaders clearly define the steps needed to make change and share in the responsibility of implementation (Elmore, 1999).

To achieve lasting school reform, Michael Fullan (2002) states that we must have leaders who can fundamentally transform the learning cultures of schools and the teaching profession itself. He agrees that leaders must be cultivated at many levels and suggests, that, to some extent, the effectiveness of a leader in creating sustained change can be judged by the number of leaders he or she leaves behind (Fullan, 2002). School reform, like Linked Learning, requires a courageous, intelligent, strategic and passionate leader who can share leadership and inspire teachers and students to reach their full potential, achieving more than they ever thought possible (Natsiopoulou & Giouroukakis, 2010).

21st Century School Reform

Organizational change

Educational experts often agree that school reform efforts are needed to address the myriad problems facing education and keep pace with a rapidly changing world, but change efforts must be intentional (Kotter, 1995). Organizational change expert, John Kotter (1995) suggests creating a sense of urgency, forming a strong coalition, building a vision and effectively communicating it, removing obstacles, creating quick wins, and building momentum will make change part of the institutional culture. Structures are put

in place so that collaborative planning and evaluation are an ongoing and integral part of the implementation process further supporting and sustaining the change.

Dwayne Simpson (2002), Director Emeritus of the Texas Christian University Institute of Behavioral Research, concurs that change is a process requiring a sequence of activities to maximize success. Although change constantly occurs at both the personal and organizational level, it is especially important to make change efforts intentional and positive at the organizational level because the process requires careful consideration of the collective mindsets, actions, and relationships of a group of individuals (Simpson, 2002). Simpson (2002) presents a four-stage program model for change, which involves action steps, along with factors that promote or inhibit success.

Simpson's (2002) first stage is referred to as *exposure*, and often involves training in the form of lecture, self-study, workshops, or expert consultants. Simpson (2002) claims there must be sufficient readiness for change in terms of motivation (defined by perceived needs and pressures for change) from leaders and staff members as well as adequate institutional resources (staffing, facilities, training, and equipment) for innovations to be credible. Convenience of the training (e.g., time and place) must also be considered as any of these factors can prove to be barriers to staff training and motivational readiness and perceived needs are central to moving the process to the second stage (Simpson, 2002).

In *adoption*, the second stage, Simpson (2002) characterizes an intention to try an innovation, including formal efforts lead by program leadership and subtle levels of personal commitment and attempts at the novel program. The third stage, *implementation*, requires additional resources and an atmosphere conducive to executing

the adoption of the innovation. This stage implies a period of trial usage of the new innovation to allow for testing of its viability and potential. Critical organizational dynamics include a suitable *climate for change* (e.g., clarity of mission and goals, staff cohesion, autonomy, communication, stress, and openness to change) along with *institutional supports* that foster and maintain the innovation. Supports may in the form of monitoring, feedback, and the establishment of formal and informal rewards that strengthen positive program changes. Finally it is important to consider *staff attributes* (e.g., professional growth, efficacy, influence, and adaptability) that positively impact the change process (Simpson, 2002).

Simpson's (2002) last stage involves moving to *practice*, where the innovation is incorporated into regular use and, even in a modified form, is sustainable. Although each stage is comprised of a series of smaller interrelated steps, the change program model is presented in four global stages (Simpson 2002). Appropriate assessments are needed to evaluate and refine the model of program change and Simpson (2002) suggests information must be obtained from staff through voluntary self-reporting measures such as survey questionnaires. These assessments are challenging because they take data from individuals within the organization and then aggregate it in way to represent the organization (Simpson, 2002).

Texas Christian University developed the Organizational Readiness for Change (ORC) assessment which measures an organization's functioning and readiness for change and focuses on the personality attributes of leaders and staff, motivation for change, institutional resources and organizational climate, as it relates to implementing a new initiative (Lehman, Greener, & Simpson, 2002). Questions measuring attributes

focus on the extent to which staff value professional growth, feel a sense of efficacy about their own abilities, their willingness and ability to influence others, and their ability to adapt to a changing environment. Organizational climate questions assess the clarity of the mission and goals, staff cohesiveness and autonomy, openness of communication, levels of stress, and openness to change. Training effectiveness and needs, along with sources of the pressure for change, are also measured (Lehman, Greener, & Simpson, 2002).

Originally developed for use in substance abuse treatment organizations, the 115 Likert-type scaled item instrument is useful in assessing an organization's readiness to implement new programs and determine reasons for failure to adopt an innovation (Lehman et. al, 2002). Lehman, Greener, & Simpson, (2002) found reliability measures indicate 10-11 of the 18 scales had coefficient alphas greater than .70 for directors and staff and reliability measures at the program level were greater with 13 out of 18 scales having alphas greater than .70 (Lehman et. al, 2002).

Simpson (2002) cautions the complexity of the innovation must be considered when interpreting results. For example, very simple innovations can be adopted and implemented with few additional resources or supports. In the case of more challenging innovations, however, widespread support systems become progressively critical. Consequently, evaluations of program change should consider innovation requirements and complexity, as well as the perceptions of stakeholders as an organization introduces change (Simpson, 2002).

Richard Dufour (1998), noted American education researcher, acknowledges change is difficult, but not impossible. He encourages those who attempt to transform

schools to recognize normal issues such as anxiety, discomfort, and ongoing conflict often accompany change initiatives, especially in the early stages (Dufour, 1998). Dufour also stresses that a carefully thought out plan strategically implemented can greatly increase the success of school reform.

Professional Development/Professional Learning

Although change is a long-term process, research on school improvement indicates the relationship between professional development and school improvement efforts is symbiotic, and that effective professional development is essential to successful innovative program implementation (Hord, 1987). School reform demands educators gain new knowledge effecting change in insights, skills, behaviors, and attitudes. Activities can include workshops, study groups, coaching, experiential site visits, learning through digital technology, and numerous other formal and informal experiences. Professional development may have a powerful impact on teacher behavior if it is continued over time, focused on essential content, and embedded in the work of professional learning communities that encourage ongoing improvements in teachers' practice (Darling-Hammond, Chung Wei, Andree, Richardson, & Orphanos, 2009).

Numerous research studies have addressed the characteristics related to effective professional development (Darling-Hammond, 1997; Darling-Hammond, 1999; Gersten, Chard, and Baker, 2000; Joyce and Showers, 2002; Showers, Joyce, and Bennett, 1987; Sparks, 1983; Sparks and Hirsch, 1997). This comprehensive body of evidence serves to guide the development of professional learning activities, but despite vast research and enormous financial investments in professional development, United States Secretary of Education Arne Duncan admits, "the bang we are getting for our buck is a disaster"

(Calvert, 2010, para. 3). Professional development is intended to provide teachers and educators with meaningful opportunities to improve instructional practices in an effort to raise student achievement (Curwood, 2011), and during the implementation of school reform, adult learning is particularly important.

There appears to be a disconnect, however, between research on professional development through the lens of adult learning, the dedication of funds to support teachers' growth and development and the design of professional development activities (Curwood, 2011). It is critical that professional development be evaluated through a purposefully executed plan. Results can provide meaningful information that can be used to make thoughtful, responsible decisions about future professional development offerings (Guskey, 2002).

In *Evaluating Training Programs: The Four Levels*, Kirkpatrick (1998) suggests a four-stage model for evaluating the process and impact of training programs. His four-stage method aims to measure participant reaction to the training, participant learning, changes in participant behavior, and desired results, guidelines are presented for each stage, and the degree of difficulty increases as one moves through the levels (Kirkpatrick, 1998). Level one determines what participants thought and felt about the training and is viewed as a measure of customer satisfaction, often through post-training surveys. Learning, Level two, refers to the subsequent increase in knowledge and/or skills, and change in attitudes and is usually assessed through a test or knowledge demonstration. Level three, behavior, is regarded as the transfer of the learning from the classroom to the job and is usually assessed through observation. Finally, level four indicates results-outcomes achieved from attending the training, often seen in performance-based

measures or financial rewards (Kirkpatrick, 1998). Kirkpatrick (1998) suggests this information is useful when an organization is deciding whether to continue offering a particular training program, how to improve future programs, or validating an individual's position as a trainer.

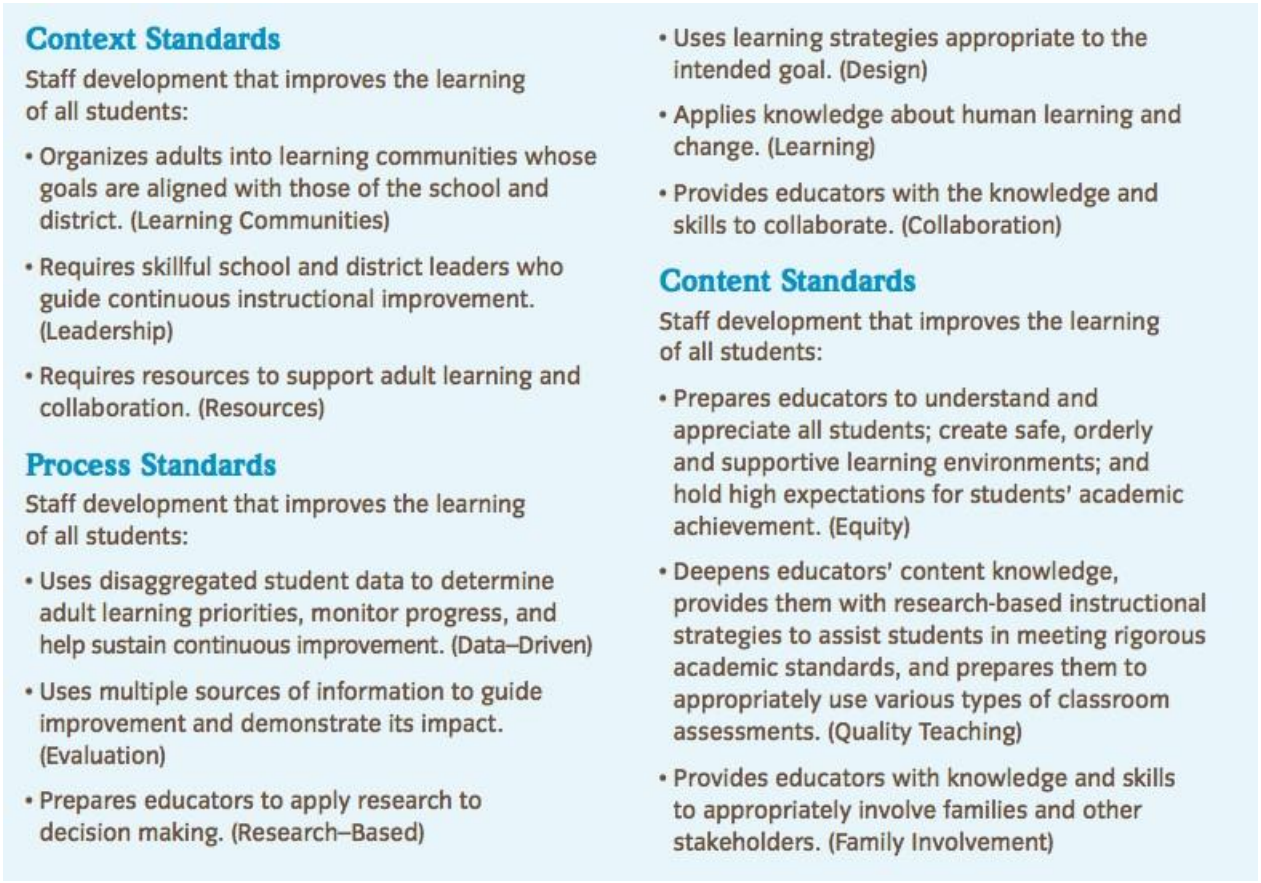
Guskey (2002) also recommends utilizing the four components of Kirkpatrick's model and including a measure of "organization and support and change". Starting with the goal-improved student outcomes, schools must carefully consider how the organization advocated, facilitated and supported the implementation of the learning (Guskey, 2002). Deliberate execution of professional development is essential.

In *Professional Development: An Effective Research-Based Model*, Dr. J. David Cooper (washingtonstem.org) suggests four critical components to assist teachers in learning new skills and strategies. First, theory and research must be presented so teachers gain an understanding of the foundation and rationale for the new instructional strategy, skill or concept. Secondly, the strategy must be demonstrated and teachers must see a model performing the strategy first hand, with real students or through video. Then teachers should be given an opportunity to practice the skill and receive immediate feedback. The fourth component involves coaching and follow-up. Coaching is the process of being observed and receiving feedback that increases the probability that the teacher will internalize the strategy, skill or concept and make it a part of his/her regular practice (Joyce & Showers, 1988).

In addition to the four components, Cooper (wanshingtonstem.org) discusses three categories of standards set by the National Staff Development Council (NSDC), namely, content, process and context standards. Context refers to where the learning will

be utilized and the organizational structure where improvement is desired. Process pertains to how the learning occurs and content is what is being learned. Figure 1 illustrates standards in each of the three categories. Following these standards will assist educators in providing valuable learning experiences that will lead to improved student outcomes (washingtonstem.org).

Figure 1: National Staff Development Council Standards



Stephanie Hirsh, executive director of Learning Forward, and Joellen Killion, deputy executive director of the National Staff Development Council (2009) prefer the term "professional learning" over "professional development" because they feel the phrase highlights the importance of educators taking an active role in their own continuous improvement with a focus on learning. They suggest principles, or powerful

beliefs that guide actions must be incorporated into professional learning and are essential to sustained system and school improvement. The eight principles stress an appreciation for staff diversity, the importance of building capacity, the benefit of ambitious goals, the power of evaluation, and the value of collaboration among educators. They suggest principles rather than practices should remain in the forefront and guide decision-making about professional learning activities. (Hirsh & Killion, 2009).

For professional learning to have a significant impact on educators, these essential principles need to be integrated into all professional learning embedded in school reform efforts (Hirsh & Killion, 2009). Educators should plan thoughtfully, responsibly allocate resources, and incorporate proven principles of adult learning to offer professional development that engages adults in meaningful learning that results in changes in behavior and positively impacts student learning. Finally, organizational culture and systems must consistently facilitate and support implementation to ensure sustainable change (Guskey, 2002).

Workshops and week-long institutes

Educators know it is imperative to keep their professional knowledge and skills current and presentation-style workshops are an efficient way to accomplish this task for large groups of learners (Hunzicker, 2011). However, evidence strongly supports professional development that is ongoing and continuous, not "one-shot" workshops or lectures (Murphy, 2000). Hunzicker (2011) claims that the information acquired in workshops is often forgotten and not likely to be applied when teachers return to their daily routines unless the learning activities are "supportive, job-embedded, instructionally focused, collaborative, and ongoing" (p. 178)

Hunzicker (2011) also suggests that teachers favor open-ended learning experiences and operate best when they have a voice in the pace and direction of their learning. Multi-day institutes and workshops can increase their effectiveness by providing engaging, relevant activities wherein teachers work collaboratively to address problems and create solutions that directly relate to their work (Hunzicker, 2011). Linked Learning offers a number of one, two, and five-day workshops. In terms of process standards, presenters attempt to meet NSDC standards by balancing traditional 'sit and get' lecture with videos, small group activities and personal reflection exercises. Intensive professional development plans, especially when they involve applications of information to teachers' planning and instruction, have a better probability of influencing teaching practices and, in turn, producing gains in student learning (Knapp, 2003; Cohen & Hill, 2001; Desimone, Porter, Garet, Yoon, & Birman 2002; Garet, Porter, Desimone, Birman, & Yoon, 2001; McGill-Franzen, Arlinton, Yokio, & Brooks, 1999; Supovitz, Mayer & Kahle, 2000, Weiss & Pasley, 2006)

Coaching

According to a 2009 study on professional development, teachers need approximately 50 hours of professional development in a specific area to improve their skills and positively impact student outcomes (Darling-Hammond et al., 2009). In addition to workshops and other forms of learning, author of *The Art of Coaching,* Elena Aguilar, (2013) suggests coaching and believes it is a fundamental element of an effective professional development program. She claims coaching can provide an ongoing professional development component that can "build will, skill, knowledge, and capacity" because it addresses the intellect, behaviors, practices, beliefs, values, and

feelings of the educator. Coaching creates a caring, trusting relationship in which a client can feel safe to take risks and change their practice (Aguilar, 2013, p 49).

A significant number of comparison-group studies have revealed that teachers who receive coaching are more likely to embrace the desired teaching practice and apply it more appropriately than teachers participating in traditional professional development (Darling-Hammond et al., 2009). Other studies have reported mixed findings, but the authors suggest these should not be seen as an endorsement or a criticism of coaching, and that other factors could have interfered with demonstrating a clear causal relationship between coaching and improved teaching practices (Darling-Hammond et al., 2009). Despite conflicting research, school-based coaching programs are one of the fastest growing forms of professional development and aim to provide ongoing guidance, advice, and mentoring to teachers. Coaching is also used with administrators and the resulting supportive relationship promotes an atmosphere where powerful conversations and meaningful reflections take place causing impactful learning experiences (Aguilar, 2013).

Digital technology and online tools

The 21st century has brought a multitude of technological resources to the field of education. Despite initiatives like the National Educational Technology Standards in the United States, there is great variation in the ways technology is used in school settings since technology- integration is a complex process. The use of digital technologies and online tools are prevalent and becoming increasingly popular, but tools may not be used to an optimal degree for a variety of reasons ranging from the availability of resources to skill development and attitudes (Curwood, 2011). Barriers can prevent full adoption and

organizations may experience an under- utilization of technology tools and a lack of integration within instruction (Brinkerhoff, 2006).

In many cases, American schools continue to provide short-term, workshop-based and tool-based professional development that stresses the capabilities and limitations of digital tools rather than emphasizing how the tools can enhance instruction and promote student learning (Curwood, 2011). This type of professional development does not provide teachers the opportunity to engage in open discussion, continuous collaboration, and curricular improvement, all of which are vital factors of effective professional development (Darling-Hammond & Sykes, 1999).

Emerging studies are identifying key factors that enhance the learning of new technologies. In a study that examined the types of professional development that met the needs of instructors involved in a new education technology initiative, Lynn Feist (2003) found a number of key issues to consider when training for and introducing new technology. Study participants stated they desired professional development opportunities that were relevant to current instructional needs, had built-in follow up processes, matched their learning styles, were convenient in terms of time, included leadership from a chairperson and provided a technology support person who could troubleshoot and provide consistent support (Feist, 2003). Curwood (2011) found hands-on learning with digital tools to be key, as well as learning communities that served to consistently and successfully address curricular needs and technology support.

Professional development for online tools, like Linked Learning's ConnectEd Studios, which offers a variety of online educational services, should integrate research-based strategies if it is to be fully utilized and remain cost effective. Fear of technology,

often cited by adult learners as a serious concern, can be alleviated through effective, hands-on training and support. The worry that the use of the tool will remove the human connection can be lessened through a well-designed, interactive platform where users have the ability to interact with both each other and engaging material (cenewscenter.rutgers.edu).

Experiential site visits

Adults learn best through professional development that is self-directed, problem-centered, experience based and relevant to their work (Knowles, 1980). Research indicates that teachers are more apt to attempt new classroom practices that have been modeled for them in professional development settings (Darling-Hammond et al., 2009). Likewise, teachers themselves deem learning most valuable when it involves "hands-on" work that adds to their knowledge of academic content, specifics on how to teach it to their students and when it considers the local context (including local resources, curriculum guidelines, accountability measures, etc.) (Garet et al., 2001).

As schools begin to implement a new reform, experiential site visits give educators an opportunity to see exemplary schools already in the process of change and witness, first hand, the school's culture, systems and instructional practices required for implementation. As a group, educators, may observe classes where teachers model effective practices, view presentations by students and staff, and debrief with facilitators. This "collective participation" helps to generate school-level collaborative groups and a "critical mass" for instructional change (Snow-Renner & Lauer, 2005).

