Summer 2014

The relationship between configurations of the New Tech High School model and student achievement

Kyle Grant Machen
Louisiana Tech University

THE RELATIONSHIP BETWEEN CONFIGURATIONS OF THE NEW TECH HIGH SCHOOL MODEL AND STUDENT ACHIEVEMENT

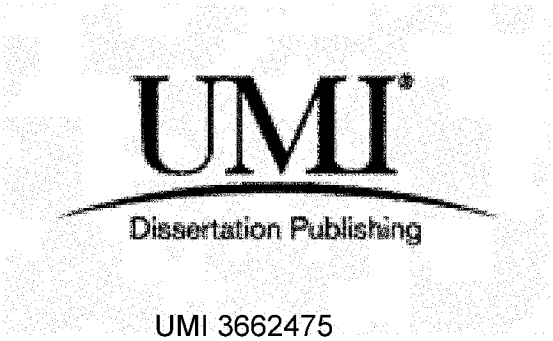
by

Kyle Grant Machen, B.S., M. Ed.

A Dissertation Presented in Partial Fulfillment
of the Requirements for the Degree
Doctor of Education

COLLEGE OF EDUCATION
LOUISIANA TECH UNIVERSITY

August 2014



ProQuest LLC
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106-1346

LOUISIANA TECH UNIVERSITY

THE GRADUATE SCHOOL

July 14, 2014

Date

We hereby recommend that the dissertation prepared under our supervision by Kyle Grant Machen

entitled The Relationship Between Configurations of the New Tech High School Model and Student Achievement

be accepted in partial fulfillment of the requirements for the Degree of Doctor of Education

Supervisor of Dissertation Research

Head of Department

Curriculum Instruction and Leadership

Department

Recommendation concurred in:

Advisory Committee

Approved:

Director of Graduate Studies

Approved:

Dean of the Graduate School

Dean of the College

GS Form 13a
(6/07)

ABSTRACT

Traditional educational environments have been documented as being potential barriers to improving student achievement. Consequently, reform models, such as the New Tech High School (NTHS), were created to enable educators to fundamentally rethink teaching and learning. The purpose of this study was to ascertain whether the NTHS, as a reform model, is an effective vehicle to increase student achievement. The study examined the relationship between NTHS models and desired outcomes of the New Tech Network (NTN) as indicated by: state proficiency exams, End of Course (EOC) exams; a college and career readiness exam, the American College Test (ACT); and, School Performance Scores (SPS). An attempt was made to determine if the participating NTHS schools have been accomplishing the intended outcomes of the NTN and if this reform model has the potential to successfully transform educational practices. Analysis and conclusions were based on results from the application of a chi-square distribution test, comparisons of calculated z scores with percentile ranks, and a Pearson product-moment correlation coefficient. The data sets used in the study were constructed from reported student achievement and principal/teacher perceptions at three NTHS schools located in northern Louisiana.

The study found that there is an association between NTHS model configuration and student achievement scores on state proficiency exams. This study also determined that the participating NTHS schools reported lower student achievement scores on the college readiness indicator exam, the ACT, when compared to the Louisiana state

average composite score. Likewise, the researcher found that the NTHS model configurations of Whole School Conversion (WSC) and Autonomous School (AS) both reported a SPS lower than the average Louisiana School Site SPS while the entire school of the Small Learning Community (SLC) configuration reported a higher SPS than the state average Louisiana School Site SPS. Finally, a positive correlation was found in NTHS principal/teacher perceptions of implementation of the NTN goals instructional approaches and principal/teacher perceptions of meeting the NTN desired student outcomes based upon the NTN School Success Rubric (SSR). Implications of the findings and recommendations for further research are provided.

APPROVAL FOR SCHOLARLY DISSEMINATION

The author grants to the Prescott Memorial Library of Louisiana Tech University the right to reproduce, by appropriate methods, upon request, any or all portions of this Dissertation. It was understood that "proper request" consists of the agreement, on the part of the requesting party, that said reproduction was for his personal use and that subsequent reproduction will not occur without written approval of the author of this Dissertation. Further, any portions of the Dissertation used in books, papers, and other works must be appropriately referenced to this Dissertation.

Finally, the author of this Dissertation reserves the right to publish freely, in the literature, at any time, any or all portions of this Dissertation.

Author 

Date 7-14-2014

GS Form 14
(5/03)

DEDICATION

This dissertation is dedicated to God's greatest blessing in my life, my family. Words mentioned in this simple dedication cannot adequately express how sincerely grateful I am that you are all in my life nor can these words express the tremendous amount of love I have for each of you. To my wife, Lori, and my daughters, Molly Grace, Lanie Marie, and Lindy Claire, you all make me the luckiest man in the whole world! Forever know you have my whole heart, and may God's love and grace be with you always.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACKNOWLEDGEMENTS

I have been incredibly fortunate to have family, friends, and colleagues support me along the way. First and foremost, I am so thankful for the generous support that I have received from my immediate family, Lori, Molly Grace, Lanie Marie, and Lindy Claire. Despite the challenges we all shared in this pursuit, you have always remained my most solid foundation.

Likewise, I am so very thankful to my parents, D.C. and Maria Machen. Your unwavering faith, unconditional love, continuous prayer, wisdom, and guidance have always kept me secure. Thank you for always believing and investing in me. It is my greatest prayer that Lori and I continue the legacy that you have started.