Professional learning communities

The context most conducive to the learning of professionals is the professional learning community (Hord & Hirsch, 2009). The National Staff Development Council stresses the importance of strong working relationships among teachers (Darling-Hammond et al., 2009). Rigorous research shows when schools are deliberate in scheduling time and creating productive collaborative relationships within academic departments or grade levels, or among teachers school-wide, benefits may include greater consistency in instruction, more enthusiasm in sharing practices and trying new ways of teaching, and more success in solving problems of practice (Hord, 1997; Joyce and Calhoun, 1996, Louis, Marks & Kruse, 1996; McLaughlin & Talbert, 2001; Newman & Wehlage, 1997; Successful California schools, 2007).

A national organization, The Partnership for 21st Century Skills (p21), which promotes 21st century readiness for students, views professional development as crucial to success in school reform. The organization suggests schools should be organized into professional learning communities where teachers regularly collaborate and share effective strategies for integrating 21st century skills into daily instruction. Discussions should revolve around practical ways to balance direct instruction with project-based learning. Additionally, the professional development should provide teachers with the tools needed to identify individual student talents, strengths and weaknesses and deliver differentiated instruction (p21.org).

A comprehensive five-year study of 1,500 schools undertaking major reforms discovered that in schools where teachers developed functional professional learning communities, student absenteeism and dropout rates were decreased and achievement improved significantly in math, science, history, and reading. In addition, specific

features of teachers' professional communities, "a shared sense of intellectual purpose and a sense of collective responsibility for student learning", were correlated with a narrowing of achievement gaps in math and science among low and middle-income students. (Newman & Wehlage, 1997)

Professional learning communities require a significant commitment of time and resources beyond what districts and schools normally allocate for professional development. In fact, the NSDC recommends that 25 percent of teachers' time be dedicated to learning and collaborative work with other teachers (Darling-Hammond et al., 2009). Mike Schmoker (1999), author of *Results: The Key to Continuous Improvement,* also supports regular meetings and recommends teams have focused interaction on a reasonably regular basis, at least once a month for each learning goal set and meeting less can stifle momentum and seriously jeopardize the chances of improvement. This type of ongoing professional development that incorporates collaborative teaming, aids in fostering a culture of "collective responsibility" and encourages teachers to adopt a sense of ownership in the school reform program and assume responsibility for all students' achievement (Blair, 2000). Richard DuFour (1998) agrees transforming schools into professional learning communities is the best hope for meaningful school improvement.

Fred Newmann and Gary Wehlage (1995), authors of *Successful School Restructuring,* suggest collective responsibility leads to increased teacher efficacy and more successful implementation of the reform. NSDC executive director, Dennis Sparks, asserts for change to occur in the classroom between teachers and students, a massive amount of support must be provided in the school and in the classroom (Blair, 2000).

Evidence suggests that it is teachers who make the difference (Newmann & Wehlage, 1995), so it is incumbent on school and district leaders to provide the time, resources and support needed to build capacity in teachers though the use of professional learning communities.

Leadership

In an interview with James Bellanca (2010), author of *21st Century Skills: Rethinking How Students Learn,* education scholar, Linda Darling-Hammond, discusses three practices in which administrators must participate to move schools into the 21st century. Darling-Hammond states that teachers must be given time to collaboratively plan curriculum and assessments which will address the kind of learning needed by today's youth. Teaching must move from teacher-centered to student-centered learning and planning takes time. The school day must be restructured so that creative scheduling can provide teachers with the necessary time to provide authentic, meaningful learning experiences for children (Darling-Hammond, 2010).

Secondly, Darling-Hammond (2010) suggests school leaders must design and implement comprehensive professional development programs that address the specific needs of their schools. This includes institutionalizing professional learning communities, offering coaching and mentoring to a group of identified teachers, and collaborating with teams about interventions for struggling students. Finally, school leaders are encouraged to take responsibility and have the courage to assist ineffective teachers in finding another profession when no improvement is seen (Bellanca, 2010).

Chapter Three

Methodology

Purpose of the Study

In an effort to better prepare students to compete and be successful in college and the world of work in the 21st century, a large, urban school district has invested a significant amount of time and money in ConnectEd's Linked Learning. With a focus on project-based learning and real life problem solving, the research-based approach claims to meet the needs of all types of students, with graduates attaining higher academic achievement, higher rates of postsecondary participation, and greater earning power (connectedcalifornia.org). Career and Technical Education (CTE) teachers collaborate with core teachers to provide cross-curricular, engaging learning experiences with support from business partnerships and post-secondary institutions. The approach is currently being piloted in eight high schools within this large, urban district that plans to eventually implement the program in all high schools, district-wide.

Prior to full implementation of Linked Learning, ConnectEd requires that schools participate in a year of planning and professional development. The purpose of this program evaluation was to evaluate the early initiation activities and professional development of Linked Learning. Specifically, this program evaluation examined the Pathway Design Team members' perceptions of the early initiation activities and professional development of Linked Learning and its impact on readiness for implementation. Additionally, this program evaluation identified factors that were perceived to contribute to and/or hinder implementation efforts, and a cost analysis of readiness activities was conducted to determine cost effectiveness. Considering the

district's significant financial investment and the importance of educating students for college and the world of work, it is critical that programs and practices be evaluated. Evaluation involves inquiry and judgment methods to determine value, quality, utility, effectiveness, and significance of the program or practice in relation to its intended purpose to inform stakeholders as they make decisions about adoption, continuation, or expansion of the program or practice (Fitzpatrick, et. al., 2012). An evaluation of the planning phase provides ConnectEd, district personnel, and future Linked Learning school staff, as well as school board trustees, valuable information as the district moves forward with a widespread execution of the initiative.

Since the planning phase is designed to prepare the schools implementing Linked Learning for a major shift in practices, it is important to consider the organization's readiness for change. In "Assessing Organizational Readiness for Change", Simpson (2002) offers a process model of program change that integrates new technologies or knowledge into a program. In response to a need for an individual and organizational assessment with good psychometric qualities and predictive validity, Texas Christian University developed a comprehensive assessment of organizational functioning and readiness for change (ORC), which focuses on personality attributes of leaders and staff, motivation for change, institutional resources, and organizational climate as it relates to implementing a new program (Lehman, Greener, Simpson 2002). The instrument is comprised of multiple scales in these four major areas and are defined mainly by perceptions and cognitive appraisals by employees about their work environment, especially organizational attributes related to capacity for change (Lehman, et al., 2002). Each scale has identified areas of importance resulting in a total of 18 domains. Although

the instrument is viewed as a "work in progress", Lehman, Greener, & Simpson (2002) determined that the 18 domains have acceptable psychometric properties in most areas and have significant relationships with other assessments of organizational functioning, structure, and environment (Lehman, et al., 2002). Lehman, Greener, & Simpson, (2002) found reliability measures indicate 10-11 of the 18 scales had coefficient alphas greater than .70 for directors and staff and reliability measures at the program level were greater with 13 out of 18 scales having alphas greater than .70 (Lehman et. al, 2002).

School personnel must be ready, willing, and supported through the change process for program implementation to be successful. The Organizational Readiness for Change, a research based instrument, will be used as a model for the Linked Learning Readiness Activities Survey which will measure six domains relevant to this program evaluation. District leaders requested survey questions be limited to those addressing attitudes and perceptions of initiation activities, professional development opportunities, and readiness for program implementation.

Research Design

Evaluation is a process meant to deepen understanding of the value of the object being evaluated and once a program has begun, an evaluation of processes can provide useful information and inform implementing decisions (Fitzpatrick, et al., 2012). A program evaluation of Linked Learning early initiation activities and professional development in seven pilot high schools in a large urban school district was deemed appropriate to examine whether the goals and objectives of the activities were being accomplished at desired levels (Fitzpatrick et al., 2012).

Mixed-methods including semi-structured interviews, a survey, and focus groups were used to acquire a rich description of perceptions of all the participants involved in the planning and initiation phase of Linked Learning. Throughout the years, many methods have been used to measure character and personality traits (Likert, 1932). This can be challenging to transfer these qualities into quantitative measures for the purpose of data analysis. The survey used in this study utilized a five-point Likert scale to lend a quantitative measure to the program evaluation. Qualitative research methods are often used to examine specific aspects of programs and to articulate participants' experiences and perceptions. This in-depth information can be used to enrich program development (Higginbotham & Vaterlaus, 2011**).** According to Merriam and Associates (2002), qualitative studies are the most suitable for discovering views and perspectives of people. The combination of survey results and focus group interviews revealed a greater understanding of the Pathway Design Team members' perceptions of Linked Learning early initiation activities and professional development and their impact on readiness to implement Linked Learning.

As a result of year-long planning and professional development, each school was expected to create a vision, a set of desired student outcomes, a capacity and needs assessment, and a multi-year implementation plan. Documents were studied and an analysis of the perceptions of the readiness activities associated with these tasks was conducted through the use of record analysis, semi-structured interviews, survey, and focus groups to determine perceptions of readiness for implementation. A thorough examination of program costs helps to decide if outcomes are cost-effective (Fitzpatrick et al., 2012). A cost-effectiveness analysis detailing early initiation activities and

professional development with their associated costs was conducted to inform programmatic decisions about which activities to continue or improve upon to achieve the desired results.

Research Questions

What are Pathway Design Team members' (implementation team) perceptions of Linked Learning early initiation activities and professional development and their perceived impact on readiness to implement Linked Learning?

What are the perceptions Pathway Design Team members of the factors that contribute to and/or hinder implementation?

How cost effective is Linked Learning in achieving its professional development outcomes and early initiation activities?

Selection of Participants

Central office support personnel who were an integral part of the early initiation planning process were included in the program evaluation through semi-structured interviews. Survey and focus group participants were selected from the seven pilot schools in which each principal volunteered to be a part of the first cohort of schools to implement Linked Learning in the district. Selection was based on inclusion in each school's Pathway Design Team and participation in the planning process. Teams included central office leaders, principals (one from each school), teachers (at least one from each school) and other school leaders (at least one from each school). Each school's Pathway Design Team was asked to participate in the study, and a total of 26 Pathway Design Team members were invited by e-mail to complete an online survey electronically submitted through SurveyMonkey. Nineteen participants responded to the survey

yielding a 73% response rate. Three focus groups were conducted with a total of 12 individuals, representing 57.8% of participants who responded from the Pathway Design Team group.

Setting

Despite past reform efforts, Big District ISD continues to face many challenges. In 2009, the district experienced a persistent 68 % four-year graduation rate and 34.6% students who did not read on grade level. Under No Child Left Behind, three of the district's high school failed to meet adequate yearly progress for five straight years, and the district as a whole was unsuccessful at meeting federal standards in 2009 (Melon, 2010). According to the state education agency 2013 Accountability Summary, the district met standard in the areas of student achievement, student progress, closing performance gaps, and postsecondary readiness.

However, in January, 2014, the state education agency released a list of schools who failed to meet standards and Big District ISD had 8 high schools and a total of 53 schools on the list, which is nearly triple the number of 18 from the previous year (Tolson, 2014). As a result, a strategic plan for reform became a priority and plans were put in place to address the needs of these struggling schools. Linked Learning is one of several initiatives aimed at improving student achievement and reducing dropout rates. Linked Learning Cohort 1 schools include one high school that failed to meet the state standard, but the remaining six schools all met standards for 2012-2013.

The study focused on seven schools in this large, urban school district. Each school differs in regard to size, ethnicity of students, percentage of economically disadvantaged students, academic ratings as measured by standardized tests, and specific

career and technical programs on campus. In addition, teacher demographics and years of experience vary. Table 1 and 2 below illustrate the differences.

Table 1

Comparison of Student Demographics Based on 2012-2013 State Education Agency Ratings

S	ENR	Ethnicity %				Students by Program %					ED %	AR %	AtR %	GR %	DO %
		AA	A/PI	H	W	CTE	ESL	GT	SE	T1	*Based on 2011-2012 data*				
1	2,819	12	4	83	2	56	8	11	8	100	80	66	92.2	85.9	10.7
2	872	16	<1	82	2	73	11	10	11	100	94	78	94.9	89.8	3.2
3	1,409	15	9	72	4	67	29	3	9	100	70	69	93.2	82.4	8.2
4	2,012	4	<1	95	1	55	17	10	10	100	80	69	94.3	83.8	10.5
5	2,130	10	1	84	4	69	3	18	10	100	74	52	95.2	94.4	3.8
6	932	71	<1	27	1	70	7	3	18	100	79	69	89	79.2	16.4
7	2,721	31	6%	37	23	59	5	19	7	100	49	45	93.8	90.7	5.4

Note. S = School; ENR = Enrollment; Ed = Economically Disadvantaged; AR = At Risk; AtR = Attendance Rate; GR = 4-Yr. Graduation Rate; DO = Drop Out Rate; AA = African American; A/PI = Asian/Pacific Islander; H = Hispanic; W = White; CTE = Career/Technical Education; ESL = English/Second Language; GT = Gifted/Talented; SE = Special Education; T1 = Title 1

Table 2

Comparison of Teacher Demographics Based on 2012-2013 State Education Agency Data

S	# T	Ethnicity %					AE	Teachers by Program %							Other			
		AA	AI	A/PI	H	W	Yrs	R	E	CTE	C	GT	SE	O	C	A	O	E
1	138	29	0	9	22	41	10	34	10	10	4	9	9	23	4	6	9	9
2	56	43	0	0	18	30	10	29	0	14	4	16	16	21	1	1	3	4
3	75	35	0	4	17	43	6	31	16	11	5	9	12	16	0	5	3	8
4	116	35	0	3	22	39	11	40	8	13	1	7	15	17	4	6	3	5
5	110	32	0	6	14	46	13	25	8	13	1	4	24	25	1	5	5	7
6	59	71	2	3	7	12	12	27	2	14	0	8	17	32	0	0	5	6
7	161	19	1	5	12	61	11	42	1	13	1	9	6	28	1	2	11	10

Note. S = School; # T = Teacher number; AE = Average years of experience; AA = African American; AI = American Indian; A/PI = Asian/Pacific Islander; H = Hispanic; W = White; R = Regular; E = English as a Second Language; CTE = Career/Technical Education; C = Compensatory; GT = Gifted/Talented; SE = Special Education; O = Other; C = Counselor; A = Assistant principal; O = Other personnel; E = Educational aide

Prior to implementation, ConnectEd provided a variety of optional and mandatory professional development experiences. As first step, in April 2013, ConnectEd presented "Readiness Assessment and Asset Mapping", an informational meeting, in which presenters discussed the need for education reform and explained the Linked Learning process. Through the use of a Power Point presentation with embedded videos and guiding questions, participants were led through a number of collaborative small-group activities wherein school and district representatives discussed their perceptions of the current state of the district and need for change. Guiding questions focused on leadership, systems alignment and commitment to equity, culture and current practices. The meeting served to generate interest and excitement in Linked Learning and, it provided an opportunity for ConnectEd strategies could be developed to facilitate a smooth implementation.

Following the initial training, a brief presentation on Linked Learning was offered at a district-wide principal meeting. At the conclusion of the meeting, interested school leaders were invited to apply to be a part of the first cohort. The short application required principals to explain why they wanted to participate and what structures were already in place that supported the components of Linked Learning. Interested schools completed applications and were chosen to be included in the first cohort (Cohort 1).

Once Cohort 1 schools were selected, a collaborative network was established between school representatives, district personnel, and ConnectEd staff through an online tool, ConnectEd Studios, which supports the development of integrated curriculum with project-based learning activities and the posting of student work. Each school selected teams to participate in a year-long initiation process. The number and composition of each team varied by school, but a set of criteria, suggested by ConnectEd, guided team member selection. The principal of each school was given the freedom to select pathway team members, but each team was required to include at least one administrator or counselor, a CTE representative, a core teacher, and any other support staff the principal deemed relevant. It was also suggested that team members be leaders who were respected by the staff to assist in coalition building.

Schools were required to send a multi-disciplinary team, including a CTE teacher, to a week-long summer institute that focused on effective teaming and project-based learning design and implementation. The goals for the training included the expectation that teachers learn how to work effectively on a team to create effective project-based lessons and develop one or more cross-curricular projects related to CTE programs

offered at their particular schools. Principals attended the last day of the institute when teacher teams presented their ideas for interdisciplinary projects.

Linked Learning facilitators offered optional experiential site visits to certified Linked Learning schools in Long Beach, California, and Nashville, Tennessee, so Pathway Design Team members could see Linked Learning in action and gain a deeper understanding of the process. Visits lasted two to three days in duration and involved classroom observations, visits with school personnel and student panels. In addition, district personnel from the host school district facilitated presentations and discussions about district support systems and programming that enhanced Linked Learning effectiveness.

In December, 2013 pathway teams participated in the one day "Pathway Design Institute" and met for one and a half hours with an expert in master scheduling the following day. The Institute led school Pathway Design Teams through the design process to accomplish four goals. First, teams created a mission and vision to guide and brand the pathway. Teams then developed student outcomes for college and career readiness. The teams began with the end in mind to identify desired behaviors of learning and teaching appropriate to the pathway goals. Finally, pathway themes and programs of study were established and scheduling needs were considered. To provide individual guidance and problem solving, teams participated in a coaching session with a scheduling expert (connectedstudios.org).

In an effort to provide ongoing job-embedded professional development, principals were assigned coaches to assist with planning and implementation at the building level. Coaches met regularly with principals and school personnel to address

identified needs and provide guidance and support to help teams stay focused and keep momentum going to ensure that schools were ready for full implementation in the fall of 2014. As a group, Cohort 1 principals also met monthly with district personnel to collaborate and request needed support as preparations were made and structures put in place for the fall.

Throughout the design process, each school was given the autonomy to phase-in and design the program to meet the needs of their particular population, but each school had to offer one or more 21st century career pathways. In these thematic pathways, core teachers were to participate in cross-curricular planning with career and technical education instructors providing opportunities for project-based learning, real life problem solving, and career connections. Students were to participate in a three to four-year coherent sequences of CTE courses achieving industry certifications and in some instances, culminating in their senior year with a capstone research project. Schools were to collaborate with business and community partners to provide teachers with externships and students with job shadowing and internships.

Central office personnel provided guidance through the planning process. Funds from the recently awarded "Race to the Top" grant were dispersed to support the implementation by providing money for materials, teacher training, extra-duty pay for teachers, field trips, and summer enrichment programs. Personalized student services were enhanced at these schools with additional funding for a CTE counselor and extra-duty pay for teachers to provide individualized interventions. President Obama's "Race to the Top" initiative fosters college and career readiness through the quest of rigorous standards, the enhancement of teacher effectiveness, use of data to inform instruction,

and the employment of new reforms in struggling schools (whitehouse.gov). Linked Learning goals are aligned with "Race to the Top" guidelines.

Procedures

Phase I: Central office interviews

The University of Houston, Committee of the Protection of Human Subjects, granted approval of this study. Semi-structured interviews were first conducted with four central office staff involved in the Linked Leaning initiative who were asked to participate in the study. Since subjects must be able to choose whether or not to participate in a study, steps were taken to ensure that subjects had a clear understanding of the process (Ary, Jacobs, & Razavieh, 1972). Three members of the CTE department and the School Support Officer in charge of coordinating the Linked Learning initiative were given consent forms that thoroughly explained the purpose of the study, procedures, risks, and a copy of "Subject Rights". These consent forms were signed before conducting the semi-structured interviews. Two interviews were held at the district office and two were held over the telephone at a day and time that was convenient to interviewees' schedules. Interviews focused on central office views about the relevance of the survey questions and their ability to capture useful information to guide decision- making as the district moves forward with the implementation of Linked Learning. Questions for the semi-structured interviews and focus groups were developed based on feedback received. Data detailing activities and professional development along with costs and desired outcomes were also collected from calendars, meeting agendas, and board agendas. Information was compiled, organized and presented in a table.

Phase II: Survey, consent, administration, and analysis

An overview of the study was presented at the monthly Linked Learning principal meeting in April 2014, and an e-mail was sent to 35 Pathway Design Team members inviting them to participate in the study. To preserve confidentiality numerical identifiers were assigned to schools. A link for the Linked Learning Survey adapted from the Organizational Readiness for Change (ORC) was sent to Pathway Design Team members through Survey Monkey, an online survey website. Consent forms and "Subject Rights" were obtained through the first survey question. Survey questions were used to determine participants' perceptions of the effectiveness of the activities, and their impact on readiness for implementation. The survey was developed in part by adapting existing ORC scales and integrating new items written specifically to measure important components of the initiation activities of Linked Learning.

SurveyMonkey data collection tools were used to organize results and create descriptive charts to identify frequency, distribution, and modes for responses. Text analysis was used to identify general trends in subjects' open-ended responses. As trends emerged, data collection resembled a "zigzag" process where the researcher gathered data in the field, analyzed the data, used focus groups to gather more data. Additional information was needed to saturate categories and further explain themes (Creswell, 2003).

Phase III: Focus groups

Three focus groups were held to gain insight into trends and themes revealed by the survey. Focus groups consisted of a total of 12 participants. One group consisted of eight participants and two groups contained two members. The groups with two members

were smaller than expected as a result of teacher and administrator turnover in participating schools. Three other members declined participation in focus groups and stated they were too busy to meet.

Questions for the focus groups were open-ended questions. Open-ended questions were preferable in the focus group interviews because they did not presume an answer but allowed the participant to go in the direction he or she chose (Seidman, 2006). Focus group responses were recorded and then transcribed. The constant comparative method, also known as the grounded theory method, was used to analyze typed transcriptions, compare data, identify key concepts and create categories to generate themes (Glaser & Strauss, 1965). The categories were eventually organized according to survey scales.

Qualitative researchers use a variety of methods to validate developing insights and confirm the trustworthiness of the data. Member checks allow the researcher to solicit feedback from participants and gain even more insight into the findings (Ary et al., 2002). A member check was facilitated with the principals at a Linked Learning community of practice meeting by sharing a summary of results to confirm that interpretations were accurate. Results were summarized and organized, and recommendations were made to improve future implementation and research efforts.

Instrumentation

Linked Learning Readiness Activities Survey

The Linked Learning Readiness Activities Survey (LLRAS) (See Appendix A), adapted from selected parts of the Organizational Readiness for Change (ORC) assessment, was administered to Cohort 1 Pathway Design Team members. The survey, which employs a Likert scale and 4 open-ended questions, was conducted online through

SurveyMonkey to evaluate perceptions of the impact of Linked Learning early initiation activities and professional development in achieving staff readiness for implementation. Scales relating to offices, computer access, and E-communications were replaced by one scale measuring instructional support. Instructional support is key to successful program implementation and included questions about the online tool, ConnectEd Studios, equipment, and other instructional resources. Questions assessed attitudes and perceptions of initiation activities, professional development opportunities, and readiness for program implementation.

The ORC assessment was developed to characterize the most relevant variables for examining innovation and change efforts in substance abuse treatment facilities (Lehman et al., 2002). Texas Christian University has adapted the instrument for use in several other social service agencies whose organizational structure resembles those in the school system. The Linked Learning Readiness Activities Survey (LLRAS) includes 27 Likert-style items (scored on 5-point agree-disagree response scales) to represent the three content domains relevant to this study and the three open-ended questions refer to overall satisfaction of the readiness activities and allow for general comments. Modeled after the ORC, the LLRAS includes multiple scales in three domains: institutional resources, staff attributes, and organizational climate of the school (Lehman, et al, 2002).

Institutional resources are a key component to consider when evaluating organizational behavior (Brown, 1997; Burrington, 1987; Jones & James, 1979; Pond, 1984). In some cases organizational change may be desirable, but unlikely, due to staff workload and institutional resources. The LLRAS assessed staffing, training resources, and instructional support.

Staff attributes significantly impact organizational change and research on professionalism (Bartol, 1979; Hall, 1968) and behavioral change models (Fishbein, 1995) suggest similar dimensions of attitude and functioning. Three LLRAS survey items measured efficacy as it related to participants' skill level needed for and confidence about Linked Learning implementation, as well as Pathway Design Team preparedness. High efficacy individuals are more likely to see the value of a new program and have the confidence to effectively implement the new strategies (Lehman et al., 2002).

Lastly, organizational climate generally reflects mission and goals, group cohesion and cooperation, openness of communication and openness to change (Lehman et al., 2002). Feedback from district-level facilitators of Linked Learning recommended keeping the amount of questions to a minimum and deemed the categories of mission and goals and openness to change to be most useful for this evaluation. LLRAS questions measuring organizational climate, targeted clarity of mission and goals and staff openness to change.

Focus groups

Four focus groups were conducted with Pathway Design Team members to gain insight into trends identified by the SurveyMonkey analysis. Focus group protocol questions integrated feedback originally received from stakeholders and were open-ended in an effort to obtain more specific information about the year of readiness activities. The questions were similar to those used in program evaluations leading from general questions aimed at identifying stakeholder views to more specific questions evaluating the readiness activities and professional development (Fitzpatrick, et al., 2012). Each focus group was guided by the following five questions.

1. What is your general perception of the Linked Learning readiness activities?
2. What did you find to be most effective?
3. What did you find least effective? Why?
4. What barriers have you faced during early the initiation phase on your campus?
5. How might the readiness activities and professional development be improved upon to be better?

Data Collection and Analysis

Survey results were collected, tabulated, and organized through the SurveyMonkey tool and each item was analyzed to identify themes within the three domains to be measured: institutional resources, personality attributes of the staff, and organizational climate. Survey questions were organized based on the six areas within the domains and descriptive statistics were used to present medians, modes and percentages of responses to questions as they related to particular areas within each domain. The median was selected because descriptive statistics, such as means and standard deviations, have imprecise meanings when applied to Likert scale items (Sullivan & Artino, 2013). For example, the average of "strongly agree" and "agree" is vague, and responses clustered at high and low extremes may have a mean which does not characterize the data which could be misleading (Sullivan & Artino, 2013). Since single questions were often used to assess specific areas within the domains, and no attempt was made to combine responses into a composite scale, a Likert-type analysis was used (Boone & Boone, 2012). Items were then coded as they related to the six areas to

generate themes and identify specific areas needing further clarification. The results of this analysis served as a guide for focus group discussions.

A protocol was used to conduct focus groups to address areas needing further clarification and to capture the experiences of each focus group participant with clarity and depth. The focus groups were recorded through the use of audiotaping. The audiotapes were then transcribed and typed by an external clerical assistant.

Multiple methods of data analysis were utilized to reduce potential systematic bias that can occur when using a singular data source, method, or procedure (Maxwell, 2008). As a first step, the researcher did a general read, or "paw" through the transcriptions and highlighted important information using colored highlighters, and looked for word repetitions and key-words-in-context to create codes (Ryan & Bernard, 2003). Reflective notes about what was learned through the data were kept in the form of memos which were used when creating follow up questions, describing trends, drawing conclusions, and making recommendations for future programming and study. Ideas and insights gained through the process were also notated and used as additional data to be analyzed. The focus group transcriptions were then carefully read line by line, and data were divided into meaningful analytical units. This classification of similar ideas, concepts, activities, and themes signified categories, and words or phrases were selected to describe the essence of the categories and these words become the codes for the categories (Ary et al., 2002). A master list of codes were generated and modified as new categories were created. The researcher counted the frequency in which specific codes appeared to determine the significance of the category. After all data were coded, paragraphs having the same coding categories were cut and pasted together for further

analysis. Results were synthesized and organized by categories and survey data, detailing percentages of responses, medians, and modes were placed in tables to give a full picture of perceptions of the effectiveness of the Linked Learning readiness activities.

Themes were identified and strengths and weaknesses of the readiness activities were captured and categorized with regard to the Linked Learning content domains. Following the initial coding process, a colleague read a clean copy of the transcriptions and used the same process of coding the responses to identify themes. This provided external reliability to the researcher's interpretation and the multiple sources of data used to form categories and themes helped to triangulate the data. Categories were compared with one another, new categories formed and categories merged when appropriate. Generally the member check confirmed original themes. The data were summarized based on relationships among the categories.

Additional information was obtained through a document review of each planning document from Cohort 1 schools and Big District ISD's contract with ConnectEd. Planning documents were systematically reviewed to determine the level of task completion as required by Pathway Design Teams during the early initiation activities. Trends were identified and included in the overall analysis. Costs and desired outcomes for readiness activities were obtained from district documents including the Linked Learning contract and board agenda items. All information was placed in a table, and a cost effectiveness (CE) analysis was completed to determine effectiveness and efficiency of expenditures by comparing survey item medians and modes of specific activities with their associated costs. The CE analysis identified the activities that were the most cost effective; costing the least and having the highest mean/mode scores.

The next phase of analysis involved interpretation going beyond descriptive data to extract meaning and insights. This inductive process involved making generalizations based on connections and commonalities among the categories and patterns (Ary et al., 2002). Important findings were described, themes were summarized, and recommendations for future planning and research were presented.

Limitations

The data collected in this study was limited to seven schools in a large, urban school district and each school varied from one another in student demographics, teacher composition, accountability measures, and current 21st century programming. Data collection was limited to late spring of the 2013-2014 school year and focused only on perceptions of the early initiation activities and professional development of Linked Learning and their perceived impact on readiness for implementation, and not the actual student outcomes or impact or impact of implementation because the program has not yet been implemented.

Participation in the study was voluntary, and therefore limited to those who completed the survey and/or agreed to be interviewed. The program was being implemented in eight schools, and the researcher's school was part of the Cohort 1 (pilot cohort), but participants from the researcher's school did not participate. Since the sample was relatively small, the survey did not distinguish between teachers and administrators to avoid potential identifiers and increase anonymity. Teacher and administrator turnover also affected the survey sample and focus group size. Toward the end of the year of planning, one school received a new principal who replaced several Pathway Design team members. These new personnel could not effectively comment on activities in

which they had not participated. The data was analyzed based on the constructs outlined by the ORC, and were subject to researcher interpretation.

Chapter Four

Results

Research supports a need for school reform, and organizational change is complex and requires careful planning. Research conducted by American change and leadership authority John Kotter (1995) has proven that major change efforts often do not have the desired outcome and implementation efforts have only a 30% chance of success. Kotter (1995) however, suggests that implementing change is much easier and more successful when it is carefully planned and provides a strong foundation. Big District ISD has invested a significant amount of time and money on one year of planning and preparation to implement Linked Learning. In an effort to provide valuable information that will assist school and district leaders in improving Linked Learning program implementation, this program evaluation examined Pathway Design Team members' perceptions of the early initiation activities and professional development of Linked Learning and the resulting impact on readiness for implementation. Additionally, factors perceived to contribute to and hinder implementation efforts were also identified. Data from survey responses and focus group feedback yielded a number of relevant themes in regards to Pathway Design Team members' perceptions of the early initiation activities and professional development. In two instances, focus groups contained only two members and were smaller than anticipated and, although the same format and questions were used, the focus groups developed into small-group interviews. Survey participants totaled 19, and 12 of the survey respondents participated in focus groups. Descriptive statistics including percentages of response categories, medians and modes were presented in table form. Likert scale items, on a scale of 1-5, were used to indicate the following levels: 1-

very low, 2- low, 3-medium, 4-high, and 5-very high. Median and mode scores were then used to suggest levels of intensity and effectiveness of readiness activities.

Additionally, a document review was performed and each school's Linked Learning pathway proposal, for the fall of 2014, was found to be complete. Proposals included pathway elements such as mission statements, student learning outcomes, and business partners. Finally, a cost analysis of activities and professional development was conducted to determine cost effectiveness. Activities were compared in terms of desired outcomes, cost per person, and effectiveness in terms of median and mode scores. This section reports the findings for the three research questions guiding this study.

Question 1: What are Pathway Design Team members' (implementation team) perceptions of Linked Learning early initiation activities and professional development and their perceived impact on readiness to implement Linked Learning?

Theme #1: Pathway Design Team members are relatively confident about their own skill level, but uncertain about team preparedness and confidence about implementation.

When assessing the effectiveness of the Linked Learning readiness activities and professional development, survey results and focus group feedback indicate differing levels of confidence about implementation and a medium level of readiness to successfully implement Linked Learning. While survey results indicated Pathway Design Team members were relatively confident about their own skill level, their perceptions of readiness were mixed in terms of team preparedness and confidence about implementation. Table 3 presents findings from survey items that measured self-efficacy

and Table 4 illustrates items measuring perceptions of staff attributes and organizational climate factors as they relate to perceived collective teacher efficacy and team readiness. Table 3 depicts Pathway Design Team members' perceptions of their own readiness and Table 4 shows Pathway Design Team members' perceptions of staff readiness to implement.

Table 3

Pathway Design Team Members' Ratings of Themselves

ITEMS	5 % (n)	4 % (n)	3 % (n)	2 % (n)	1 % (n)	Median	Mode
16. You have the skills needed to effectively implement.	33.3(6)	38.9(7)	16.7(3)	11.1(2)	0	4	4
18. You are confident about implementing.	26.3(5)	31.6(6)	10.5(2)	31.6(6)	5.3(1)	4	4,2

Note. n = number; 5 = Strongly agree; 4 =Agree, 3 = Neutral; 2 = Disagree; 1 = Strongly disagree

Table 4

Pathway Design Team Members' Ratings of Staff

ITEMS	5 % (n)	4 % (n)	3 % (n)	2 % (n)	1 % (n)	Median	Mode
1. Staff have the skills needed to implement.	5.6(1)	38.9(7)	38.9(7)	5.6(1)	11.1(2)	3	4,3
2. A larger support staff is needed.	26.3(5)	52.6(10)	10.5(2)	10.5(2)	0	4	4
3. Staff will have enough time to complete duties.	0	52.9(9)	11.8(2)	17.6(3)	17.6(3)	3	4
17. Your team is prepared to implement the initiative.	15.8(3)	31.6(6)	15.8(3)	21.1(4)	15.8(3)	3	4

Note. n = number; 5 = Strongly agree; 4 =Agree; 3 = Neutral; 2 = Disagree; 1 = Strongly disagree

In response to item 16, "You have the skills needed to effectively implement Linked Learning." a total of 72.22% either strongly agreed or agreed and 58% answered they were confident about implementing the new initiative. However, for item 17, "Your

Pathway Design Team is prepared to implement the new initiative," results were mixed. While 47.37% either strongly agreed or agreed, 15.79% were uncertain, and a total of 36.84% disagreed or strongly disagreed. The median score of 3 may be interpreted to indicate a medium level of confidence in team preparedness.

Additionally, responses to survey item 18, "You are confident about implementing the new initiative," indicated a little over half of the participants were confident about implementation. However, 10.53% were uncertain, 31.58% disagreed and 5.26% strongly disagreed. In general, focus group comments did not confirm a feeling of confidence. One member said, "I don't feel ready. I feel like we have the organizational structure and some people feel like they (central administration) should make edicts. We should have been deeper into the work by now." On a similar note another member stated, "You know, we are making things up as we go because we don't know how to work it here for Big District ISD." Another group member echoed uncertainty about the process,

> You know, we're making it up as we're going and then you know what's to say that we've worked the whole year or six months on something and then you know it wasn't enough or not exactly what they were looking for. I mean we don't know because we don't know, I mean I'm not an engineer to say this is what they need and especially in our green concept that we have, you know what are they doing in the industries that maybe they can even guide us and say hey this is what we need you guys to do for your pathway because this is what we are looking for.

A fourth member suggested uncertainty might be related to a lack of training and stated, "Well I think going forward I don't see how it's sustainable, but maybe like 'my

principal' said, it's just that we haven't been trained enough in the design of how it works. To me, it makes me very nervous." A lack of readiness was also evident when another participant stated, "We're confused while we're talking about it; while we're doing it." Focus group comments generally indicated a willingness to move forward with Linked Learning, but reflected a need for clarity and a school-wide understanding of the expected tasks.

Survey results also indicated Pathway Design Team members were uncertain about the skills of the staff involved in implementation and whether or not they will have the time needed to effectively implement the initiative. As reflected in Table 4, when asked if school staff have the skills needed to implement Linked Learning, only 5.56% strongly agreed and 38.89% agreed. However, 38.89% were uncertain about the skill level representative of staff. When asked to rate their perception regarding school staff having enough time to complete assigned Linked Learning duties, slightly over half (52.94%) agreed they would have enough time and 35.3% either disagreed or strongly disagreed. The median score of 3 in this area indicates a medium level of concern about time needed by staff. On item 2, "A larger support staff is needed to help meet Linked Learning needs," three out of four survey participants indicated a larger support staff is needed. The median score of 4 on item 3 implies a high level of concern regarding a lack of staff support.

Concerns about staff were also evident in focus group responses. Five members voiced concern about the skill level, readiness, and commitment of all staff. One member suggested spending more time training the whole staff and stressed, "The whole staff needs to be on board at the beginning." In a similar way, another member stated, "The

whole staff needs to be together because they're all over the place." Another echoed the concern and hypothesized about the lack of buy-in by their staff and reflected, "It's the unknown. I think the shock and awe is what is causing the resistance because people are afraid of the unknown." Responses and comments support the need to form a strong coalition, build a vision and effectively communicate it, while putting structures in place so collaborative planning and evaluation are an ongoing and integral part of the implementation process (Kotter 1995).

Simpson (2002) emphasized organizations must be prepared for change and stressed the need for organizational readiness and key factors related to organizational climate within the institutional infrastructure. Simpson's (2002) conceptual framework with sequential elements includes training, adoption, implementation, and practice, all of which can be impacted by organizational factors (Lehman, et al., 2002). A lack of readiness can negatively impact an effective and lasting implementation of Linked Learning. Table 5 summarizes Pathway Design Team members' perceptions of organizational climate factors.

Table 5

Pathway Design Team Members' Perceptions of Organizational Climate Factors

ITEMS	5 % (n)	4 % (n)	3 % (n)	2 % (n)	1 % (n)	Median	Mode
19. Some staff do not understand main goals.	26.3(5)	31.6(6)	26.3(5)	10.5(2)	5.3(1)	4	4
20. Staff understand how Linked Learning fits in the school's vision.	26.3(5)	31.6(6)	10.5(2)	21.1(4)	10.5(2)	4	4
21. Staff understand expected students outcomes.	10.59(2)	42.1(8)	0	42.1(8)	0	4	4,2
23. Most staff are supportive of the new initiative.	10.5(2)	31.6(6)	36.8(7)	21.1(4)	0	3	3
24. Attitude at my school is to change things that are not working.	36.8(7)	47.4(9)	15.8(3)	5.3(1)	0	4	4

Note. n = number; 5 = Strongly agree; 4=Agree; 3 = Neutral; 2 = Disagree; 1 = Strongly disagree

A lack of staff unity around the initiative was also supported by survey results for items 19 and 20 relating to a clear mission and vision, which indicated a need for a deeper understanding of Linked Learning. Only half of survey participants agreed that staff understood expectations of the initiative, and over half of the participants perceived that the staff does not have an understanding of the main goals of Linked Learning. Data revealed a general feeling of uncertainty around all staff understanding the goals, being supportive of the initiative and ready for implementation.

Two survey items assessed openness to change and four items measured clarity of the Linked Learning mission and goals. Survey data, as reflected in Table 5, indicated Pathway Design Team members were open to change but uncertain about staff support of the initiative. Survey results for item 24, "The general attitude at my school is to change

things that are not working," indicate an openness to change with 84.2 % of participants strongly agreeing or agreeing. However, survey results for item 23, "At my school most staff are supportive of the new initiative." suggest more uncertainty about staff support for Linked Learning. Over a third (36.84%) were uncertain about staff support, 21.05% disagreed that staff were supportive of Linked Learning, and almost half of respondents disagreed that staff understood expected student outcomes. Additionally, over half of survey respondents perceived staff to not understand the main goals of the program and the median score of 4 indicates a high level of intensity of this perception.