I am forever grateful to the doctoral faculty at Louisiana Tech University. In particular, Dr. Lawrence Leonard, my major professor. I have the utmost respect and admiration of your significant contributions to Louisiana Tech University, educational leadership as a whole, and to my own leadership transformation. You have not only modeled diligence but have continuously provided the resources and direction necessary for the successful completion of my study. I also hold in high esteem Dr. Pauline Leonard, a member of my doctoral committee. I am extremely grateful for the opportunity to be one of your last doctoral students. It is my prayer that you both enjoy retirement as well as what God has in store for you on the "Open Road."

Thank you also to Dr. Janelle McDaniel, Louisiana Tech University, and Dr. Dorothy Schween, University of Louisiana at Monroe, for serving on my committee and for supporting me throughout this process.

Finally to my mentors, colleagues, and friends, Dr. Nichole Bourgeois, Dr. Fred Ogunyemi, Arthur James, Debbie Gegg, Melissa Mainiero, and Ben Wood. I am truly grateful for your inspiration, guidance, encouragement, and diverse perspectives. Thank you for never allowing me to feel alone on this journey. It is my hope that you will all continue to make positive impacts in the lives of so many.

CHAPTER ONE

STATEMENT OF THE PROBLEM

World progress is considered to largely depend on the proliferation of formalized education; consequently, both scholars and practitioners frequently strive to understand, address, and solve significant problems in education from a holistic perspective. How a person receives and transitions the education process into his or her daily way of life is largely dependent upon contextual circumstances; however, public schools throughout the United States are faced with accountability reform movements intended to improve school performance and student achievement. These reform standards are not only setting higher levels of accountability for the performance of students, but also increasing levels of accountability for the performance of teachers and educational leaders.

Pursuit of educational performance at optimum levels has prompted sweeping, comprehensive, mandated reforms from politicians and policy makers. A number of these educational reforms, initiatives, and advancements have been sponsored by the United States federal government, such as via the *National Defense Education Act* of the 1950s and the *Elementary and Secondary Education Act* of the 1960s to more modern initiatives like *A Nation at Risk, No Child Left Behind 2002, American Recovery and Reinvestment act of 2009 Race to the Top, The Blueprint of Reform* of *the Elementary and Secondary Education Act,* and the most recent *Common Core State Standards* (U.S. Department of Education, 2012).

A state-led effort intended to establish a single set of clear educational standards for kindergarten through 12th grade in English language arts and mathematics, Common Core State Standards (CCSS) was described by Farbman, Goldberg, and Miller (2014) as the nation's first attempt to provide a comprehensive roadmap for educators to help bring all children to college and career readiness. Adopted voluntarily by states designed to provide a consistent and more clear understanding of what students are expected to learn, CCSS are created to ensure that students graduating from high school are prepared to enter credit-bearing entry courses in two or four year college programs or to enter the workforce. Forty-five states, the District of Columbia, four territories, and the Department of Defense Education Activity have all adopted the CCSS (Common Core State Standards Initiative, 2012).

Based upon the premise of fully preparing communities to compete successfully in the global economy of the future, organizations such as the National Governors Association (NGA) and the Council of Chief State School Officers (CCSSO) have led the development of CCSS and continue to lead the initiative. Farbman at el. (2014) explain that because of the CCSS the United States is poised to take a major step forward in preparing the next generation of Americans for success in higher education and the workforce. However, critics of the CCSS claim the standards were developed nationally and not by individual states or school districts. Likewise, opponents argue that Race to the Top federal grant money and No Child Left Behind waivers are what ultimately garnered the support of some of the participating states (Hertel, 2013). Nonetheless, according to the Louisiana Department of Education (LDOE) 2014, CCSS were developed by educators, college professors, and content experts from Louisiana in

collaboration with several other national organizations such as the National Education Association (NEA), American Federation of Teachers (AFT), National Council of Teachers of Mathematics, and National Council of Teachers of English (NCTE) to provide specific and constructive feedback on the standards. The State of Louisiana adopted CCSS on July 1st of 2010 and plans to have full implementation by the 2014-2015 school year (Louisiana Department of Education, 2014).

Indeed, the current climate in education can be summed up in one resounding word: accountability. More frequently and more comprehensively than ever before, high-stakes testing is used to determine how schools and school systems are rewarded or remediated and the results actively influence curricular and policy decisions. However, in March of 2009, United States President, Barack Obama, made the following comments with regard to educational reform and standards assessment:

> I'm calling on our nation's governors and state education chiefs to develop standards and assessments that don't simply measure whether students can fill in a bubble on a test, but whether they possess 21st century skills like problem-solving and critical-thinking and entrepreneurship and creativity (U.S. Department of Education, 2012, para. 5).

Slavin (1989) suggested that educational infrastructures are incapable of promoting any lasting and beneficial change without first changing the ground rules for selecting, implementing, evaluating, and institutionalizing innovative reform. Doll (1996) wrote that changes in education have progressed from "organizational development" that concentrate on the "human social system," into more of a "systemic reform, or change in an entire educational system" (p. 324). White and Smith (2010) noted that even after

several decades of education research coupled with a plethora of improvement efforts, a unified movement for educational change has yet to emerge. While current strategies may not be adequately advancing the intended change, most schools, school districts, and states are attempting to implement reform practices to varying degrees. Boss and Krauss (2007) suggested that the structure of schooling, from the school day to the implementation of traditional teaching practices, does not foster a collaborative examination of the fundamental acts of teaching. Likewise, Bell (2010) suggested that workforce evaluations will not only come from the production of the individual, but also from the collaborative, negotiating, planning and organizational skills of that individual.