Overall, results from the survey, combined with focus group feedback imply a mixed level of readiness for implementation in regards to the staff attribute of efficacy and organizational climate factors: clear mission and a positive attitude towards change. Although Pathway Design Team members appear confident in their own ability, findings suggest mixed levels of confidence in staff and their levels of understanding, preparedness, and support for the initiative. Goddard, Hoy and Hoy, (2000) emphasize the importance of high levels of collective teacher efficacy. Although the survey results of this study suggest a relatively high level of teacher self-efficacy, findings indicate perceptions are mixed in terms of the level of collective teacher efficacy.

Theme #2: Effectiveness of training varied, especially in terms of format, content, and timing.

Several trends emerged in terms of professional development and training. Some training was viewed as more helpful than others, and comments were made about format, content and the timing of the training. Survey results indicate participants viewed the Pathway Design Institute to be the most effective and the Summer Institute to be the least

effective. Additionally, a relatively large percentage of participants did not participate in the first four trainings, so information is limited to the small number of respondents who actually participated in all of the activities. Only 36.84% of participants attended the trip to Long Beach, California, and participation in the Summer Institute, Readiness Assessment and Asset Mapping, and Nashville site-visits ranged from approximately 58% to 69%. Of those who did participate, respondents found the site visit to Nashville to be more effective than the Long Beach visit. Two focus group members stated they believed starting early and taking the year to plan was the most effective component. Table 6 summarizes Pathway Design Team members' responses to survey items addressing training effectiveness.

Table 6

Pathway Design Team Members' Perceptions of Training Effectiveness

ITEMS	5 % (n)	4 % (n)	3 % (n)	2 % (n)	1 % (n)	Did Not Attend	Med	Md
5.Summer Institute	0	10.53(2)	26.32(2)	31.6(6)	5.3(1)	31.6(6)	*2	*2
6.Asset Mapping/ Assessment	5.26(1)	21.05(4)	21.05(4)	10.53(2)	0	42.11(8)	*3	*4,3
7.Site Visit Long Beach	15.79(3)	5.26(1)	5.26(1)	10.53(2)	0	63.16(12)	*4	*5
8.Site Visit Nashville	15.79(3)	21.05(4)	5.26(1)	10.53(2)	0	47.37(9)	*4	*4
9.Pathway Design Institute	10.53(2)	52.63(10)	26.32(5)	10.53(2)	5.26(1)	NA	4	4
10.Master Schedule	5.56(1)	38.89(7)	22.22(4)	16.67(3)	16.67(3)	NA	3	4

Note. n = number; 5 = Strongly agree; 4=Agree; 3 = Neutral; 2 = Disagree; 1 = Strongly disagree; Med = Median; Md = Mode * = Median and mode calculated with attendees only

Focus group feedback indicated the format of the trainings was a key factor and three focus group members stressed that time to collaboratively plan was essential. One member, in reference to the Pathway Design Institute stated, "It was good to begin thinking about a complex overarching problem that transcends our discipline. It is helpful to sit and work with colleagues and begin to weave our curriculum and standards together. Also having someone who has done this before can ask guiding questions to stretch us and keep us focused." On a similar note, another member thought the trainings were helpful and said, "The planning is good; I mean it takes us through the steps …the math teacher plans with the English teacher and the science teacher and the social studies teacher." However another expressed concern by saying, "It is a little difficult for us teachers to do it before the students can get it. It's a bigger picture and it takes some time for us to be able to do, because it's a lot of planning. We need to be doing similar things, like the same project in all the classrooms. Teachers have to be on the same page."

Nine members commented on the ineffectiveness of the training. In the open-ended response section of the survey, one participant stated too much time was spent on "team-building touchy-feely" activities, while another claimed it was a "colossal waste of time". One focus group member rather bluntly stated, "They did not have training that was interactive. The training … I attended, I've been to two of them, three of them actually, and they were mostly lecture and film and lecture and film, not giving what we preach all the time; opportunities for other participants to be engaged and to interact." Another member concurred and said, "It also seemed like they used the same videos in all of the trainings." On the same note, another member argued, "Its one thing to stand up there and listen to somebody talk about it and have some video, but the real learning

occurs when you do it." Design Pathway Team members called for engaging, relevant, self-directed and meaningful learning experiences much like the training proposed by Adult Learning Theory (Knowles, 1980).

The content of the trainings was discussed and a large number of members (10) commented on its effectiveness. Some comments suggested an overabundance of content related to Linked Learning philosophy which caused the training to be redundant. One member claimed, "Trainers spent too much time on team-building, writing mission statements, and abstract concepts and some was repetitive." When asked if the group agreed, another participant was in favor of teaching teams to work together and stressed, "I thought that, number one, we need to teach our teams how to reach a consensus because they don't know how. So I think that's really important; how you reach consensus and how you get input from everybody. I think people will need to spend some time getting to know each other and when I went, I didn't see any 'touchy feely', I saw mostly boring."

In many instances, members did not feel the trainings adequately prepared participants to fully implement Linked Learning. In reference to the Summer Institute and Pathway Design Institute, one member argued, "It took too long to get down to the real work and there was no accountability. You don't really get down to work until you are forced to build a plan for a cross-curricular project." In a similar way, another member found the trainings to be ineffective and asserted, "The problem I see with the training, in general, is the redundancy of the trainings. There is also a lack of exemplar projects that can be dissected, so one can see how to go about creating a cross-curricular project. We only saw sound bites and couldn't tell who did what and how they did it." These findings

are in line with current recommendations like those in *Professional Development: An Effective Research-Based Model,* in which Dr. J. David Cooper (washingtonstem.org) emphasizes the need for a new strategy to be demonstrated so teachers can see a model performing the strategy first hand, with real students or through video. Then, he suggests, teachers should be given an opportunity to practice the skill and receive immediate feedback (washingtonstem.org).

Two members claimed the content of the trainings was more applicable to California than Texas, and one suggested, "Maybe some homework should have been done, a little bit more, so that they could adapt it to Texas." Three other members stated a lack of specific content related to their subject area. One member voiced distrust and stated, "Personally I didn't trust the trainers. I needed to see a sample that incorporated geography or the social sciences."

Although 44.5 % of survey response indicated the master schedule consultation was helpful, three focus group members found it to be ineffective. Two stated the training was provided before teams were ready to tackle master scheduling issues and all three commented on a lack of individualization to specific school needs. While there were positive comments made about the trainings and some members found the trainings to be helpful, other members voiced a number of concerns that hindered effectiveness.

Additionally, seven focus group participants expressed concern over the timing of trainings. In reference to the Summer Institute, one focus group member voiced apprehension about "the timing of the training just coming right after school is out" when school staff members are "still hiring and starting summer school and just getting the

(STAAR) scores. Everything!" Another member echoed the sentiment and frankly said, "As a matter of fact, we told them not to train us then."

Three members cited a lack of knowledge about needed skills for students in their career path and the researcher asked, "Was that what the externship [on-site industry training for teachers] was supposed to provide?" The externship was scheduled for later in the summer and one participant responded, "Yeah, but then it's too late because you've already gone to the training (Summer Institute)." Three participants made comments that indicated the externship should come before the summer institute so teachers have key concepts specific to their career pathways to integrate into the cross-curricular projects. A key focus of Linked Learning is integrating core academic standards and Career and Technical Education (CTE) so knowledge of career pathway skills is crucial to cross-curricular planning (connectedcalifornia.org).

Site visits to Linked Learning schools in Long Beach, California, and Nashville, Tennessee, provided opportunities for a preferred type of professional development that was self-directed, problem-centered, experience-based and relevant to the work (Knowles, 1980). However, data suggests site visits were somewhat helpful but missing key elements. When asked if the site visits were helpful, percentages indicated the Nashville trip (15.79% strongly agreed and 21.05% agreed) was more helpful than the California trip (15.79% strongly agreed and 5.26% agreed). However, only 36.84% of participants attended the trip to California and 53.63% attended the Nashville, Tennessee site visit. Therefore, information was limited to this relatively small number of 10 participants. Focus group feedback confirmed the mixed perceptions of the effectiveness of the site visits.

Overall, comments indicated the Nashville visit was well-planned and organized, and four members found the visit to be extremely beneficial in terms of seeing academies in practice and systems which effectively link schools with the business community. One member stated another trip was already being planned for school staff. However, two of these same members who praised the Nashville site visit, noted a lack of evidence of key Linked Learning components, in particular, cross-curricular projects and a structure very dissimilar to the Pathway Design members' own school district.

One participant voiced, "We saw good instruction going on but it did not fit the components of Linked Learning. In general, I got a lot out of the trip but more in terms of the Career and Technical Education certification process and career academies. We could see systems in place that support Career and Technology Education." A participant from a different focus group exclaimed, "We did get to see some success stories but, it was obvious it was a show because a lot of the things we saw weren't working and they told us that they went through three years of extensive growing pains and they were actually very heavy from the top down." Another remarked, "It's a bit different….the way that the structure of the district is set up is different because the community and the city support the school; as far as funding and the way that they plan it because they actually have them (businesses and community members) on their advisory committee opposed to how we have it set up here for (Big District ISD)."

Another focus group member found seeing the overall district Linked Learning structure beneficial and stated, "It was helpful to see the buy-in from the business community and the structures that were put in place to support the schools." One participant wanted more information about the beginning steps of the process and

remarked, "They didn't have the same people throughout the whole stages. And so we couldn't really get the whole feel of how it was from the very beginning to where you're at now and it's great that you have success and all, but then we need to know what it took for you guys to get to that point because that's where we are." Another participant summed it up and said, "I found the trip helpful in some ways but there were many elements missing."

Three members agreed there were crucial elements missing and argued the student tours were too rehearsed, compromising authenticity. One member elaborated,

> When you talked to the students, they've practiced many times. But they weren't really sincere about what they were doing because they've been doing it so long for the tours, that they know what to say and they know what to give you for those questions that they've already practiced. You can tell that it's rehearsed.

On the same note, another member from the same school team concurred and stated, "The students who facilitated the tours were well-trained and eloquent speakers. However, although the students talked about Linked Learning, we did not see evidence of cross-curricular planning or projects."

Comments on the site visit to Long Beach, California, were mixed and two members found the visits to be quite helpful. When comparing the California schools to the Nashville schools one member noted a lack of strong business partners in the California schools, but remarked, "Everything else at Long Beach seemed great." Another member agreed and said,

> It felt very much like it was the team. I did see the business partners come on board in Long Beach and I think that was a very valuable experience for me as a

> leader… They did a quick presentation for each pathway and then the business partners got to choose or look at pathways they might find interesting…We saw the fine arts pathway. They had a production studio and talked about how they had shown some student work. It was really interesting how the students had been able to capture each part of the academic areas that go along with the fine arts…that was really beneficial for me.

This member also praised the Long Beach visit and appreciated the opportunity to speak to the students. Through the conversation she perceived the students to have a clear understanding of their pathway and the how the work relates to their goals. She went on to say, "Sometimes we have things on our campus but students can't speak to it. It's there but the ownership isn't there. I really feel that the ownership is there with Linked Learning."

Three members found the California site visits to be ineffective and emphasized the lack of good instructional models and details on the process of beginning Linked Learning implementation. One focus group member said, "I didn't find the trip helpful at all. It's really nice to go look at other schools but as far as what to come back here and do, I didn't see the connection." Another remarked, "Even in the California schools we saw, the videos, were very nice projects usually, but none of them were [in their] first year; they showed us what happened over time." Another participant acknowledged the need for guidance and stipulated, "I agree, seeing the end product was nice and how it could be successful, but actually how to get there is what we need." Survey and focus group responses suggest it is essential to carefully select sites to be visited that address

adult learner needs and interests and showcase successful Linked Learning implementation evidence.

Generally, perceptions varied in terms of how helpful particular trainings were viewed. With median scores of 4 on item 25 and 26, survey results clearly indicate a high level of need for more training in the areas of cross-curricular project planning and integrating state standards. Training needs are summarized in Table 7.

Table 7

Training Needs

ITEMS	5 % (n)	4 % (n)	3 % (n)	2 % (n)	1 % (n)	Median	Mode
25.Cross-curricular projects	47.37(9)	52.63(10)	0	0	0	4	4
26.Integrating state standards	47.37(9)	47.37(9)	5.35(1)	0	0	4	5,4

Note. n = number; 5 = Strongly agree; 4 =Agree; 3 = Neutral; 2 = Disagree; 1 = Strongly disagree

In response to item 25, 47.37% strongly agreed and 52.63% agreed they needed more training in designing and implementing cross-curricular projects. Results were similar for item 26 where 47.37% strongly agreed and 47.37% agreed they needed more training in integrating Linked Learning with state standards. Findings indicate a strong need for additional training in these two areas.

Theme #3: Coaching was more effective than monthly meetings.

Individual and group support was also provided in the form of coaching and monthly meetings. Intended to create a community of practice, coaching was provided by an external coach while monthly meetings were led by internal central administration staff. Results indicate coaching was perceived to be more beneficial than the monthly

meetings. Table 8 presents a summary of survey participants' perceptions of coaching and monthly meetings.

Table 8

Pathway Design Team Members' Perceptions of Coaching and Monthly Meetings

ITEMS	5 % (n)	4 % (n)	3 % (n)	2 % (n)	1 % (n)	Med	Md
11. You benefitted from coaching.	5.26(1)	42.11(8)	21.05(4)	21.05(4)	10.53(2)	3	4
12. Monthly meetings were helpful.	5.26(1)	15.79(3)	42.11(8)	21.05(4)	15.79(3)	3	3

Note. n = number; 5 = Strongly agree; 4=Agree; 3 = Neutral; 2 = Disagree; 1 = Strongly disagree; Med = Median; Md = Mode

When asked if these training opportunities were effective, survey results demonstrated 5.26 % participants strongly agreed and 42.11 % agreed coaching benefited them, while only 5.26 % strongly agreed and 15.79 % agreed the monthly meetings were helpful. In fact, in regards to the monthly meetings, 42.11% were uncertain, 21.05 % disagreed and 15.79 strongly disagreed that the monthly meetings helped them to get ready for Linked Learning implementation. Two survey participants commented on the meetings in their open-ended responses. One stated that he/she "learned nothing" from the meetings and the other commented on the fact that meetings were often cancelled during the administrative transition.

Focus group feedback provided some support for survey results. One member candidly stated, "It hasn't been effective to me because, I am trying to think of when I've had some coaching." The member continued and indicated she had met a coach on one occasion and commented, "We were told we had everything together. She said we were way ahead and she thought it was great." The same member also expressed concern over

the monthly meetings and bluntly said, “Then we went to some meetings in the afternoon, but I didn’t get anything from it.” Sign-in sheets demonstrate the monthly meetings were poorly attended so information was limited.

Coaching is viewed as a fundamental element of an effective professional development program and creates a caring, trusting relationship in which a client can feel safe to take risks and change their practice (Aguliar, 2013). Leaders in education also promote professional learning communities as having a powerful impact on learning and behavior when they are sustained over time, focused on important content, embedded in the work, and support ongoing improvements in practice (Darling-Hammond, Chung Wei, Andree, Richardson, & Orphanos, 2009). Although both coaching and monthly meetings received median scores of 3, coaching received a mode score of 4 indicating that it was more effective. Feedback implies both activities could be more effective if conducted with a clear focus, held on a consistent basis and embedded in the work over time.

Theme #4: ConnectEd Studios tool is a valuable tool but underutilized.

ConnectEd Studios is a digital platform intended to create a collaborative network between school representatives, district personnel, and ConnectEd staff through the online tool, which supports the development of integrated curriculum with project-based learning activities and the provides a digital platform for the posting of student work. ConnectEd Studios is a vital component of Linked Learning and training was provided to the Pathway Design Teams; yet, survey results indicate the tool is highly under-utilized. A total of 66.66% either strongly agreed or agreed the tool was easy to use and 52.63% found it useful but only 21.05% answered that it was frequently used. In fact, 36.84%

disagreed and 21.05% strongly disagreed to item 13, "You frequently used the ConnectEd Studios tool." During a focus group, one member expressed frustration and stated,

> I tried looking at projects on ConnectEd Studios, but the creator of the project has to allow you access and I have never been granted access. I wanted to see a demonstration of a well-defined project online. The tool was put in front of us but there was no structured time to work with it. There was training but no follow up. There was little use.

When asked about the ConnectEd Studios tool, one member claimed, "I'm familiar with it, but am I'm on it regularly, as a building principal, I'm going to say no." Three members commented on the tool's lack of use and suggested it would be helpful to have guidance in how to increase usage of ConnectEd Studios. Survey results confirmed these notions: 75% of survey participants indicated more training is needed in using ConnectEd Studios: 38.9% strongly agreeing and 38.89% agreeing. Table 9 illustrates Pathway Design Team members' perceptions of ConnectEd Studios and data suggest more training might increase the use of this easy to use online tool.

Table 9

Pathway Design Team Members' Perceptions of ConnectEd Studios

ITEMS	5 % (n)	4 % (n)	3 % (n)	2 % (n)	1 % (n)	Med	Md
13. You frequently used the tool.	0	21.05(4)	21.05(4)	36.84(7)	21.05(4)	2	2
14. You find the tool is easy to use.	5.56(1)	61.11(11)	22.22(4)	11.11(2)	0	4	4
15. You find the tool useful.	5.3(1)	52.63(10)	21.05(4)	15.79(3)	5.26(1)	4	4
28. You need more training in using the tool.	38.89(7)	38.89(7)	11.11(2)	11.11(2)	0	4	5,4

Note. n = number; 5 = Strongly agree;4 =Agree; 3 = Neutral; 2 = Disagree, 1 = Strongly disagree; Med = Median; Md = Mode

Research Question 2: What are Pathway Design Team members' perceptions of the factors that contribute to and/or hinder implementation?

Theme #5 Lack of Institutional Resources Hinders Implementation

Staff

Data indicated a need for a larger support staff. When asked if a larger support staff is needed, survey responses indicated a total of over 75% strongly agreed or agreed a larger support staff is needed to meet Linked Learning needs. When asked if staff will have enough time to complete assigned duties indicated only about half of the participants perceive school staff will have enough time to complete assigned Linked Learning duties. Four focus group members cited concerns over the number of staff needed to successfully implement Linked Learning and three members, who had attended the Nashville site visit, commented on the large number of staff that district dedicated solely to the program. Referring to one school, a member noted, "Like I said, they had a literacy coach, they had a person just to go out to solicit the businesses, and an

accountability coach." She illustrated how the school used the staff members to provide ongoing support to the school through implementation. In a similar fashion, another member commented on the Nashville school staffing model and remarked "They had a curriculum person that did curriculum just for that specific pathway". Another member concurred and mentioned the scheduling team she had witnessed on a site visit. Based on the staff structures observed, several (4) members felt more staff in key positions would be needed to effectively implement the program in Big District ISD. A lack of existing staff was viewed as a barrier.

Training

Ten focus group members expressed concern over the ineffective training and its impact on a lack of readiness. Most (7) focus group members perceived teachers and other staff lacked the knowledge needed to move forward and believed the deficiency would hinder implementation of the program in the fall. One member supported the concept of Linked Learning but acknowledged the issue,

> There's a big gap there. There's a huge gap, but I personally think Linked Learning is the way to go. I am a big advocate of Linked Learning and I think if we can really make it work, that students will really begin to achieve, or identify their own passion and then let us support that passion. That's where we are trying to go with it and we are making up some of it as we go because nobody has ever told us what to do.