Therefore, 21st century students should be prepared to enter a workforce in which they will be judged on their own performance as well as the contributions they make to overall team performance. Consequently, effective pedagogical practices and beliefs of educators who are adopting practices geared toward improving the education of students are crucial to enhance performance at the highest level. Furthermore, implementation of instructional strategies like project-based learning (PBL), embedded within professional learning communities (PLCs) and that are harmonious with ubiquitous technology, requires the guidance and direction of transformational leaders. Fullan, Hill, and Crevola (2006) explained that a systemic change should, "focus on establishing expert instructional systems that serve the needs of all levels" (p.89). One such systemic change initiative is the New Tech Reform Model.

New Tech Reform Model

The New Tech Network (NTN) is a nonprofit organization made up of 86 public high schools in 16 U.S. states that was founded in Napa Valley, California in 1996 (New

Tech Network, 2012). The NTN operates as a subsidiary of *KnowledgeWorks*, a social enterprise created to provide innovative tools, training and assistance to school leaders, teachers and community stakeholders (KnowledgeWorks, 2014). Services and support are provided to enable schools to fundamentally rethink teaching and learning. The NTN defines the Learning Outcomes of the New Tech High School (NTHS) model with content standards, collaboration, critical thinking, oral communication, written communication, career preparation, citizenship and ethics, and technology literacy (New Tech Network, 2012). The NTHS model embeds the afore mentioned learning outcomes in instructional approaches that are centered on project-based learning (PBL), a culture that empowers students and teachers as professional learning communities (PLCs), and classrooms with integrated technology (New Tech Network, 2012).

Three key elements are featured in the model. First, NTHS utilizes instructional strategies like PBL that emphasize technology use, standards-based projects, and cultivation of community partnerships. Second, NTHS aims to develop a school culture of "trust, respect, and responsibility" whereby students and teachers are empowered to make meaningful contributions to school policy and learning. Third, NTHS prioritizes full-scale technology integration into classrooms through one-to-one computing ratios, Internet access, and the use of a learning management system that transforms students into self-directed learners and teachers into learning facilitators (New Tech Network, 2012).

Many schools that have adopted the NTHS model have done so in one of three ways: (a) small learning community (SLC), which is a small school program in a shared facility for whole school cooperation; (b) whole school conversion (WSC), where an

entire school adopts the New Tech model, usually transitioning by adding one grade each year so that all students eventually will become New Tech students; or (c) autonomous school (AS), which is a school located on a separate site from existing district schools and admitting students from throughout the district. According to the NTN (2012) districts are encouraged to lay a solid foundation for the NTHS model by committing to the following conditions:

1. Creation of an autonomous public high school with a unique identity;
2. Small school size of 400-500 students;
3. Creating a professional climate based on trust, respect, and responsibility;
4. Provision of a computer for every student with school-wide internet access;
5. Scheduling flexibility to support team teaching and cross-curricular projects;
6. All courses having project-based learning as the primary method of instruction; and
7. Creating physical learning spaces that support team teaching and student collaboration.

At the heart of the instructional approach in the NTN is project-based learning (PBL). Students collaborate on projects that require critical thinking and communication intended for learning to remain contextual, creative, and shared. The NTN touts higher educational outcomes obtained through making learning relevant in order for engagement to reach new levels. The use of technology supports the approach to instruction and culture of the NTN by ensuring that all students have a one-to-one student-to-computer ratio by securing access to web-enabled computers and the latest in collaborative learning technology. Therefore, every student has an opportunity to become a self-directed

learner who does not need to rely primarily on teachers or textbooks for knowledge and direction. An online learning management system utilized by the NTN, called *Echo Collaborative Learning Environment*, allows students, teachers, and parents to connect to each other as well as to student projects across the country. Finally, each NTHS is expected to maintain a culture that promotes trust, respect, and responsibility, thereby allowing students and teachers ownership of the learning experience and the school environment. Working on projects and in teams allows for students to be kept accountable to their peers as well as acquiring responsibility to what they would experience in a professional work environment (New Tech Network, 2012).

The overall stated goal of the NTN is to enable students to gain the knowledge and skills they need to succeed in life, college, and the careers of today and tomorrow. Although students are evaluated on how proficient they are in traditional subject matter, the NTN School Success Rubric (SSR) enables schools to self-assess their progress as it relates to *learning outcomes*, *cultural outcomes*, and *college and career outcomes*. *Learning outcomes* are assessed according to what knowledge, skills, and attributes every NTHS graduate should demonstrate. While *cultural outcomes* are assessed according to what students should experience in the NTHS learning environment as it relates to being connected, engaged, and challenged. Finally, *college and career outcomes* assessed whether students are prepared, eligible, and aware of what they need to enter and be successful in postsecondary learning opportunities. It should be noted that according to the NTN, the term college refers to a broad range of formal postsecondary experiences that further a person's learning in preparation for a career and lead to a certificate or a degree. In addition to traditional two and four year college experiences, many technical

or trade school experiences and the military could serve as a college experience (New Tech Network, 2013). Utilization of the SSR provides for assessment by multiple measures rather than a single point in time test (see Appendix A).

School Success Rubric (SSR) indicators for curriculum and instruction ensure that teachers are using PBL as the primary instructional approach as well as the use of a variety of techniques to scaffold student skills. Additionally, integrated authentic community-based projects are utilized to teach 21st century skills. While SSR indicators for technology insist that schools maintain a one-to-one networked computer-to-student ratio, the use of the NTN's *Echo Collaborative Learning Environment* allows teachers to incorporate other digital and online tools to support student engagement and instruction.