As mentioned in the previous section, all survey participants either strongly agreed or agreed they needed more training in designing and implementing cross-curricular projects. Additionally, over 94% strongly agreed or agreed they needed more

training in integrating Linked Learning with state standards. Two focus group members discussed the novelty of working on a cross-curricular team, curriculum mapping, and trying to agree on a plan. Another member expressed frustration over teachers' complaining and lack of understanding about how to integrate Linked Learning practices into current practices. She explained,

> Yeah I got a lot of that last week. A lot of 'ok I can give you one day and I'm going to do this on top of all the other stuff that I have to do. I kept trying to explain this is the vehicle to teach the TEKS (Texas Essential Knowledge and Skills); this is how we want to go about presenting those standards and teaching those standards but I can't get them ready for the test that way. We spent a lot of time talking about that last week, trying to get teachers to understand that it's not something to do in addition to, it replaces the way that you have always done it.

Over 75% of survey responses to item 27, which assessed the need for additional training in the online tool, reveal a strong need for more training in Connect Ed Studios. In general, data indicate a substantial need for training in three critical areas: cross-curricular projects, the integration of Linked Learning with the TEKS, and ConnectEd Studios.

Instructional support

A lack of instructional resources was also viewed as a hindrance to implementation according to survey results and focus group feedback. Focus group feedback stressed, in particular, specific support for content area teachers. Four focus group members referenced the shortage of instructional support and one member frankly said,

> We didn't have any other content experts to connect our content to the standards. The first time we went through the design process we came up with a pretty good idea, using the idea of recycling to connect our standards. We designed what seemed like a pretty good problem but then we never followed through on the implementation. Not only that, but someone later said this "problem" was substandard. So all of the work we did didn't seem worthwhile. The project should never have been approved by the trainers, if it was not right, or we should have been validated in our initial efforts.

In addition, three members voiced a concern about the lack of understanding about Texas curriculum and student expectations on the part of the workshop presenters. One member rather bluntly contributed,

> It's good that they have the trainings that go step-by-step, but the one thing that I see on that is some of that 'stuff' is mostly California-based and not Texas-based. So that's when we still have some questions…You'll hear the comments and they'll say, 'Oh that happens in California,' but that's not the way we do it in Texas. And so, I know that they are new to our district, but maybe some homework should have been done so that they could adapt it [Linked Learning] to Texas. I guess [referring to] the expectations of the way we teach in Texas as opposed to how they do it in California.

Focus group members indicated Career and Technology Education (CTE) support-staff were heavily involved in the process but content area support was lacking and caused a significant barrier to effective planning. Findings indicate more instructional support and

guidance from content area specialists is needed to effectively implement Linked Learning.

Theme #6: Central Administrative and Teacher Turnover is a Hindrance

Five members argued that consistent central administrative leadership and support were essential for successful implementation. Three claimed the turnover in central administration during the planning year had a significant impact on the level of readiness of school Pathway Design Teams. One member asserted, "I think they've changed the people over Linked Learning three times this year and that's extraordinarily difficult to work with." On a similar note another focus group member stated, "Things were very disorganized and changing leadership made it worse. Central administration should have lead an organized roll-out with benchmarks along the way to monitor progress." Another member voiced irritation with administrative turnover and referenced the *Race to the Top* grant which the district will use to support Linked Learning efforts, **"**On top of everything else, the Race to the Top grant wasn't written with any input from principals and they know best what kind of support they need to implement the program effectively."

However, one group member expressed hope that barriers to implementation may be lessened with the newly created Linked Learning staff positions now in place. He asserted, "Now that we have a new assistant superintendent over Linked Learning, maybe we will receive direction." The need for consistent leadership and removing obstacles is supported by the work of organizational change expert, John Kotter (1995).

Two focus group members also commented on a lack of consistency among schools, which they perceived to be a by-product of the administrative turnover. Since

there was no clear outline of activities or monitoring of progress, these individuals noticed schools were at various levels of readiness. Two other members cited turnover in teacher teams as an added barrier. They discussed the problem of having teachers trained and become valuable members of a team and then be transferred to another position or leave the school all together. Teacher turnover and changing team members was viewed as a serious problem.

Four members mentioned fear of accountability measures as hindering the implementation of Linked Learning and one member felt district leadership should take action to reduce consequences. With STAAR test scores and the Texas Education Agency (TEA) Accountability Measures recently released, two of these members voiced great concern over low performing schools being asked to participate in such a departure for traditional teaching. One group member expounded,

> A huge barrier is accountability. So teachers are scared to let go at all and I know I heard a biology teacher talk about it, 'But I've got to teach the TEKS or else my kids won't pass the test' and I know that it has been suggested to the superintendent that maybe we have a relief of one year. At least reprieve from that, not that we wouldn't take the test, but that it would not necessarily be against us so that teachers would feel free to experiment. This is a huge change in the way we teach and if we don't look at that and give teachers some freedom to experiment, then teachers for the most part are going to be teaching the test which we've done for years unsuccessfully."

Other individuals talked about the fear associated with taking such a risk. Two group members praised the district for giving schools a year to plan while two others

commented that the district was rushing. “Stop. Take time. Give us people who know what they’re talking about, who will work with us and keep those people there for a least a year.” Three other members spoke about a need for time to be dedicated to Linked Learning. Two members complained about feeling like they were being pushed to do something complex on top of their numerous other responsibilities and given no extra time to complete the tasks. One mentioned, “I think 1-2 hours a week should be mandated for Linked Learning planning and monitoring. We need to spend time with it.” Another claimed, “I think that we need some time to really work on this and know where we’re going. We don’t get that time, it’s like it has to be done now.” ConnectEd requires that schools participate in the year of planning and professional development prior to full Linked Learning implementation and organizations must take the time to complete each phase of preparation for effective change to occur (Kotter, 1996).

Research Question 3: How cost effective is Linked Learning in achieving its professional development outcomes and early initiation activities?

A cost-effectiveness (CE) analysis was performed to evaluate readiness activities according to their costs and effectiveness in accomplishing goals (Levin & McEwan, 2000). The CE analysis evaluated costs per person in relation to the effectiveness of readiness activities. The analysis was intended to provide a cursory examination of the cost-effectiveness relationship and, although the analysis aimed to determine cost effectiveness in relative terms, it did not attempt to establish whether the total benefits exceeded total costs (Levin & McEwan, 2000). Table 10 illustrates a summary of survey responses and effectiveness as defined in terms of median effectiveness ratings.

Table 10

Effectiveness Ratings of Readiness Activities and Associated Costs

Readiness Activity	Desired Outcome	Part. Number	Per Person Cost	Total Cost	Effectiveness Median	Effectiveness Mode
ConnectEd Studios *	-Create an online collaborative network	41	$951	$ 39,000	4	4
Pathway Design Institute *	-Pathway implementation plan	41	$743	$ 30,500	4	4
Coaching *	-Create community of practice	19	$2,298	$ 43,666	3	4
Site Visit Long Beach **	-Experiential professional learning	19	≈$1,200	$ 22,800	4	5
Site Visit Nashville **	-Experiential professional learning	27	≈$1,200	$ 24,000	4	4
Summer Institute *	-Cross-curricular planning	49	$765	$ 37,500	2.5	3

Note. Part. = Participants; 4=Agree; 3 = Disagree; 2 = Strongly disagree; ** = Funded by individual schools; * = Funded by Big District ISD contract with ConnectEd; ≈ = Approximate amount due to varying airline costs

Data indicated the Pathway Design Institute was relatively the most cost effective activity and the Summer Institute was the least cost effective. The cost of Pathway Design Institute was $743 per person and received a median effectiveness score of 4, while the Summer Institute incurred a similar cost of $765, but with an effectiveness rating of only 2.5. Although both trainings were offered in a similar fashion, findings indicate the Pathway Design Institute, which was offered during the school year, was more effective than the Summer Institute that was offered the week immediately after the termination of the spring semester and the same week summer school began. As referenced earlier, the timing, content, and format of the Summer Institute influenced the rating.

Although coaching received a median effectiveness score of 3, it was also the most expensive and the $2298 per person cost was significantly higher than other

activities. More information should be gathered to further explain the effectiveness of coaching. ConnectEd Studios training was the second most expensive activity funded by the school district, and although it rated a median score of 4 on effectiveness, over half of survey respondents either strongly disagreed or disagreed that they frequently used the valuable tool and it only received a median score of 2 in terms of usefulness. Since it is critical that all members of the implementation team be ready, the Pathway Design Institute clearly provides the most effective services for the least amount of money per person.

Site visits to Long Beach, California, and Nashville, Tennessee, funded through individual schools, received median effectiveness scores of 4, indicating high levels of effectiveness. Costs per person were approximately $1200, making it the second most expensive activity overall. Though viewed as effective, 63.16% (12) of respondents did not attend the Long Beach trip and 47.7% (9) did not go to Nashville. When considering only site visit attendees, the Nashville site visit received a somewhat higher effectiveness rate with 70% (7/10) survey respondents either strongly agreeing or agreeing the trip was helpful and 57% (4/7) respondents finding the Long Beach site visit effective. In the case of the Nashville visit, the higher effectiveness rating may justify the increased cost.

With the exception of the Summer Institute, readiness activities received relatively high ratings with the Pathway Design Institute appearing to be the most cost effective. Although site visits received high ratings, they were the most costly to individual schools, and consideration should be given to whether the same learning can be achieved through an alternative, less expensive type of professional development. Also costly, coaching received a medium level of effectiveness and more information is

needed to assess overall effectiveness. The cost effectiveness analysis, although not formal, did attempt to gain a cursory understanding of the relationship between costs and the effectiveness of readiness activities.

Chapter Five

Conclusion and Summary

Research supports a need for school reform and a change in the way schools do business. The literature reviewed addressed pertinent theories, a history of school reform, and the components of the innovative program, Linked Learning. In addition, the literature discussed organizational change as a multi-faceted, complex process. This chapter will include an overview of the study, a discussion of the results in the context of current research, implications for future Linked Learning implementation efforts, implications for policy, and possibilities for future research.

Overview of Study

The primary purpose of this program evaluation was to examine Pathway Design Team members' perceptions of the early initiation activities and professional development of Linked Learning and their perceived impact on readiness for implementation of this new program in seven Big District ISD high schools. Prior to full implementation of Linked Learning, ConnectEd, who is partnering with this large, urban school district, requires that schools participate in a year of planning and professional development. This program evaluation also identified factors that were perceived to contribute to and hinder implementation efforts. Finally a cost-effectiveness analysis was conducted to determine which readiness activities were most cost-effective.

Mixed-methods including a records analysis, survey, semi-structured interviews, and focus groups were utilized to acquire a rich description of perceptions of all the participants involved in the planning and initiation phase of Linked Learning. Documents were studied and semi-structured interviews were conducted to gather background data

and gain a deeper understanding of the purpose and desired outcomes of the year of planning. A survey was administered and items measured three categories of organizational attributes including institutional resources, staff attributes, and organizational climate. Institutional resources included staffing, training, and instructional support. Self-efficacy, which refers to the perception of one's ability to produce a desired or intended result, was the staff attribute measured and items measuring organizational climate addressed the clarity of mission and the organization's openness to change. Training needs were also measured and focus groups revealed more information about identified themes in perceptions of the professional development activities and their impact on readiness for implementation. A cost-effectiveness analysis detailing early initiation activities and professional development with their associated costs was performed to evaluate costs in relation to outcomes achieved.

A SurveyMonkey data collection tool was used to organize survey results and descriptive charts were created to identify frequencies, percentages, medians, and modes for item responses. Text- analysis was used to identify general trends in subjects' open-ended responses to the survey. Focus group responses were transcribed and data was analyzed using the constant comparative method. Results were organized based on the initial constructs and categorized by research question.

Discussion of Results

Research question 1: What are Pathway Design Team members' (implementation team) perceptions of Linked Learning early initiation activities and professional development and their perceived impact on readiness to implement Linked Learning?

Education experts have been stressing the need for school reform and examining implementation efforts for over sixty years (Darling-Hammond, 2007; The White House, 2013). One of the greatest challenges for researchers studying schools is to determine how school organizations impact teacher behavior and ultimately students' academic success (Goddard, Hoy & Hoy, 2000). Organizational change expert, John Kotter (1995) proposes a model that involves creating a sense of urgency, forming a strong coalition, building a vision and effectively communicating it, removing obstacles, creating quick wins, and building momentum to make change part of the institutional culture. He suggests that collaborative planning and evaluation must be an ongoing and integral part of the implementation process further supporting and sustaining the change. When examining the sequence of activities, goals and expected outcomes of ConnectEd's plan for the year of readiness activities and planning, it appears to be in line with Kotter's model for change. Two focus group members highly praised the process and stated they believed starting early was essential and taking the year to plan was the most effective component. Organizational factors and dynamics, however, can help support (or suppress) movement from one stage to another (Lehman et al., 2002). Although the plan is supported by research, findings revealed some crucial staff attributes and organizational factors were present while others were not. Certain activities, such as the Pathway Design Institute and site visits, were perceived to be more effective than others, and specific training needs were identified. Whether the plan was fully implemented with fidelity is in question.

One staff attribute, teacher self-efficacy, has been proven to be a key factor in effecting change (Lehman et al., 2002). This study utilized efficacy measures to

determine the staff's level of confidence in fulfilling their responsibilities in implementing Linked Learning, as high efficacy individuals are more likely to see the value of a new program and have the confidence to effectively implement the new strategies (Lehman et al., 2002). Also based on Bandura's (1977) social cognitive theory, high levels of collective teacher efficacy have been shown to have a significant impact on the implementation of programs that positively influence student achievement (Goddard, Hoy & Hoy, 2000).

The survey results and focus group feedback of this study indicate a moderate level of uncertainty and, in a number of cases, a lack of readiness to successfully implement Linked Learning. In general, findings revealed Pathway Design Team members had high levels of confidence about their own skill levels. Perceptions of readiness were mixed in terms of team preparedness and confidence about implementation. Less than half (47.37%) of members perceived that the Pathway Design Team was prepared to implement the new initiative, and a little over half (52.94%) agreed staff would have enough time to complete Linked Learning duties. These results indicate a lack of readiness on the part of the school staff to successfully implement the new initiative without an abundance of support from central administration and others. In addition, there appears to be a lack of commitment and willingness to do whatever it takes to ensure the success of Linked Learning. In schools where there is a low level of collective teacher efficacy, teachers are less likely to persevere through challenging times and implementation efforts may be stymied, whereas in schools characterized by high levels of collective efficacy, teachers are more likely to accept challenging goals and persist to achieve success (Goddard, Hoy & Hoy, 2000).

The success of implementation efforts may vary among schools and be more effective in schools where teams perceive a high level of self-efficacy and collective teacher efficacy, and are given extra time to tackle the new duties associated with implementation. Organizational change may be desirable but unlikely due to staff workload and institutional resources (Lehman et al., 2002). Findings suggest a need to enhance self-efficacy and collective teacher efficacy throughout the readiness and implementation process. Chong & Kong (2012) suggest a collaborative lesson-study process to provide numerous opportunities to support the adoption of new behaviors. Results reflect an immediate and continuing need for numerous support opportunities. For organizations to develop and transform, high levels of self-efficacy and collective teacher efficacy are critical to produce a highly capable, self-directed workforce, such as is needed for Linked Learning (Brown, S. P., Ganesan, S., & Challagalla, G. (2001). Findings indicate additional effort should be made to unify teachers around the common goal of Linked Learning implementation and inspire them in such a way that the goal seems attainable.

Organizational climate factors such as openness to change and clarity of mission and goals are also critical to successful change (Lehman et al., 2002). Findings indicated Pathway Design Team members possessed high levels of openness to change but were uncertain about staff support of the initiative and the staff's understanding of the goals and expected outcomes. Although openness to change is an important factor to consider when implementing change, organizations that lack mission or goal clarity are less likely to manage change in ways that improve program functioning (Lehman et al., 2002). Kotter (1995) also emphasizes the need to form a strong coalition, build a vision and effectively communicate it. Generally, findings imply a variety of levels of readiness for

implementation in regards to self-efficacy, collective teacher efficacy, clarity of mission, and an overall positive attitude towards change. Mixed levels of confidence in staff and their levels of understanding, preparedness, and support for the initiative indicate a lack of readiness on the part of some Pathway Design Teams, which can negatively impact an effective and sustainable implementation of Linked Learning. Findings point out an overwhelming need for ongoing training, coaching and support.

Noted American education researcher, Richard Dufour (1998), acknowledges change is difficult and encourages those who attempt to transform schools to recognize normal issues such as anxiety, discomfort, and ongoing conflict that often accompany change initiatives. Organizational climate factors, as they relate to implementing a new program, are also critical to consider when assessing organizational readiness for change (Lehman et al., 2002). Change is a long-term process and research on school reform stresses the importance of effective professional development for successful school improvement (Hord, 1987).

School reform requires educators to gain new knowledge effecting change in insights, skills, behaviors, and attitudes. Workshops, study groups, coaching, experiential site visits, learning through digital technology, and numerous other formal and informal experiences are all examples of readiness activities needed by teachers and staff implementing Linked Learning. Educational leaders argue, however, the information acquired in workshops, is often forgotten and seldom applied when teachers return to their daily routines unless the learning activities are “supportive, job-embedded, instructionally focused, collaborative, and ongoing” (Hunzicker, 2011, p.179). They emphasize professional development should integrate the principles of Malcolm

Knowles' (1980) adult learning theory to enhance effectiveness because the training is essential to create readiness and implement a new program (Curwood, 2011). Adults need to know why the learning is important, need to learn experientially, approach learning through problem solving, and learn best when the topic is of immediate value (Knowles, 1980).

Findings from this study demonstrate variability in effectiveness among the trainings in terms of format, content, and timing, and activities viewed as highly effective integrated Adult Learning principles and utilized best professional development practices. The Pathway Design Institute was deemed most effective and feedback supports that training facilitator's mixed lecture with hands-on activities that were meaningful and relevant to readiness efforts. Focus group comments praised opportunities to work collaboratively with colleagues and do step-by-step cross-curricular planning, and members liked the availability of consultants who had been through the process. One member requested more time be spent in collaborative groups to actually break apart a model project and work through the design process from start to finish.

Collaborative opportunities were also offered through coaching and monthly meetings, and coaching received only a moderate rating and was the most costly per-person expenditure. Monthly meetings received low ratings and were perceived to be poorly organized and inconsistent. Rigorous research shows that these meetings will not be effective unless leaders are deliberate in scheduling time and creating productive collaborative relationships causing greater consistency in learning, more willingness to share practices and try new ways of teaching, and more success in solving problems of practice (Hord, 1997; Joyce and Calhoun, 1996, Louis, Marks & Kruse, 1996;

McLaughlin & Talbert, 2001; Newman & Wehlage, 1997; Successful California schools, 2007). Since Linked Learning is a departure from traditional schooling, it is imperative that teachers experience the kind of learning the program asks them to impart to students. Mezirow's (1991) Transformational Learning theory suggests that for transformative learning to occur, teachers must be given opportunities to reflect and discuss their assumptions about the world and education, to experience a shift in frame of reference. Individuals should be engaging in reflective discourse, challenging each other and encouraging each other to consider various perspectives in a safe atmosphere (Mezirow, 1991). Results indicate that a significant amount of additional professional learning is necessary to ensure effective implementation of Linked Learning, and that coaching and monthly meetings must be structured so that teachers can engage in the kind of dialogue in a safe atmosphere. If teachers are to meet the 21st century needs of today's students, they must adopt a new perspective on the need for change and understand and accept the need for a shift from traditional lecture to more facilitative instructional approach Wagner, 2008).

Experiential site visits, perceived as highly effective, created first-hand experiences to see Linked Learning in action. Grounded in Knowles's (1980) Androgogy theory and Bandura's (1977) social learning theory, these visits provided opportunities for participants to learn through observation and interaction with others, modeling the desired behavior and then reflect on the learning to bring meaning to the experience. Although the second most costly activity and funded by individual schools, participants perceived the site visits to be beneficial in readiness preparation. Moving forward, it is crucial that these visits be made to exemplary sites exhibiting clear evidence of the

desired practices at the time of the observation. Findings suggest it is essential to carefully select sites to be visited based on successful Linked Learning implementation evidence with an emphasis on addressing adult learner needs and interests.

The Summer Institute was viewed as the least effective and feedback centered on too much time spent on team-building, too much lecture, and a redundancy of the content. In addition, for a variety of reasons, the timing of the Summer Institute negatively impacted the effectiveness rating. Several members felt some of the content was more applicable to California than Texas, and some perceived the presenters as lacking knowledge about Texas curriculum and accountability measures. These findings speak to a lack of integration of adult learning theory and best professional development practices, along with a lack of experiential, relevant, problem-centered learning activities, all of which are needed by the participants in this study.

ConnectEd Studios, an interactive online tool, also received mixed reviews. Respondents rated the tool as very easy to use and extremely useful but few participants claimed that they frequently used it. Curwood (2011) noted this problem and described the use of digital technologies and online tools as prevalent and becoming increasingly popular, but many tools are not used to an optimal degree for a variety of reasons ranging from availability of resources to skills development to attitudes about online learning. These barriers can potentially prevent full adoption and organizations may experience an under-utilization of technology tools and a lack of integration within instruction (Brinkerhoff, 2006). Findings revealed ConnectEd Studios is clearly underutilized and did not achieve the goal of creating and supporting a collaborative community. Efforts should be made to make the tool more accessible and appealing, and additional training

should be offered for users to explore potential benefits. Additionally, regular communication through the tool, on the part of central administration, would force users to access the tool more often, increasing usage.

Research question 2: What are Pathway Design Team members' perceptions of the factors that contribute to and/or hinder implementation?

Step five in Kotter's (1995) change model involves identifying barriers and removing obstacles that might undermine the vision so that change becomes part of the institutional culture. Institutional resources are important to consider when implementing a new program (Lehman et al., 2002). In fact Daniel J. Galvin (2012), Faculty Fellow at the Institute for Policy Research and Director of Undergraduate Studies at Northwestern University, proposes that it is critical to invest in institutional resources because they serve to widen an institution's path and enhance its capacity to undertake a broader range of activities in the future. Findings in this study indicate a lack of institutional resources, in terms of staff and training, as a barrier to effectively implementing Linked Learning.

Over 75% of survey participants strongly agreed or agreed a larger support staff was needed to effectively implement the program, and approximately half of respondents perceived school staff would have enough time to complete assigned Linked Learning duties. Focus group feedback confirmed the need for additional staff and curriculum consultants. Evidence was cited from the Nashville site visit where members noted the district dedicated a large number of personnel solely to Linked Learning and presenters stressed time management and strategically scheduled time for teachers to collaborate regularly. In addition, it was mentioned that Career and Technical Education teachers must be an integral part of the design and planning process. Findings suggested a need for

a larger support staff and for central office staff members to provide ongoing support to schools throughout implementation. Not only must school personnel be ready and willing, they must also be supported through the change process for program implementation to be successful (Lehman et al., 2002). Findings also imply a need for internal and external coaches and other support staff to meet regularly with staff and provide consistent, individualized support throughout the implementation process. Additionally, results suggest the district would benefit from designating staff specifically to Linked Learning, and ensure they are focused solely on implementation efforts and have the time needed to provide support.

Ineffective training, and its impact on a lack of readiness, was perceived as another barrier. Although the Pathway Design Institute was viewed as effective, many were still confused about goals and outcomes and how to implement the initiative. Over 75% of survey respondents indicated a need for more training in Connect Ed Studios, over 94% survey respondents strongly agreed or agreed they needed more training in integrating Linked Learning with state standards and 100% perceived they needed more training in designing and implementing cross-curricular projects. Focus group feedback confirmed the need for additional training and the lack of knowledge, many feared, would negatively impact implementation efforts. Training levels have been proven to be a key factor in successful program implementation (Lehman et al., 2002) and findings suggest a significant need for more training that is highly engaging and relevant to the work.

Findings revealed another hindrance in the form of instructional resources, in particular, specific support for content area teachers. Focus group members indicated

Career and Technology Education (CTE) support staff members were heavily involved in the process, but content area support was lacking and caused a significant barrier to effective planning. Findings indicate the need for more instructional support and guidance from content area specialists and Texas–based facilitators who have a clear understanding of curriculum and accountability measures. The collaboration between core teachers and CTE teachers is crucial to Linked Learning (connectedcalifornia.org). In a *phenomenological study of professional development and instructional change,* Jennifer Roberts (2009), also noted the importance of administrative and colleague support, and found the support to be a necessary component to successful implementation. Existing district instructional specialists might be trained and utilized to help facilitate learning and assist with implementation.

Consistent central administrative leadership and support are vital to successful implementation of school reform. In a study of schools implementing Linked Learning in California, Anne Johnston (2013) determined administrative and teacher turnover to be a major stressor to staff, and when leadership structures were in disarray, the effectiveness of reform efforts were diminished. Central administration turnover during the planning year was perceived as significantly hindering the level of readiness of school Pathway Design Teams. Additionally, lack of consistent leadership, indistinct messaging of the mission, and a disorganized introduction of Linked Learning were seen as possible causes for the inconsistencies among schools and a general lack of readiness for implementation. A strong, stable central administrative leadership team and support were viewed as essential for successful implementation and optimism was expressed that new central administration leadership would remedy these issues. The need for consistent leadership

and removing obstacles is supported by the work of organizational change expert John Kotter (1995).

Turnover in teacher teams was also perceived as a barrier. The problem of having teachers trained and being valuable members of a team and then being transferred to another position or leaving the school was viewed as an impediment to moving forward in a unified fashion and compromised team cohesiveness. Changing teacher teams causes stress and can hinder the functioning of the team especially during the implementation phase (Johnston, 2013).

Fear of change can be another barrier and normal issues such as anxiety, discomfort, and ongoing conflict often accompany change initiatives, especially in the early stages (Dufour, 1998). The current atmosphere of high-stakes testing and punitive accountability adds to the fear and causes educators to limit the curriculum at the expense of the needs of the whole child. Teachers are often reluctant to engage students in meaningful discussions related to metacognition, reflective thinking and problem solving for fear of failure to adequately prepare students for standardized tests (Wagner, 2008). Some believe education has become a complicated test score game which appears to be narrowing curriculum, uprooting successful programs, and pushing low achieving students out of many schools" (Darling-Hammond, 2007). Schools can no longer focus solely on the dissemination of facts and simply teaching to the test. Although a number of educational leaders proclaim that schools must address the needs of the whole child by providing a 21st century curriculum and ensuring just and comprehensive assessments (Laitsch, Lewallen, and McCloskey 2005), school reform efforts like Linked Learning may cause teachers to pause before deviating from traditional test preparation strategies.

Findings revealed this fear was especially evident in light of the STAAR scores and Texas Education Agency (TEA) Accountability Measures, which had been recently released. Concern that low performing schools were being asked to participate in such a departure for traditional teaching was expressed, and it was also suggested that district leadership take action, like California, to reduce consequences should test scores falter during implementation. Educational accountability in California is changing to more broadly reflect and encourage student preparation for college and careers, and the new system puts greater importance on local decision-making over how money is spent to best serve students (linkedlearning.org).

However, despite, the negative feedback, three members expressed a sense of hope and a commitment to Linked Learning. There was hope that new district leadership would steer teams back on course and provide much needed structure and support. One focus group member appeared inspired and stated, "I think that this work is really going to help move our students into the next level. I'm looking forward to seeing the results." In the same spirit another member proclaimed, "I agree with that. I'm looking forward to, in three or four years, actually having it down to science so that it's very project based and very experience based. Our budget allows and supports that, but we're not going back and reinventing the wheel. We're going to actually take it to the next level. I think this will be great for our kids. It's exactly what we need."

Research question 3: How cost effective is Linked Learning in achieving its professional development outcomes and early initiation activities?

Scholars and policymakers agree that improving teacher quality is key to improving student achievement and professional development is needed to achieve this

goal. As a result, a number of studies have focused on the cost-effectiveness of professional development efforts that stress the need to compare the effectiveness of the programs in relation to expenditures (Foster, Toma, & Troske, 2013, Knight, 2012). A Cost Effectiveness (CE) analysis was used in this study to evaluate the readiness activities in relation to their costs and effects with regard to producing the desired outcomes (Levin & McEwan, 2000). The CE analysis evaluated costs per person in relation to the effectiveness of readiness activities, but did not attempt to establish whether the total benefits exceeded total costs (Levin & McEwan, 2000). The analysis was an informal attempt to draw general comparisons and did not employ formulaic calculations.

Data revealed some activities were relatively more cost effective than others and the Pathway Design Institute appeared to be the most effective for the money. The Summer Institute received the poorest rating, and was also one of the least expensive activities in terms of per person cost. Funded by individual schools rather than the district, the site visit to Nashville, though attended by few participants, was somewhat more expensive than the large group workshop style experiences, but also rated high in terms of effectiveness. Training in the online tool, ConnectEd Studios, was viewed as highly effective and the cost was slightly more expensive than, but similar, to the other workshops. However, findings indicated the tool was seldom used. More information about the barriers to ConnectEd Studios usage needs to be gathered to further inform cost-effectiveness and future training efforts.

Implications and Recommendations

A carefully developed plan strategically implemented can greatly increase the success of school reform such as Linked Learning. Central administration personnel can enhance implementation by having a staff dedicated to Linked Learning and organizing a structured rollout with benchmarks, to which schools are accountable. Consistent leadership with clear focus and district support can provide the crucial support needed by schools to effectively implement the program. With a calendar of activities, expectations, and checkpoints along the way, schools could stay focused and move through the change process more efficiently and effectively.

Improving the training and providing meaningful and relevant professional development is crucial to successful implementation of any program (Kotter, 1995). At the time of the focus group, Pathway Design Teams were in the middle of a two-week Summer Institute specifically focused on aligning curriculum and developing a cross-curricular project. Comments indicated it was exactly the type of training they needed. "Actually getting you there to that point, I think what we are doing this week, working, giving teachers time to get it together and pay them to come in and plan so that they can work through all of the obstacles and questions and research what they need to research is probably the most effective." Master scheduling support could also be helpful as schools transform.

If schools are in varying stages of implementation a menu of opportunities might be offered to differentiate and individualize offerings based on identified needs. Additionally, action should be taken to reduce the number of initiatives schools must tackle simultaneously or failure on all fronts is likely, and in "Cracking the Code of

Change", Beer & Nohria, (2000) claim the reason for most failures is linked to an organization's rush to change and leaders end up "immersing themselves in an alphabet soup of initiatives" (para. 2), losing focus and becoming overwhelmed. This proliferation of suggestions often leads to halfhearted attempts at change, resulting in poor implementation (Beer & Nohria, 2000).

While this program evaluation focused on the implementation of Linked Learning, the lessons learned have broader applications to all districts and schools in the midst of reform. As new programs are implemented, it is essential to consider the components of organizational change and effective professional development. When innovative programs are piloted, such as in this case, program evaluations are necessary and useful, providing valuable information for correcting mistakes and making needed improvements in future implementation efforts. To develop a culture where adult learning is enduring and meaningful, change leaders must target a few practices, offer teachers and staff ongoing, sustained learning, and follow up workshops with support and coaching (Joyce &Showers, 2002; Fullan, 2001). Schools must create a sense of urgency, form a strong coalition, build a vision and effectively communicating it, remove obstacles, create quick wins, and build momentum for optimal and sustainable change to occur (Kotter, 1995). It is only then that quality sustainable change can be achieved.

Implications for Policy

Progressing through the stages of change is seldom a smooth process and in *Leading in a Culture of Change* (2001), author Michael Fullan describes the "implementation dip" as the "inevitable bumpiness and difficulties encountered as people learn new behaviors and beliefs." When school reforms, such as Linked Learning, are

introduced and implemented, there is often a "dip" in confidence levels in teachers and student performance (Fullan, 2001). Aware of this phenomenon and committed to innovative reform, a group of California school districts called CORE, the California Office to Reform Education, have pushed for autonomy to develop their own set of reform strategies, including Linked Learning. CORE's plan stresses shared accountability and a holistic approach to student evaluation with less emphasis on standardized tests. In August, 2013 U.S. Secretary of Education, Arne Duncan, granted CORE a waiver from certain accountability aspects of No Child Left Behind. Waivers are usually granted to states and this was the first waiver given to districts. CORE districts now have the flexibility to spend approximately $110 million in Title I funding in whatever way they believe will benefit their particular student populations (Amandolare, 2013).

Since Big District ISD is implementing Linked Learning district-wide and implementation dips are common in school reform, it is recommended that efforts be made to reduce the impact of accountability measures on schools. Efforts should be made to assist districts in obtaining waivers from state and federal agencies to reduce standardized testing and reduce sanctions against schools whose test scores may drop during the implementation phase. Accountability relief would provide for a safer environment for schools to use innovative strategies to increase student performance and reduce the achievement gap. With new accountability measures put in place by a recent House bill and the state education agency, coupled with pressure to meet Adequate Yearly Progress, accountability relief is more important than ever if schools are embark on much needed reform efforts.

Future Research

As school reform efforts continue, future research addressing all areas of organizational change (Lehman et al., 2002) could assist districts and schools through the change process by outlining key factors and suggesting effective strategies to effect change. A more extensive survey, that addresses all factors, could combine scale scores and yield an overall readiness score to more accurately determine the organization's readiness for implementation. In addition, examining the effectiveness of professional development through the lens of Kirkpatrick's (1998) four-stage model for evaluating the process and impact of training, could also lend valuable insight for future readiness activities.

Other research might explore principals' perceptions as they compare to teacher perceptions. Many "top-down" change efforts fail because leaders implement school reform without taking the time to gain support from and train all stakeholders (Fullan, 2001). Distinguishing between administrator and teacher perceptions was a limitation of this study, but differences in perceptions could be useful in modifying future implementation plans.

Additionally, more research on principal leadership styles could lend important information for choosing pilot implementation sites and leaders. In a study of leadership styles in effective California Linked Learning schools, Hamilton (2011) found principals with a distributive leadership style to be the most conducive to Linked Learning philosophy. Consideration of leadership style can guide the district to carefully select schools with a higher probability for success and train principals in the skills needed for successful implementation.

The Career Academy Support Network suggests that Linked Learning schools will see an increase in academic achievement, a decrease in dropout rates, higher rates of postsecondary participation and higher earning power in the world of work (Stern, Saroyan, and Hester, 2012). After Linked Learning has been implemented in the district a program evaluation should be conducted to evaluate effectiveness. The urgent need for school reform and the high cost of the program demand an evaluation to guarantee that all students are receiving an excellent and equitable education.

Concluding Thoughts

Beer and Nohria (2000) note that many traditional organizations have acknowledged, in theory at least, that they must either change or perish. Despite some individual victories, however, change remains difficult to accomplish, and few organizations manage the process successfully (Beer & Nohria, 2000). Richard Elmore (1999) emphatically states that existing structures of schooling are one of the biggest obstacles to student learning and he no longer believes in the institutional structure of public schooling. Research has ascertained that the importance of establishing organizational readiness for change is critical and studies have noted that organizations must take the time to complete each phase of preparation in a strategic manner for effective change to occur (Kotter, 1995).

Findings from this study revealed that some professional development activities, which engaged participants in collaborative, meaningful experiences relevant to their work appeared more helpful and cost-effective than others. It was also indicated that Pathway Design Teams who participated in the year of planning and professional development prior to full Linked Learning implementation, were at varying levels of

readiness for implementation, according to important factors proven to be essential to successful organizational change. Implementing change is much easier and more successful when it is planned carefully and built on a strong foundation. The Linked Learning initiation and professional development activities are aligned with this process and sequenced in such a way to build solidarity and make Linked Learning a part of the institutional culture.

The innovative school reform, Linked Learning, is designed to prepare students for both college and career by making connections between learning and the workplace through a personally relevant, engaging curricula. Judy Gilbert, director of talent at Google, stated learning to use a multi- disciplinary approach to problem solving is one of the most important skills educators can teach students in preparation to work at companies such as Google (Wagner, 2012).

If we can ensure schools achieve a high level of organizational readiness and Linked Learning is implemented with fidelity, this innovative school reform may positively impact student performance and decrease the achievement gap in Big District ISD. As districts and schools continue to implement Linked Learning, educators may use the findings of this study to inform planning and implementation decisions to enhance successful school reform. It is critical that public education take immediate action to ensure schools are adequately prepared to foster the 21st century skills students need to become productive adults and strong competitors in this complex, information-based global economy.

References

2012-2013 HSI Lists. (n.d.). *Home*. Retrieved March 2, 2014, from http://www.edexcelencia.org/research/2012-2013-hsi-lists

'A Nation at Risk' Turns 30: Where Did It Take Us?. (n.d.). *NEA Today RSS*. Retrieved March 2, 2014, from http://neatoday.org/2013/04/25/a-nation-at-risk-turns-30-where-did-it-take-us/

Aguilar, E. (2013). *The art of coaching: effective strategies for school transformation*. San Francisco: Jon Wiley & Sons.

Alch, M. L. (2008). Get ready for a new type of worker in the workplace: the net generation. *Supervision, 69*(6), 18-21.

Amandolare, S. (2013, August 29). Q&A with Rick Miller: California district waivers mean tougher accountability, but less focus on tests. *The Hechinger Report*. Retrieved October 3, 2014, from http://hechingerreport.org/?s=rick+miller

Applebaum, S. H., Habashey, S., Malo, J., & Shafiq, H. (2012). Back to the future: revisiting Kotter's 1996 change model. *The Journal of Business Management, 31*(8), 764-782.

Ary, D., Jacobs, L. C., & Razavieh, A. (1972). *Introduction to research in education*. New York: Holt, Rinehart and Winston.

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

Banchero, S. (2013, Dec 03). U.S. high-school students slip in global rankings. *Wall Street Journal (Online)*. Retrieved from http://search.proquest.com.ezproxy.lib.uh.edu/docview/12987814?accountid=7107

Bartol, K. M. (1979). Professionalism as a Predictor of Organizational Commitment, Role Stress, and Turnover: A Multidimensional Approach. *Academy of Management Journal*, *22*(4), 815-821.

Bellanca, J. A., & Brandt, R. S. (2010). *21st century skills: rethinking how students learn*. Bloomington, IN: Solution Tree Press.

Bennett, W. (2012, February 9). U.S lag in science, math a disaster in the making. *CNN*. Retrieved March 4, 2014, from http://www.cnn.com/2012/02/09/opinion/bennett-stem-education/

Blair, L. A. (n.d.). Strategies for Success: Implementing a Comprehensive School Reform Program. *Welcome to SEDL: Advancing Research, Improving Education*. Retrieved March 2, 2014, from http://www.sedl.org/

Boone, Jr., H. N., & Boone, D. A. (2012). Analyzing Likert data. *Journal of Extension, 50*(2), 27-32. Retrieved October 2, 2014, from http://www.joe.org/joe/2012april/tt2.php

Brinkerhoff, J. (2006). Effects of a Long-Duration, Professional Development Academy on Technology Skills, Computer Self-Efficacy, and Technology Integration Beliefs and Practices. *Journal of Research on Technology in Education, 39* (Fall 2006), 22-43.

Brown, B. S. (1997). Staffing patterns and services for the war on drugs. In J. A. Egertson, D. M.Fox, & A. I. Leshner (Eds.), *Treating drug abusers effectively* (pp. 99–124). Cambridge, MA: Blackwell Publishers.

Brown, S. P., Ganesan, S., & Challagalla, G. (2001). Self-efficacy as a moderator of information-seeking effectiveness. *Journal of Applied Psychology*, *86*(5), 1043-1051.

Burrington, D. D. (1987). Organization development in the Utah Department of Public Safety. *Public Personnel Management*, 16 (2), 115–125.