In order to create a positive school culture, SSR indicators of school culture and autonomy insist NTHSs demonstrate commitment to a unique school identity through vision and goals while promoting trust, respect, and responsibility. Teachers are expected to empower students to set rules, policies, and activities, therefore, allowing students to exhibit pride in school culture while actively working to reinforce and defend it. Likewise, SSR indicators require staff members to collaborate in school decision making, requiring administrators to provide dedicated time for teacher professional development and allowing teachers opportunities to utilize data to reflect on and inform their teaching practice. As for partnership development, SSR indicators petition that schools provide access through postsecondary partnerships as well as schools offering internships through partnerships with local businesses. Furthermore, the schools are to support a community service-learning component while facilitating positive relationships with parents and the NTN. SSR promotes academic success by students demonstrating a

strong professional and responsible work ethic in conjunction with the use of technology to conduct research, communicate, and create documents. Students are to thoughtfully reflect on their learning while utilizing their gained knowledge and skills in a community experience.

Statement of the Problem

It is commonly perceived that the United States faces serious challenges with regard to its public P-12 education system. Policy makers, politicians, district and schools leaders alike are attempting to ensure student success, not only in school and work, but also in life. Gardner (2006) explained that many current formal educational practices are antiquated as they prepare students for the world of the past as opposed to proper preparation for probable worlds of the future. Many current accountability standards insist on measuring knowledge with standardized tests that focus on the memorization of facts as opposed to the application of knowledge in complex situations. Therefore, standards-based high-stakes assessments are commonly considered the primary evidence that skill sets are appropriately met. Nonetheless, Wagner (2008) sees a disconnect between teaching and assessment techniques in schools today as well as between how students are expected to learn versus the requirements the world will demand of them as adults and what may motivate them to optimum productivity.

Bell (2010) envisions that 21st century workforce evaluations will not only be based on individual performance outcomes, but also on the collaborative, negotiating, planning and organizational skills of the individual. Consequently, there appears to be concern that traditional educational environments fail to address contemporary skills that students need in order to achieve modern-day success. With the current emphasis now

being placed on education reform, it is likely to be beneficial to know which reform models are realizing academic improvement.

Purpose of the Study

The primary focus of this study was to ascertain whether the New Tech High School (NTHS), as a reform model, is an effective vehicle to increase student achievement. More specifically, this study examined the relationship between NTHS models and desired outcomes of the NTN as indicated by state proficiency exams, End of Course (EOC) exams; a college and career readiness exam, the American College Test (ACT); and School Performance Scores (SPS). An attempt was made to determine if the participating NTHS has been meeting the intended outcomes of the NTN and if this reform model has the potential to successfully transform educational practices.

Research Questions

The following research questions were addressed:

1. Is there an association between the New Tech High School model configurations examined and student achievement scores on English/language arts, mathematics, and science state proficiency exams?
2. How do students from the examined New Tech High School model configurations of Small Learning Community, Whole School Conversion, or Autonomous School compare to the Louisiana state average score on college readiness exams, the American College Test (ACT)?

3. How do the examined New Tech High School model configurations of Small Learning Community, Whole School Conversion, or Autonomous School compare to the state average School Performance Scores (SPS)?
4. Is there a relationship between principal/teacher perceptions of implementation of the New Tech Network instructional approaches and principal/teacher perceptions of meeting the New Tech Network desired student outcomes?

Hypotheses

1. Based upon the New Tech High School model used by each school and when compared to each of the model configurations used for this study, there will be an association between New Tech High School model configurations and student achievement scores on the:
    a. English language arts state proficiency exams;
    b. Mathematics state proficiency exams; and
    c. Science state proficiency exams.
2. Based upon the New Tech High School model configurations used for this study and when compared to the Louisiana state average composite ACT score, the New Tech High School model configurations will report higher student achievement scores on college readiness indicator exams, specifically ACT scores.
3. Each New Tech High School model configuration (Small Learning Community, Whole School Conversion, or Autonomous School) will report higher program success than the average Louisiana high school as identified by School Performance Scores (SPS).

4. Based upon the School Success Rubric (SSR) utilized by each school to self-assess learning, cultural, and college/career outcomes, a positive correlation will be found in principal/teacher perceptions of implementation of the New Tech Network instructional approaches and principal/teacher perceptions of meeting the New Tech Network desired student outcomes.

For the sake of statistical application subsequent use of the hypotheses will be presented as null hypotheses.

Limitations of the Study

The study had the following limitations:

1. The study was limited to a small sample size of three NTHS in northern Louisiana.
2. The study was limited to data collection of one academic year.
3. The study was limited by non-consideration of socioeconomic structure of the schools tested.

Definition of Key Terms

American College Test (ACT) - An exam that assesses student achievement in English, reading, math, and science as an indicator of readiness to graduate from high school on time and with the knowledge and skills to succeed in college and challenging 21st century careers (Louisiana Department of Education, 2013).

Autonomous school (AS) - A NTHS in which the school is located on a separate site from existing district schools and which admits students from throughout the district (New Tech Network, 2012).

Constructivism - An educational theory where learning is an active contextualized process of constructing knowledge rather than acquiring knowledge; in other words, teaching the student how to think and solve problems (Keengwe & Onchwari, 2011).

End of Course exams (EOC) - Assessments developed collaboratively by the State of Louisiana and a coalition of states called the Partnerships for Assessment of Readiness for College and Careers (PARCC). These identical criterion-referenced assessments measure students on a set of specified criteria allowing Louisiana to benchmark its progress against other states (Louisiana Department of Education, 2013).