Cain, Ebony Cheir'ee. (2012). Preparation for Civic Life Matters Understanding the Role of Civic Learning in the Linked Learning Reform. UCLA: Education 0249. Retrieved from: http://www.escholarship.org/uc/item/5m9167kx

Calvert, L. (n.d.). Secretary Duncan mines ideas from teachers. *U. S. Department of Education*. Retrieved February 28, 2014, from http://www.ed.gov/blog/2010/12-secretary-duncan-mines-pd-ideas-from-teachers/

Career Academy Support Network. 2012. *Comparing students in each California Partnership academy with non-academy students at the same high school, 2009-2010.* Berkeley, Ca. Stern, D. Saroyan, P. Hester, C.H.

Chong, W. H., & Kong, C. A. (2012). Teacher Collaborative Learning and Teacher Self-Efficacy: The Case of Lesson Study. *The Journal of Experimental Education, 80*(3), 263-283.

Clapper, T. C. (2010). Beyond Knowles: What Those Conducting Simulation Need to Know About Adult Learning Theory? *Clinical Simulation in Nursing, 6*(1), e7-e14.

Cohen, D. K., & Hill, H. C. (2001). *Learning policy*. New Haven, CT: Yale University Press.

ConnectEd California: Home. (n.d.). *ConnectEd California: Home*. Retrieved February 27, 2014, from http://connectedcalifornia.org/

Cooper, J. D. (n.d.). Professional development: An effective research-based model. *Washington STEM*. Retrieved March 1, 2014, from http://www.washingtonstem.org/

Costa, A. L., & Kallick, B. (2000). *Discovering & exploring habits of mind*. Alexandria,

Va.: Association for Supervision and Curriculum Development.

Costa, A. L. (2001). *Developing minds: a resource book for teaching thinking* (3rd Ed.). Alexandria, Va.: Association for Supervision and Curriculum Development.

Costa, A. L., & O'Leary, P. W. (2013). *The power of the social brain: teaching, learning, and interdependent thinking*. New York: Teachers College Press.

Creswell, J. W. (2003). *Research design: qualitative, quantitative, and mixed method approaches* (2nd Ed.). Thousand Oaks, Calif.: Sage Publications.

Curwood, J. S. (2011). Teachers as Learners: What makes technology-focused professional development effective? *English in Australia, 46*(3), 68-75.

Darling-Hammond, L. (2007, May 2). Evaluating 'No Child Left Behind'. *The Nation, 284*, 11.

Darling-Hammond, L. (2010, January 27). Big Thinkers: Linda Darling-Hammond on Becoming Internationally Competitive. *Edutopia*. Retrieved March 4, 2014, from http://www.edutopia.org/international-teaching-learning-assessment-video

Darling-Hammond, L. (1997). *Doing what matters most: Investing in quality teaching*. Kurtztown, PA: National Commission on Teaching and America's Future.

Darling-Hammond, L. (1999). *Teacher quality and student achievement: A review of state policy evidence*. Center for the Study of Teaching and Policy, University of Washington.

Darling-Hammond, L., Wei, R. C., Andree, A., Richardson, N., & Orphanos, S. (2009). *Professional Learning in the Learning Profession: A Status Report on Teacher Development in the United States and Abroad*. Stanford: National Staff Development Council and the School Redesign Network at Stanford University.

Dede, C. (2012). *Digital teaching platforms: customizing classroom learning for each*

student. New York: Teachers College Press.

Desimone, L., Porter, A., Garet, M., Yoon, K., & Birman, B. (2002). *Effects of professional development on teachers' instruction: Results from a three-year longitudinal study*. Education Evaluation and Policy Analysis, 24(2), 81-112.

Dictionary. (n.d.). *Merriam-Webster*. Retrieved March 3, 2014, from http://www.merriam-webster.com/

DuFour, R., & Eaker, R. E. (1998). *Professional learning communities at work: best practices for enhancing student achievement*. Bloomington, Ind.: National Education Service.

Duckworth, A. L., & Seligman, M. E. (2005). Self-Discipline Outdoes IQ In Predicting Academic Performance Of Adolescents. *Psychological Science*, *16*(12), 939-944.

Elmore, R. (1999). Building a New Structure for School Leadership. *American Educator*, *Winter*, 1-9.

Elmore, R. F. (1979). Backward Mapping: Implementation Research and Policy Decisions. *Political Science Quarterly*, *94*(4), 601.

Engineering Emergency. (n.d.). *Welcome to Change the Equation*. Retrieved March 7, 2014, from http://changetheequation.org/

Feist, L. (2003, June 1). Removing Barriers to Professional Development. *T H E Journal*, *30*, 30.

Fishbein, M. (1995). Developing effective behavior change interventions: some lessons learned from behavioral research. In T. E. Backer, S. L. David, & G. Soucy (Eds.), *Reviewing the behavioral science knowledge base on technology transfer* (NIDA Research Monograph 155, NIH Publication No. 95–4035). Rockville, MD: National Institute on Drug Abuse

Fitzpatrick, J. L., Sanders, J. R., & Wortham, B. R. (2012). *Program evaluation: alternative approaches and practical guidelines* (4. ed.). Boston, Mass: Pearson.

Foley, G. (2000). *Understanding adult education and training* (2nd ed.). St. Leonards, N.S.W.: Allen & Unwin.

Foster, J. M., Toma, E. F., & Troske, S. P. (2013). Does Teacher professional development improve math and science outcomes and Is It cost effective? *Journal of Education Finance, 38*(3), 254-275.

Framework for 21st Century Learning - The Partnership for 21st Century Skills. (n.d.). *The Partnership for 21st Century Skills*. Retrieved July 24, 2013, from http://www.p21.org/overview/skills-framework

Friedman, T. L. (2005). *The world is flat: a brief history of the twenty-first century*. New York: Farrar, Straus and Giroux.

Friedman, T. L., & Mandelbaum, M. (2011). *That used to be us: how America fell behind in the world it invented and how we can come back.* New York: Farrar, Straus and Giroux.

Fullan, M. (2002, May). The change leader. *Educational Leadership, 59,* 16.

Galvin, D. J. (2012). The Transformation of Political Institutions: Investments in Institutional Resources and Gradual Change in the National Party Committees. *Studies in American Political Development, 26*(01), 50-70.

Gardner, H. (2006). *Intelligence reframed: multiple intelligences for the 21st century*. New York, NY: Basic Books.

Garet, M., Porter, A., Desimone, L., Birman, B., & Yoon, K.S. (2001). *What makes professional development effective*? Results from a national sample of teachers.

American Educational Research Journal, 38(4).

Gersten, R., Chard, D., & Baker, S. (2000) *Factors that enhance sustained use of research-based instructional practices: A historical perspective on relevant research.* Journal of Learning Disabilities, 33, *445-457.*

Glaser, B. G., & Strauss, A. L. (1965). *Awareness of dying, by Barney G. Glaser and Anselm L.Strauss.* Chicago: Aldine.

Goddard, R. D., Hoy, W. K., & Hoy, A. W. (2000). Collective Teacher Efficacy: Its Meaning, Measure, And Impact On Student Achievement. *American Educational Research Journal*, *37*(2), 479-507.

Gordon, E. W., & Bridglall, B. L. (2007). *Affirmative development: cultivating academic ability*. Lanham: Rowman & Littlefield Publishing.

Graduation rates. (n.d.). *College Completion*. Retrieved March 7, 2014, from http://collegecompletion.chronicle.com/state/

Graham, E. (2013, April 25). â€˜A Nation at Riskâ€™ Turns 30: Where Did It Take Us?. *NEA Today RSS*. Retrieved March 7, 2014, from http://neatoday.org/2013/04/25/a-nation-at-risk-turns-30-where-did-it-take-us/

Graves, J. (2012). The 10 Best Jobs. *US News RSS*. Retrieved March 4, 2014, from http://money.usnews.com/money/careers/slideshows/the-10-best-jobs

Gregson, J. A., & Sturko, P. A. (2007). Teachers as Adult Learners: Re-conceptionalizing Professional Development. *MPAEA Journal of Adult Education, 36*(1), 1-18.

Gulick, J. (n.d.). All-Access Membership. *Lubbock Online*. Retrieved February 27, 2014, from http://lubbockonline.com/

Guskey, T. (2002, March). Does it Make a Difference? Evaluating professional development. *Educational Leadership, 59*, 45-51.

HISD wins $30 million Race to the Top grant. (n.d.). *Houston Chronicle*. Retrieved March 2, 2014, from http://www.chron.com/news/houston-texas/houston/article/HISD-wins-30-million-Race-to-the-Top-grant-5072101.php

Habits of Mind |. (n.d.). *Habits of Mind* |. Retrieved February 27, 2014, from http://www.habitsofmind.org/

Hall, R. H. (1968). Professionalization and bureaucratization. *American Sociological Review*, 33, 92–104.

Hamilton, E. (2011). *Linked learning leadership: Exploring leadership practices within California's linked learning schools.* (Order No. 3515040, University of California, Los Angeles). *ProQuest Dissertations and Theses*, 234. Retrieved from http://search.proquest.com.ezproxy.lib.uh.edu/docview/1022236499?accountid=7107 (1022236499).

Hammond, L., & Sykes, G. (1999). *Teaching as the learning profession: handbook of policy and practice*. San Francisco: Jossey-Bass Publishers.

Heinrich, H. (n.d.). Report Stresses Raising College Graduation Rates for Latinos. Retrieved August 9, 2013, from http://www.texastribune.org/texas-education/higher-education/meet-national-goals-latino-graduation-rates-are-key

Higginbotham, B. J., & Vaterlaus, J. M. (n.d.). Qualitative program evaluation methods. *North Carolina State University*. Retrieved February 28, 2014, from http://www.ncsu.edu/

Hirsh, S., & Killion, J. (2009). When Educators Learn Students Learn: Eight Principles of Professional Learning. *Phi Delta Kappan*, *90*(7), 464-469.

Home Page - The Broad Foundation. (n.d.). *Home Page - The Broad Foundation*.

Retrieved March 7, 2014, from http://www.broadfoundation.org/

Home Page - The Broad Foundation. (n.d.). *Home Page - The Broad Foundation*. Retrieved February 28, 2014, from http://www.broadfoundation.org/

Homepage. (n.d.). *CipherCloud RSS2*. Retrieved March 2, 2014, from http://www.ciphercloud.com/

Hord, S. M., & Hirsch, S. A. (2009, February). The principal's role in supporting learning communities. *Educational Leadership, 66*, 22-23.

Hord, S. M. (1987). *Taking charge of change*. Alexandria, Va.: Association for Supervision and Curriculum Development.

Hord, S. (1997). *Professional learning communities: Communities of continuous inquiry and improvement.* Austin, TX: Southwest Educational Development Laboratory.

Howard, T. C. (2010). *Why race and culture matter in schools: closing the achievement gap in America's classrooms*. New York, N.Y.: Teachers College Press.

Hunzicker, J. (2011). Effective professional development for teachers: a checklist. *Professional Development in Education*, *37*(2), 177-179.

'Insights With Angela Creager'. (2014). *Princeton University*. Retrieved March 1, 2014, from http://www.princeton.edu/

Johnson, P. (2009). Membership. *Educational Leadership:Teaching for the 21st Century:The 21st Century Skills Movement*. Retrieved June 17, 2013, from http://www.ascd.org/publications/educational-leadership/sept09/vol67/num01/The-21st-Century-Skills-Movement.aspx

Jones, A. P., & James, L. R. (1979). Psychological climate: dimensions and relationships of individual and aggregated work environment perceptions. *Organizational Behavior and Human Performance*, 23, 201–250.

Johnston, Anne T. (2013). *At the Crux of a Systemic Reform: California Partnership Academy Lead Teachers in Comprehensive High Schools in a Linked Learning District*. UC Berkeley: Education. Retrieved from: http://www.escholarship.org/uc/item/73z9k3dh

Joyce, B., & Showers, B. (2002). *Student achievement through staff development* (3rd ed.). Alexandria, VA: Association for Supervision and Curriculum Development.

Joyce, B., & Calhoun, E. (1996). *Learning experiences in school renewal: An exploration of five successful programs*. Eugene, OR: ERIC Clearinghouse on Educational Management

Keiny, S. (1996). A Community of Learners: promoting teachers to become learners. *Teachers and Teaching*, *2*(2), 243-272.

Kirkpatrick, D. L. (1998). *Evaluating training programs the four levels* (2nd ed.). San Francisco, Calif.: Berrett-Koehler Publishers.

Knapp, M. S. (2003). *Professional development as policy pathway.* Review of Research in Education 27(1), 109-157.

Knight, D. (2012). Assessing the cost of instructional coaching. *Journal of Education Finance*, *38*(1), 52-80.

Knowles, M. S. (1980). *The modern practice of adult education: from pedagogy to andragogy* (Rev. and Updated. ed.). Wilton, Conn.: Association Press

Kolb, A. Y., & Kolb, D. A. (2005). Learning Styles and Learning Spaces: Enhancing Experiential Learning in Higher Education. *Academy of Management Learning & Education*, *4*(2), 193-212.

Kotter, J. (1995). Leading Change: Why Transformation Efforts Fail. Harvard Management Review 73 (2), 59â€“67 (March/April 1995). *Long Range Planning*,

28(3), 121.

Kotter, J. P. (1996). *Leading change*. Boston, Mass.: Harvard Business School Press.

Kurzweil, R. (2001, March 7). KurzweilAI | Accelerating Intelligence. *The Law of Accelerating Returns Comments*. Retrieved March 7, 2014, from http://www.kurzweilai.net/the-law-of-accelerating-returns

Laitch, D., Lewallen, T., & McCloskey, M. (2005). A framework for education in the 21st century. *ASCD Infobrief: The Whole Child*. Retrieved March 7, 2014, from http://www.ascd.org/publications/newsletters/policy-priorities/feb05/num40/toc.aspx

Latchem, C. R. (2001). *Leadership for 21st century learning: global perspectives from educational innovators*. London: Kogan

LeCompte, M., & Preissle, J. (1994). Qualitative research: what it is, what it isn't, and how it's done. *Advances in Social Sciences Methodology, 3*, 141-163.

Learning Point Associates. (n.d.). *Home*. Retrieved February 27, 2014, from http://www.learningpt.org/

Lehman, W. E., Greener, J. M., & Simpson, D. (2002). Assessing Organizational Readiness for Change. *Journal of Substance Abuse Treatment*, *22*(4), 197-209.

Levin, H. M. (2001). *Cost-effectiveness analysis*. Beverly Hills: Sage Publications.

Likert, R. (1932). A technique for the measurement of attitudes. *Archives of Psychology*, *22*(140), 1-55.

Linked Learning: Can Career and Technical Education Programs Take California High Schools into the 21st Century? Adams, Brian Edward. California Lutheran University, ProQuest,
UMI Dissertations Publishing, 2012. 3544947

Louis, K. S., Marks, H. M., & Kruse, S. (1996). *Professional community in restructuring schools*. American Educational Research Journal, 33, 757-798.

Markham, T., Larmer, J., & Ravitz, J. L. (2003). *Project based learning handbook: a guide to standards-focused project based learning for middle and high school teachers* (2nd ed.). Novato, Calif.: Buck Institute for Education.

McGill-Franzen, A., Allington, R. L., Yokio, L., & Brooks, G. (1999). *Putting books in the classroom seems necessary but not sufficient*. The Journal of Educational research 93(2), 67-74.

McLaughlin, M. W., & J. E. Talbert (2001). *Professional communities and the work of high school teaching*. Chicago: University Of Chicago Press.

Mellon, E. (n.d.). Race for reform. *District Administration Magazine* |. Retrieved March 2, 2014, from http://www.districtadministration.com/

Membership. (n.d.). *Educational Leadership:Beyond Instructional Leadership:The Change Leader*. Retrieved March 2, 2014, from: http://www.ascd.org/publications/educational-leadership/may02/vol59/num08/The-Change-Leader.aspx

Merriam, S. B. (2002). *Qualitative research in practice: examples for discussion and analysis*. San Francisco: Jossey-Bass.

Mezirow, J. (1991). *Transformative dimensions of adult learning*. San Francisco: Jossey-Bass.

National Center for Education Statistics (NCES) Home Page, a part of the U.S. Department of Education. (n.d.). *National Center for Education Statistics (NCES) Home Page, a part of the U.S. Department of Education*. Retrieved March 5,

2014, from http://nces.ed.gov/

Natsiopoulou, E., & Giouroukakis, V. (n.d.). Membership. *Educational Leadership:Reimagining School:When Teachers Run the School*. Retrieved October 19, 2014, from http://www.ascd.org/publications/educational-leadership/apr10/vol67/num07/When-Teachers-Run-the-School.aspx

New data demonstrate effectiveness, progress of the linked learning district initiative. (February 25, 2014). *States News Service*, p. States News Service, Feb 25, 2014.

New Tech 21st Century High School Model. (n.d.). *bobpearlman.org*. Retrieved July 24, 2013, from http://www.bobpearlman.org/newtechfoundation/newtech21.htm

Newmann, F. M., & Wehlage, G. (1995). *Successful school restructuring: a report to the public and educators by the Center on Organization and Restructuring of Schools*. Madison, WI: The Center.

Newton South High School in NEWTON CENTRE, MA | Best High Schools | US News. (n.d.). *US News & World Report | News & Rankings | Best Colleges, Best Hospitals, and more*. Retrieved July 24, 2013, from http://www.usnews.com/education/best-high-schools/massachusetts/districts/newton/newton-south-high-school-9462

Oakes, J. and Saunders, M. (2008). *Beyond Tracking: Multiple Pathways to college, career, and civic engagement.* Cambridge: Harvard Education Press.

Obama Administration Approves NCLB Waiver Request for California CORE Districts. (2013, August 6). *U.S. Department of Education*. Retrieved October 5, 2014, from http://www.ed.gov/news/press-releases/obama-administration-approves-nclb-waiver-request-california-core-districts

Online Learning: A smart choice for adult learners. (2012, September 1). *Continuing*

Education News Center. Retrieved March 1, 2014, from: http://cenewscenter.rutgers.edu/

Palfrey, J. G., & Gasser, U. (2008). *Born digital: understanding the first generation of digital natives*. New York: Basic Books.

Pink, D. H. (2006). *A whole new mind: why right-brainers will rule the future*. New York: Riverhead Books.

Pinto, J. (2009, January 12). Global outsourcing has downsides. *InTech*. Retrieved March 6, 2014, from http://www.isa.org/InTechTemplate.cfm?template=/ContentManagement/ContentDisplay.cfm&ContentID=79776

Pond, S. B. (1984). The Importance of Employee Expectations in Organizational Diagnosis. *The Journal of Applied Behavioral Science*, *20*(2), 167-180.

Prensky, M. (2001). Digital Natives, Digital Immigrants Part 1. *On the Horizon*, *9*(5), 1-6.

Projects at High Tech High. (n.d.). *High Tech High*. Retrieved July 24, 2013, from http://www.hightechhigh.org/projects/

RAND Corporation Provides Objective Research Services and Public Policy Analysis. (n.d.). *NEWS | RAND*. Retrieved July 23, 2013, from http://www.rand.org/pubs/periodicals/rand-review/issues/spring2004/news.html

Race to the Top. (n.d.). *The White House*. Retrieved March 2, 2014, from http://www.whitehouse.gov/issues/education/k-12/race-to-the-top

Ravitch, D., & Cortese, A. (2009). Why We're Behind: a Report by Common Core. *Grantmakers in the Arts*. Retrieved March 7, 2014, from http://www.giarts.org/article/why-were-behind-report-common-core

Roberts, Jennifer A. *Voices of worth- listening to teachers: A phenomenological study of*

professional development and instructional change. Denton, Texas. UNT Digital Library. http://digital.library.unt.edu/ark:/67531/metadc9831/. Accessed September 29, 2014.