Integrated technologies (IT) - The process in which technology is used as a tool to actively support the task of teaching and learning (Keengwe & Onchwari, 2011).

New Tech High School (NTHS) - School model administered by the New Tech Network (NTN) that merges PBL with integrated technology use and empowering school culture (New Tech Network, 2011).

New Tech Network (NTN)- A nonprofit organization made up of 86 public high schools in 16 U.S. states that was founded in Napa Valley, California in 1996 (New Tech Network, 2012).

Professional learning communities (PLC)- An on-going process in which educators work collaboratively in recurring cycles of collective inquiry and action research to achieve better results for the students they serve (DuFour, DuFour, Eaker, & Many, 2010).

Project-based learning (PBL) - A teaching and learning model or curriculum development and instructional approach that emphasizes student-centered instruction by assigning special projects (Thomas, 1999).

School performance score (SPS) - Numerical value based on student achievement on state standardized tests and additional measures of student success, such as credit accumulation, completion of rigorous courses and graduation. In high school, half of each school's grade is based on student achievement (25% on the ACT and 25% on EOC tests) and half of the school grade is based on graduation (25% on the graduation index and 25% on the graduation cohort rate) (Louisiana Department of Education, 2013).

School reform - The process of making changes in educational policy or practice, often in response to concern over student academic achievement (Oxford Bibliographies, 2014)

Small learning community (SLC) - A NTHS in which a small school program is in a shared facility for whole school cooperation (New Tech Network, 2012).

Whole school conversion (WSC) - A NTHS in which an entire school adopts the New Tech model, usually transitioning by adding one grade each year so that all students eventually become New Tech students (New Tech Network, 2012).

CHAPTER TWO

REVIEW OF THE LITERATURE

The purpose of this review of literature was to examine the fundamental components of the New Tech High School (NTHS) reform model. This chapter provides an exploration of literature currently in existence regarding: (a) school reform, (b) constructivism, (c) project-based learning (PBL), (d) professional learning communities (PLCs), (e) integrated technologies, and (f) the New Tech Network (NTN). Although the research questions focus primarily on which NTHS model configuration is more productive in terms of student achievement and school performance scores (SPS), a further investigation of the areas noted above is essential in determining whether this reform model is effectively achieving the intended outcomes of the NTN.

School Reform

John Dewey's *My Pedagogic Creed,* written in 1897 as a manifesto for all teachers, notes that "education is the fundamental method of social progress and reform," Dewey continues that "it is the business of everyone interested in education to insist upon the school as the primary and most effective instrument of social progress and reform in order that society may be awakened to realize what school stands for" (Dewey, 1897, p.77). Later, Dewey wrote in *The School and Society* of how radical conditions that prompt change require equally radical change in education (Dewey, 1915). More than 80

years later, authors Hall and change in education (Dewey, 1915). More than 80 years later, authors Hall and Resnick (1998) wrote of how striking it is that the education reform movement is still with us.

The publication of *A Nation at Risk* in 1983 not only firmly established that something was ailing the modern educational system (Dunleavey, 1994), it catalyzed a sense of urgency throughout the country which in turn advanced many reforms more quickly than had been the case in the past (Finn, 2008). These demands led to the modern movements of whole school or comprehensive school reform. Oxford Bibliographies (2014) defines school reform as the process of making changes in educational policy or practice, often in response to concern over student academic achievement. School reform models can cover a diverse set of programs designed to remedy education utilizing cross-disciplinary efforts including the home, the school, and the community for cogitative development of all children. In an attempt to provide pedagogical approaches to curriculum reform trends, the U.S. Department of Education (2002) defined comprehensive reform models as exhibiting 11 characteristics that:

1. Employ proven methods and strategies based on scientifically validated research;
2. Integrate a comprehensive design with aligned components;
3. Provide ongoing, high-quality professional development for teachers and staff;
4. Include measurable goals and benchmarks for student achievement;
5. Be supported within the school by teachers, administrators, and staff;
6. Provide support for teachers, administrators, and staff;

7. Provide for meaningful parent and community involvement in planning, implementing, and evaluating school improvement activities;
8. Use high quality, external technical support and assistance from an eternal partner with experience and expertise in school-wide reform and improvement;
9. Plan for the evaluation of strategies for the implementation of school reforms and for student results achieved annually;
10. Identify resources to support and sustain the school's comprehensive reform effort; and
11. Demonstrate significant improvements in the academic achievement of students, or demonstrate strong evidence that it will improve the academic achievement of students.

The New American Schools (NAS) model was formed in 1991 as the New American School Development Corporation with an emphasis for professional development that was consistent with the scope and content of creating designs to enable students to reach high educational standards. Other comprehensive programs of the 1990s included: (a) Corner Model, School Development Program (SDP) by James Coiner and the Yale Child Study Center; (b) Success for All, by Robert Slavin and associates at The Johns Hopkins University; (c) Paideja Program, by Mortimer Adler with the Institute for Philosophical Research Chicago; (d) Coalition of Essential Schools (CES), by Theodore Sizer; (e) Harvard Project Zero (HPZ), by the Harvard Graduate School of Education; (f) Education Development Center (EDC), global non-profit; (g) ATLAS Communities Project 1992-1996, a collaboration of CES, EDC, NAS, and HPZ;

and (h) Edison Project, by media entrepreneur Chris Whittle (Dunleavey, 1994; Hatch, 1998; McChesney, 1999).

Now more than a decade into the new century, along with continuous changes in the global economy and national job market, there is a call for an emphasis on 21st century skills in all of education, from elementary school through college. Efforts to transform U.S. schools and improve student learning, including both accountability measures and progressive practices, come in cycles and are often related to contextual factors in society at particular moments in time (Cuban, 1993; Sherman, 2009). Senechal (2010) argues that these "cycles" of new reform are not "new" at all, nor are the old practices obsolete. Often social, political, or economic changes create scenarios that may be defined by some as problems, therefore prompting policy makers or the opinion-elites to present proposals with solutions to those problems. Unexpected outcomes, half-hearted efforts, or even resistance can prevent certain practices from ever appearing in education or such practices fade prior to thorough evaluation.

Nonetheless, recent reform coalitions like the Partnership for 21st Century Skills (P21), whose membership organizations include AOL Time Warner Foundation, Apple, Cisco System Inc., Dell, Microsoft, and the National Education Association, contend that success depends on students learning essential 21st century skills such as critical thinking, problem solving, communication and collaboration (Partnership for 21st Century Skills, 2014). However, Senechal (2010) cautions that by solely embracing such skills without keeping them in proper prospective and recognizing their dependence on subject matter knowledge often results in: (a) the loss by students of the opportunity to master the fundamentals of any subject; (b) a failure to offer the very stability that students need in

order to make sense of choices, clamor, and confusion in order to exercise critical thinking; and (c) a loss of focus on the true purposes of education. Such movements prompt warnings like that given by Sherman (2009) to avoid the "bandwagon effect", a notion in which rapid adoptions of new practices are quickly embraced by school districts and a flurry of workshops are given to bring teachers on board as quickly as possible. This tends to create fads for practice rather than well-grounded conceptual understandings from which teachers can develop practice reflectively and effectively over time (p. 41). Hatch (1998) posited that the scope of school improvement had to go beyond aligning outcomes and policies and should determine how to coordinate efforts to carry out reform. Bass (2010) agreed that in order to increase student achievement it is imperative that the needs of the student are aligned with school reform efforts. However, often the desire by the educator and school system alike is to reform school practices to become more responsive to students. Consequently, a rapid rush from theory to practical application occurs, resulting in formulaic teaching strategies, rather than meaningful, contextually sensitive application (Sherman, 2009).

Senechal (2010) suggested that instead of embracing change for its own sake, reformers should pursue perfection in curriculum and pedagogy. A variety of reform efforts have affected the way curriculum in schools is designed and how instructors educate. Thorndike's associationist theory, conditioning involving learning from the consequences of our behavior, calls for frequent testing and continued practice on the bonds not yet mastered without an organized way for conceptual relationships of for strategies of problem solving and sense making (McLeod, 2007). Conversely, Dewey recommended a decidedly non-associationist vision which calls for transforming schools

into microcosms of society in which children learn in contextualized and practical form utilizing reasoning and social interaction, thus making them good democratic citizens (Hall & Resnick, 1998). More recently, Bourgeois' (2007) study researched what scholar practitioners perceived as the dominant philosophical beliefs guiding educational practices today. Results indicated that practitioners perceived progressive democratic practices to be gaining stock in educational arenas. Finn (2008) added that the two major innovations that have become increasingly institutionalized as part of the mainstream education system today are standards-based reform and market-driven school choice.

A strong relationship between the curricular ideology of open education and the pedagogical framework of differentiation is characterized by Sherman (2009) with the following assertions: (a) content is relevant and meaningful to students; (b) time and space are used flexibly and creatively; (c) students are grouped flexibly; (d) instruction is engaging and instructionally relevant; (e) some element of student choice is present; and (f) individual, rather than comparative, growth is emphasized. This differs from the traditional standardized educational environment in which all students are doing the same thing at the same time, regardless of their level of readiness, cultural background, or areas of interest.

While the open education movement promoted responsiveness to students and sought to meet the individual needs of the student (Sherman, 2009), the standards movement provided a stimulus for a one-size-fits-all curriculum with uniform benchmarks for achievement for students at particular grade levels (Meir & Wood, 2004; Sherman, 2009). Both open education and differentiated instruction aim to promote individual growth and meet the students at their point of instructional need. Sherman

(2009) noted that the movement to differentiate for all students gained a great deal of momentum in the United States at the same time, ironically, that standardized assessments were most publicly embraced as the means by which student learning should be measured.

Constructivism

Constructivism is an educational theory where learning is an active contextualized process of constructing knowledge rather than acquiring knowledge; in other words, teaching the student how to think and solve problems. As a theory, constructivism implies a pedagogy where the emphasis resides with hands-on, activity-based teaching and learning during which learners develop their own frame of thought (Keengwe & Onchwari, 2011), and, therefore, allowing the focus to be more on what students do than on what teachers do (Iran-Nejad, 1995). Grabe & Grabe (2008) refer to this as active learning where the primary concern is what students do with the information as opposed to how much information the teacher and the learning environments can provide. Bentley, Fleury & Garrison (2007) point out that the ideas, attitudes, and practices referred to as constructivism are about how humans learn by building knowledge cooperatively through social interaction and the application of prior knowledge in a continual interpretation of ongoing experiences. Constructivist theory assumes three basic principles: (a) learners forming their own representations of knowledge; (b) learning through active experience and exploration that uncovers inconsistencies between current knowledge representation and their own experiences; and (c) learning within a social context, with interaction between learners, peers and other members of the learning community (Keengwe & Onchwari, 2011). Contrary to the behaviorist approach that

primarily focuses on the role of the teacher as the transmitter of knowledge, constructivism emphasizes the role of the student in the learning process (Hackmann, 2004; Iran-Nejad, 1995). Iran-Nejad (1995) noted that constructivism requires the teacher, fulfilling the role of a reflective practitioner, to focus on the "depth" of understanding and to assume a supporting or "reflective" role while students construct meaning for themselves and engage in critical thinking and problem solving. Constructivist theories include Piaget's Theory of Cognitive Development (1966), Vygotsky's Social Development Theory (1962), Bruner's Discovery Learning Theory (1966), Gardner's Theory of Multiple Intelligences (1993), as well as Lave and Wenger's Communities of Practice Theory (Learning Theories Knowledgebase, 2012). All of these theories are clearly linked to the educational philosophies of John Dewey (1910) and the progressive movement (Battaglia, Bird, Foote, Harris-Ewing, Mesibov, Vermette, 2001).