Roberts, L. (2000). Beyond Moore's law: Internet growth trends. *Computer*, *33*(1), 117-119.

Robinson, K., & Aronica, L. (2009). *The element: how finding your passion changes everything*. New York: Viking.

Rogers-Chapman, F. Darling-Hammond, L. (2013). *Preparing 21st century citizens: the role of work-based learning in linked learning.* Retrieved from: http://edpolicy.stanford.edu/node/661

Rosen, L. (2014, February 20). Engineering Emergency. *Welcome to Change the Equation*. Retrieved March 2, 2014, from http://changetheequation.org/

Rotherham, A., & Willingham, D. (2009, September). 21st Century Skills: The Challenges Ahead. *Educational Leadership*, *67*, 16-21.

Ryan, G. W., & Bernard, H. R. (n.d.). Techniques to identify themes in qualitative data. *Analytic Technologies*. Retrieved March 2, 2014, from http://analytictech.com/

Schmoker, M. J. (1999). *Results the key to continuous school improvement* (2nd ed.). Alexandria, Va.: Association for Supervision and Curriculum Development.

Schulz, N. (2012, January 22). Viewpoint. *Economy: America seems poised to take off during 2012*. Retrieved March 6, 2014, from http://www.gainesvilletimes.com/archives/62154/

Seidman, I. (2006). *Interviewing as qualitative research: a guide for researchers in education and the social sciences* (2nd ed.). New York: Teachers College Press.

Showers, B. (1987). Synthesis of Research on Staff Development: A Framework for

Future Study and a State-of-the-Art Analysis. *Educational Leadership, 45*(3), 77.

Showers, B., Joyce, B., and Bennett, B. (1987). "Synthesis of research on staff development: A framework for future study and a state-of-the-art analysis." Educational Leadership, 45 (3), 77–87.

Simpson, D. (2002). A conceptual framework for transferring research to practice. *Journal of Substance Abuse Treatment, 22*(4), 171-182.

Snow-Renner, R., & Lauer, P. (2005). *Professional development analysis*. Denver, CO: Mid-Content Research for Education and Learning.

Sparks, D., and Hirsh, S. (1997). *A new vision for staff development.* Alexandria, VA: Association for Supervision and Curriculum Development

Sparks, G. M. (1983). Synthesis of research on staff development for effective teaching. *Educational Leadership*, 41 (3), 65–72.

Sternberg, R. J., & Zhang, L. (2001). *Perspectives on thinking, learning, and cognitive styles*. Mahwah, N.J.: Lawrence Erlbaum Associates.

Strauss, A. L., & Corbin, J. M. (1990). *Basics of qualitative research: grounded theory procedures and techniques*. Newbury Park, Calif.: Sage Publications.

Sturko, P., & Holyoke, L. (2009). Evaluating professional development that prepares teachers to integrate academic skills into technical curricula. *Professional Development in Education, 35*(2), 211-225.

Succ*essful California schools in the context of educational adequacy*. (2007). Washington D.C.: American Institute for Research.

Sullivan, G. M., & Artino, A. R. (2013). Analyzing and interpreting data from Likert-type scales. *Journal of Graduate Medical Education, 5*(4), 541-542.

Supovitz, J. A., Mayer, D. P., & Kahle, J. B. (2000). *Promoting inquiry based*

instructional practice: The longitudinal impact of professional development in the context of systemic reform. Educational Policy 14(3), 331-356.

Taylor, G. (1930, July 13). Is Silicon Dead, or Can We Expect More From Mooreâ€™s Law?. *Wired.com*. Retrieved March 7, 2014, from http://www.wired.com/insights/2013/08/is-silicon-dead-or-can-we-expect-more-from-moores-law/

The Glossary of Education Reform for Journalists, Parents, and Community Members. (n.d.). *The Glossary of Education Reform*. Retrieved March 6, 2014, from http://edglossary.org/

The Glossary of Education Reform for Journalists, Parents, and Community Members. (n.d.). *The Glossary of Education Reform*. Retrieved March 7, 2014, from http://edglossary.org/

The International Baccalaureate | The IB offers high quality programmes of international education to a worldwide community of schools. (n.d.). *The International Baccalaureate | The IB offers high quality programmes of international education to a worldwide community of schools*. Retrieved February 26, 2014, from http://www.ibo.org/

Timperley, H. (2005). Distributive Leadership: Developing Theory from Practice. *J. Curriculum Studies, 00,* 1-26.

The James Irvine Foundation. (n.d.). *The James Irvine Foundation*. Retrieved February 12, 2014, from http://irvine.org/index.php?option=com_content&view=article&id=891&cx=0157779835869281226 60%3Aysqwhgdmqze&cof=FORID%3A11&ie=UTF-8&q=pathway

The Partnership for 21st Century Skills. (n.d.). -. Retrieved February 27, 2014, from http://www.p21.org/index.php?option=com_content&id=351&Itemid=120

The White House. (n.d.). *The White House*. Retrieved February 28, 2014, from http://www.whitehouse.gov/

Thomas, M. (2013, May 20). In an era of standardized tests, does art have a place in the classroom?. *Pittsburg Post-Gazette*. Retrieved February 27, 2014, from http://www.post-gazette.com/neighborhoods-south/2013/05/30/In-an-era-of-standardized-tests-does-art-have-a-place-in-the-classroom/stories/201305300237#ixzz2VUO41evY

TIMSS 2011 International Results in Mathematics. (n.d.). Retrieved August 3, 2013, from http://timssandpirls.bc.edu/timss2011/international-results-mathematics.html

Tolson, M. (2014, January 9). Number of faltering Texas schools doubles. *Houston Chronicle*, p. E1.

Trilling, B., & Fadel, C. (2009). *21st century skills: learning for life in our times*. San Francisco: Jossey-Bass.

U.S. Department of Education Releases Blueprint to Transform Career and Technical Education. (n.d.). *U.S. Department of Education*. Retrieved March 2, 2014, from https://www.ed.gov/news/press-releases/us-department-education-releases-blueprint-transform-career-and-technical-educat

Wagner, T. (2008). *The global achievement gap: why even our best schools don't teach the new survival skills our children need--and what we can do about it*. New York: Basic Books.

Wagner, T., & Compton, R. A. (2012). *Creating innovators: the making of young people*

who will change the world. New York: Scribner.

Weiner, B. J. (2009). A Theory of Organizational Readiness for Change. *Implementation Science*, *4*(1), 67.

Weiss, I. R., & Pasley J. D. (2006). *Scaling up instructional improvement through teacher professional development: Insights from the local systemic change initiative*. Philadelphia, PA: Consortium for Policy Research in Education (CPRE) Policy Briefs.

Welcome to the Texas Education Agency. (n.d.). *Texas Education Agency*. Retrieved March 4, 2014, from http://www.tea.state.tx.us/

Wells, J. (2011). International Education, Values and Attitudes: A Critical Analysis of the International Baccalaureate (IB) Learner Profile. *Journal of Research in International Education*, *10*(2), 174-188.

Welsh, P. (2013, September 29). Four Decades of Failed School Reform. *The Washington Post*, pp. 1-4.

Wenger, E. (1998). *Communities of practice: learning, meaning, and identity*. Cambridge, U.K.: Cambridge University Press.

What Is Standards-Based Reform?. (n.d.). *What Is Standards-Based Reform?*. Retrieved March 6, 2014, from: http://www.stanford.edu/~hakuta/www/archives/syllabi/CalTex_SBR/whatissbr.html

Zhu, Y. (2009). Zhongwei Zhao and Fei Guo (eds): Transition and Challenge: China Population at the Beginning of the 21st Century. *Journal of Population Research*, *26*(1), 103-105.

Appendix A

UNIVERSITY of HOUSTON

DIVISION OF RESEARCH

May 9, 2014

Paula Fendley
c/o Dr. Robin McGlohn
Dean, Education

Dear Paula Fendley,

The University of Houston Committee for the Protection of Human Subjects (1) reviewed your research proposal entitled "An Evaluation Of Linked Learning Early Initiation Activities and Professional Development Practices In Seven High Schools In One Large Urban School District" on April 18, 2014, according to federal regulations and institutional policies and procedures.

At that time, your project was granted approval contingent upon your agreement to modify your protocol as stipulated by the Committee. The changes you have made adequately fulfill the requested contingencies, and your project is now **APPROVED**.

- **Approval Date: May 9, 2014**
- **Expiration Date: May 8, 2015**

As required by federal regulations governing research in human subjects, research procedures (including recruitment, informed consent, intervention, data collection or data analysis) may not be conducted after the expiration date.

To ensure that no lapse in approval or ongoing research occurs, please ensure that your protocol is resubmitted in RAMP for renewal by the **deadline for the April 2015** CPHS meeting. Deadlines for submission are located on the CPHS website.

During the course of the research, the following must also be submitted to the CPHS:

- Any proposed changes to the approved protocol, prior to initiation; AND
- Any unanticipated events (including adverse events, injuries, or outcomes) involving possible risk to subjects or others, within 10 working days.

If you have any questions, please contact Samoya Copeland at (713) 743-9534.

Sincerely yours,

Daniel O'Connor

Dr. Daniel O'Connor, Chair
Committee for the Protection of Human Subjects (1)

PLEASE NOTE: All subjects must receive a copy of the informed consent document, if one is approved for use. All research data, including signed consent documents, must be retained according to the University of Houston Data Retention Policy (found on the CPHS website) as well as requirements of the FDA and external sponsor(s), if applicable. Faculty sponsors are responsible for retaining data for student projects on the UH campus for the required period of record retention.

Protocol Number: 14348-01 Full Review: X Expedited Review: __

316 E. Cullen Building Houston, TX 77204-2015 (713) 743-9204 Fax: (713) 743-9577
COMMITTEES FOR THE PROTECTION OF HUMAN SUBJECTS

Appendix B

Linked Learning Readiness Activities Survey

	Disagree Strongly	Disagree	Uncertain	Agree	Agree Strongly
RESOURCES					
Staffing					
1. School staff have the skills needed to implement Linked Learning	☐	☐	☐	☐	☐
2. A larger support staff is needed to help meet Linked Learning needs.	☐	☐	☐	☐	☐
3. School staff will have enough time to complete assigned Linked Learning duties.	☐	☐	☐	☐	☐
Training					
4. The Summer Institute adequately prepared me to design and implement project-based learning.	☐	☐	☐	☐	☐
5. The Readiness Assessment and Asset Mapping meeting in April, 2013 caused me to want to participate in Linked Learning.	☐	☐	☐	☐	☐
6. You found the site visits to Linked Learning schools in Long Beach to be extremely helpful.	☐	☐	☐	☐	☐
7. You found the site visits to Linked Learning schools in Nashville to be extremely helpful.	☐	☐	☐	☐	☐
8. The Pathway Design Institute in December, 2013 helped my team create an implementation plan.	☐	☐	☐	☐	☐
9. The master scheduling consultation provided effective individualized training.	☐	☐	☐	☐	☐
10. You have benefitted from Linked Learning coaching.	☐	☐	☐	☐	☐
11. The monthly principal meetings were helpful in facilitating a community of practice.	☐	☐	☐	☐	☐

Instructional Support

12. You have frequently used the ConnectEd Studios tool.	☐	☐	☐	☐	☐
13. You find the online ConnectEd Studios tool easy to use.	☐	☐	☐	☐	☐
14. You find the online ConnectEd Studios tool useful.	☐	☐	☐	☐	☐
15. You need more instructional resources to successfully implement Linked Learning.	☐	☐	☐	☐	☐

STAFF ATTRIBUTES

Efficacy

16. You have the skills needed to effectively implement Linked Learning.	☐	☐	☐	☐	☐
17. Your pathway design team is prepared to implement the new initiative.	☐	☐	☐	☐	☐
18. You are confident about implementing the new initiative.	☐	☐	☐	☐	☐

ORGANIZATIONAL CLIMATE

Mission

19. Some staff members do not understand the main goals of Linked Learning.	☐	☐	☐	☐	☐
20. School staff understand how this approach fits into the school's vision.	☐	☐	☐	☐	☐
21. School administrators have a clear plan for implementing the approach.	☐	☐	☐	☐	☐
22. School staff understand the expected Linked Learning student outcomes.	☐	☐	☐	☐	☐

Change

23. At my school most staff members are supportive of the new initiative.	☐	☐	☐	☐	☐
24. The general attitude at my school is to change things that are not working.	☐	☐	☐	☐	☐

Training Needs

You need more training for –

25. Designing and implementing cross-curricular projects……	☐	☐	☐	☐	☐
26. Integrating Linked Learning with state standards ……	☐	☐	☐	☐	☐
27. Using the online ConnectEd Studios tool…….	☐	☐	☐	☐	☐

Comments:

28. What did you find to be most effective? Why?

29. What did you find least effective? Why?

30. Do you have any other comments?

Appendix C

Recruitment Script

May, 2014

Dear_____,

Thank you for agreeing to participate in this study. I appreciate your willingness to participate in a focus group as part of my University of Houston doctoral study. As you know, my dissertation is entitled "An Evaluation of Linked Learning Early Initiation Activities and Professional Development Practices In Seven High Schools In One Large Urban School District".

I have your Chief School Officer's support and permission as well as HISD's to ask you to participate in a confidential study, I will be audio-recording the focus group for my analysis purposes only. No one besides me is authorized to review the audiotapes. You will be given a code number and there will be absolutely no identifying information reported in my dissertation. I will ask you to sign for consent to participate in the focus group, be audiotaped, and permission to publish or use the results in a presentation. Attached you will find a copy of the consent form and Subject Rights document required as part of this study. I will have additional copies of this paperwork for you at the time of the focus group. I am so appreciative for your willingness to participate. You are part of improving the readiness activities and helping make Linked Learning a success in our district. I look forward to seeing you on_____,_____at_____.

Please e-mail me at pkfendley@uh.edu if you have any questions.

Best Regards,

Paula Fendley

This project has been reviewed by the University of Houston, Committee for the

Appendix C

Protection of Human Subjects (713) 743-9204.

Appendix D

CONFIDENTIAL RESEARCH CONSENT

PROJECT TITLE:

An Evaluation Of Linked Learning Early Initiation Activities And Professional Development

Practices In Seven High Schools In One Large Urban School District

You are being invited to participate in a research project conducted by Paula Fendley, Doctoral student, from the Executive Education Program in the College of Education at the University of

Houston. The purpose of this study is to examine Pathway Design Team members' perceptions of the effectiveness and efficiency of early initiation activities and professional development of

Linked Learning. This study is being conducted as part of Ms. Fendley's doctoral thesis under the supervision of Dr. Robin McGlohn.

NON-PARTICIPATION STATEMENT

Your participation is voluntary and you may refuse to participate or withdraw at any time without penalty or loss of benefits to which you are otherwise entitled. You may also refuse to answer any question.

PURPOSE OF THE STUDY

The purpose of this study is to examine Pathway Design Team members' perceptions of the early initiation activities and professional development of Linked Learning and their perceived impact on readiness for implementation. The study will also identify factors that are perceived to contribute and hinder implementation efforts. Additionally, a cost analysis

of activities and professional development will be conducted to determine cost effectiveness.

PROCEDURES

You will be one of approximately 26 subjects asked to participate in this project. Your participation in this project will be voluntary. If you participate, you will be asked to take part inan audiotaped focus group conducted by Paula Fendley, during which you will be asked to answer questions regarding your perceptions of Linked Learning early initiation activities and professional development and its impact on your perception of readiness to implement the program. Participants unwilling to grant permission to be audiotaped or who do not agree for the audiotapes to be used in publications/presentations will not be able to participate in this study. The focus group will last approximately 45 minutes and will be conducted at a mutually agreed location.

CONFIDENTIALITY

Every effort will be made to maintain the confidentiality of your participation in this project.

Each subject's name will be paired with a code number by the principal investigator. This code number will appear on all written materials. The list pairing the subject's name to the assigned code number will be kept separate from all research materials and will be available only to the principal investigator. Confidentiality will be maintained within legal limits. Audiotaped responses will be assigned a number to ensure confidentiality and will be locked in a secure location.

RISKS/DISCOMFORTS

There are no foreseeable risks, discomforts, or inconveniences to participants of this study.

BENEFITS

While you will not directly benefit from participation, your participation may help investigators better understand the efficiency and effectiveness of Linked Learning early initiation activities and professional development. The results will fill a gap in knowledge by providing valuable information to ConnectEd, district personnel, and current and future Linked Learning educators as the district moves forward to implement the approach in all district high schools. The data on successes and barriers to implementation will assist ConnectEd with enhancing their professional development and other schools as they begin the journey to becoming a Linked Learning school.

ALTERNATIVES

Participation in this project is voluntary and the only alternative to this project is nonparticipation.

INCENTIVES/REMUNERATION

No compensation will be offered to participants.

PUBLICATION STATEMENT

The results of this study may be published in professional and/or scientific journals. It may also be used for educational purposes or for professional presentations. However, no individual subject will be identified.

AGREEMENT FOR THE USE OF AUDIOTAPES

If you consent to participate in this study, please indicate whether you agree to be audiotaped during the study by checking the appropriate box below. If you agree, please also indicate whether the audiotapes can be used for publication/presentations.

___I agree to be audiotaped during the focus group.

___I agree that the audiotape(s) can be used in publication/presentations

___I do not agree to be audiotaped during the focus group.

___I do not agree that the audiotape(s) can be used in publication/presentation

SUBJECT RIGHTS

1. I understand that informed consent is required of all persons participating in this project.

2. All procedures have been explained to me and all my questions have been answered to my satisfaction.

3. Any risks and/or discomforts have been explained to me.

4. Any benefits have been explained to me.

5. I understand that, if I have any questions, I may e-mail Paula Fendley at pkfendley@uh.edu. I may also contact Dr. Robin McGlohn, faculty sponsor, at 713-743-4965.

6. I have been told that I may refuse to participate or to stop my participation in this project at any time before or during the project. I may also refuse to answer any question.

7. ANY QUESTIONS REGARDING MY RIGHTS AS A RESEARCH SUBJECT MAY BE

ADDRESSED TO THE UNIVERSITY OF HOUSTON COMMITTEE FOR THE PROTECTION OF HUMAN SUBJECTS (713-743-9204). ALL RESEARCH PROJECTS THAT ARE CARRIED OUT BY INVESTIGATORS AT THE UNIVERSITY OF HOUSTON ARE GOVERNED BY REQUIREMENTS OF THE UNIVERSITY AND THE

FEDERAL GOVERNMENT.

8. All information that is obtained in connection with this project and can be identified with me, will remain confidential as far as possible within legal limits. Information gained from this study that can be identified with me may be released to no one other than the principal investigator, Paula Fendley, and her faculty sponsor, Dr. Robin McGlohn. The

results may be published in scientific journals, professional publications, or educational presentations without identifying me by name.

I HAVE READ (OR HAVE HAD READ TO ME) THE CONTENTS OF THIS CONSENT
FORM AND HAVE BEEN ENCOURAGED TO ASK QUESTIONS. I HAVE RECEIVED
ANSWERS TO MY QUESTIONS. I GIVE MY CONSENT TO PARTICIPATE IN THIS STUDY. I HAVE RECEIVED (OR WILL RECEIVE) A COPY OF THIS FORM FOR MY
RECORDS AND FUTURE REFERENCE.

Study Subject (print name):

_____

Signature of Study Subject:

_____

Date:

_____

I HAVE READ THIS FORM TO THE SUBJECT AND/OR THE SUBJECT HAS READ THIS
FORM. AN EXPLANATION OF THE RESEARCH WAS GIVEN AND QUESTIONS FROM
THE SUBJECT WERE SOLICITED AND ANSWERED TO THE SUBJECT'S

SATISFACTION. IN MY JUDGMENT, THE SUBJECT HAS DEMONSTRATED COMPREHENSION OF THE INFORMATION.

Principal Investigator (print name and title):

_____

Signature of Principal Investigator:

_____

Date:

_____