Jean Piaget's Theory of Cognitive Development (1966), or cognitive constructivism, originated as he observed his own children making sense of the world around them. Ideas are constructed in individuals through a personal process (Kalina & Powell, 2009). Piaget's theory implied the process of building, creating, or making mental structures instead of merely absorbing or reproducing products (Iran-Nejad, 1995). This led to his four-stage model as to how the mind processed new information it encountered. The stages included: *sensorimotor stage* (birth to two years old) where learning takes place via assimilation, the incorporation of new experiences into existing ones, and accommodation, existing cognitive structures are modified and adapted in response to the environment; *preoperational stage* (two to four years old) where objects are classified in simple ways; *concrete operations stage* (seven to 11 years old) when the

child begins to think abstractly, conceptualize, and create logical structures that explain his or her experiences; and, *formal operations stage* (11 to 15 years old) where cognition reaches its final form and he or she is capable of deductive and hypothetical reasoning (Learning Theories Knowledgebase, 2012). Piaget's stages of development are all about the ability to learn at different ages in childhood based on logical development, therefore, confirming the importance of understanding what each individual needs to get knowledge and learn at his or her own pace (Kalina & Powell, 2009). Piaget's theory of cognitive development proposes that humans cannot be given information, which they immediately understand and use; instead, humans must construct their own knowledge (Piaget, 1966).

Lev Vygotsky, largely considered to be the founding father of social constructivism, believed that ideas were constructed through interactions with the teacher and other students (Kalina & Powell, 2009). This theory primarily addresses the social origins and cultural bases of individual development. In his view, children developed their potential via "enculturation" into the norms of society (Ornstein & Hunkins, 2009, p.124). Vygotsky believed that a formal education provided the optimal laboratory for human improvement. The major themes of his theory include: (a) social interaction plays a fundamental role in the process of cognitive development; (b) More Knowledge than Other (MKO), referring to anyone who has a better understanding or a higher-ability level than the learner; and, (c) the Zone of Proximal Development (ZPD) referring to the distance between the ability of a student to perform a task under adult guidance and/or peer collaboration and the ability of the student to solve the problem independently (Learning Theories Knowledgebase, 2012). Kalina & Powell considered that both

theories of constructivism (i.e., social and cognitive) need to be explicit in communicating concepts in order for students to connect to those concepts.

Jerome Bruner (1966) is credited with creating the inquiry-based constructivist learning theory that takes place in problem-solving situations, where the learner draws upon his or her own past experience and existing knowledge to discover facts and relationships and new truths to be learned. This discovery learning occurs when students are not presented with subject matter in its final form and the student, not the teacher, organizes the subject matter. As a result, students may be more likely to remember concepts and knowledge discovered on their own (Learning Theories Knowledgebase, 2012). Models based upon discovery learning include: guided discovery, problem-based learning, simulation-based learning, case-based learning, and incidental learning. Active engagement, motivation, autonomy, independence, and responsibility are all advantages to discovery learning. Successful discovery experiences make the learner more capable of discovering new experiences and more willing to learn (Ornstein & Hunkins, 2009).

Etienne Wenger and Jean Lave created the Theory Communities of Practice and define it, in part, as a process of social learning that occurs when people who have a common interest in a subject or area collaborate over an extended period of time, sharing ideas and strategies, determine solutions, and building innovations. This theory proposes a sociocultural theory of learning to explain how context influences human social endeavors and generates practice, meaning, and identity (Learning Theories Knowledgebase, 2012).

Project-Based Learning

Project-based learning (PBL) is a teaching and learning model or curriculum development and instructional approach that emphasizes student-centered instruction by assigning special projects. It allows students to work more autonomously to construct their own learning, and culminates in realistic, student-generated products. More specifically, PBL is defined by Thomas (1999) as having the following characteristics or attributes: (a) focuses on the central concepts of a discipline; (b) engages learning experiences that involve students in complex, real-world projects through which they develop and apply skills and knowledge; (c) requires students to draw from many information sources and disciplines in order to solve problems; (d) identifies curricular outcomes up-front, but the outcomes of the students' learning processes are neither predetermined nor fully predictable; and, (e) provides experiences through which students learn to manage and allocate resources such as time and materials. According to Blumenfeld, Soloway, Marx, Krajcik, Guzdail, & Palinscar (1991), the essence of PBL is that a question or problem serves to organize and stimulate activities that culminate in a final product addressing the driving question.

The construct of PBL is to promote intrinsic motivations and is based on the premise that high-quality efforts increase the probability of success. Wolk (1994) elaborated by explaining that when children are free to choose their own projects, to integrate knowledge as the need arises, motivations and success follow naturally. Grant (2009) offered that PBL affords the promise as an instructional method that supports "authentic learning tasks grounded in the personal interest of learners" (p. 1). Opportunities for every child to experience success are without a doubt the most

important rationale for learning through projects (Wolk). However, in order for this approach to be implemented fully, a teacher must develop an understanding of the underlying dynamics of the processes of project work.

In order for learning to be self-reliant it must be done so through planning, organization, or phases (Bell, 2010). First, the student uses organizers to isolate an inquiry question. Then, the student brainstorms what his or her procedure will be for research and identifies the materials that he or she will need to do his or her research. Next, the student selects a way to display what he or she has learned in the form of a project. A target audience with whom to share his or her project is selected ranging from his or her peers, to the principal, to his or her parents. The culmination of the project might be a contest, presentation, or product (Bell, 2010). As posited by Helle, Tynjala, & Olkinuora (2006), it is the production of the learning artifact that ultimately "distinguishes project-based learning from problem-based learning" (p. 291).

Helle et al. (2006) concluded that serious research on the topic of PBL is virtually nonexistent. However, Clark (2006) noted that just as Dewey's notions of learning grew from the basic tenets of the newly evolved pragmatic theory of knowledge, the project approach is a way of working with children so that they come to a deeper understanding of the world they inhabit. Educational researchers have become increasingly more aware that the learning environment must engage the learner in activities that relate to the world outside of school (Doppelt, 2003). Doppelt cited Piaget's 1969 work that described the pupil as a scientist who tries to understand the world through meaningful learning as an activity of constructing ideas and not as a process of memorizing information.

Nevertheless, schools continue to test pupils on their ability to recall memorized procedures and information.

Ravitz, Hixson, English, and Mergendoller (2011) led a study to determine the effect of PBL professional development and implementation on the perceptions of teachers in regard to their ability to teach and assess 21st century skills. Data on teaching practices and perceptions were systematically gathered and compared from two groups of teachers matched by demographics, grade, and subject: teachers expected to have utilized PBL after extended professional development and teachers who had not received professional development or not expected to have used PBL. The results indicated that teachers who used PBL and received extensive professional development reported more teaching and assessment of 21st century skills overall, with similar patterns seen within subject and for nearly all of the measured skills.

Thomas and Mergendoller (2000) described classroom management techniques used by teachers who were considered experts in the use of PBL instructional strategies. The authors interviewed 12 teachers and subjected their descriptions of classroom practices to qualitative analysis. Fifty-three classroom management principles emerged that were grouped under the following themes: (a) time management, (b) getting started, (c) establishing a culture that stresses student self-management, (d) managing student groups, (e) working with others outside the classroom, (f) getting the most out of technological resources, and (g) assessing students and evaluating projects.

Mergendoller, Maxwell, and Bellisimo (2007) compared the effectiveness of PBL and traditional instructional approaches in developing high school students' macroeconomics knowledge and whether PBL was differentially effective with students

demonstrating different levels of four aptitudes: (a) verbal ability, (b) interest in economics, (c) preference for group work, and (d) problem-solving efficacy. A total of 346 twelfth-grade students in 11 classes competed one or more of the instruments used in the study. Data analysis was based on data collected from the 246 students who completed the pre and post-macroeconomics knowledge instrument and the verbal ability measure. To determine if there was a statistical significance in the learning of macroeconomics and the traditional classes, the authors calculated independent samples t-test on the pre-test post-test change on macroeconomics test. PBL was found to be a more effective instructional approach for teaching macroeconomics than traditional lecture-discussion ($p=.05$). Additional analyses provided evidence that PBL was more effective than traditional instruction with students of average verbal ability and below, students who were more interested in learning economics, and students who were most and least confident in their ability to solve problems.

Gultekin (2005) conducted a study that investigated the effects of PBL upon learning outcomes. Both qualitative and quantitative methods were used that utilized pre- and post-test control group design, observations of the effects of PBL on the learner, and semi-structured interviews. The results showed that there was a significant correlation between the academic successes of experimental and control groups. In addition, participants and teachers indicated that PBL increased the success by providing students with various skills and making learning more enjoyable, entertaining, and meaningful. However, few problems were also reported such as arguments between group members and difficulties in carrying out the project.

Ravitz (2010) inquired about how cultural and instructional reforms differ across school reform types. A national survey completed by 395 high school teachers, who were responsible for and had used PBL in a core academic subject, focused on indicators of teacher and student culture as well as in instructional reforms including PBL and other inquiry-related practices. Teachers in reform model schools reported the greatest number of cultural and instructional reforms followed by teachers in other small schools. Reform models were particularly strong on instructional reforms and student culture. Start-up teachers reported more success implementing reforms than teachers in conversion schools. Additionally, teacher culture was reformed much more often than student culture and instruction (Ravitz).

Professional Learning Communities

Project-based learning can be effective in improving student learning, but one of the greatest challenges is the failure of students or professional educators to work together adequately. Professional learning community (PLC) is defined by DuFour, DuFour, Eaker, and Many (2010) as an on-going process in which educators work collaboratively in recurring cycles of collective inquiry and action research to achieve better results for the students they serve. One may also add that a degree of mutual assistance, common identities, joint visions, and similar values are also characteristics of a PLC. Three big ideas outlined by DuFour and Marzano (2011) that drive the PLC process include ensuring that all students learn at high levels, a collective effort to meet the needs of each student, and the use of evidence to drive continuous improvement.

Lujan and Day (2009) conducted a study focusing on the impact of implementing the PLC model as specifically defined by DuFour et al. (2010). Research questions

examined roadblocks to collaboration among teachers, collaborative culture change, collaborative time, impact of PLC on the isolation nature of the profession, and how conflicts were resolved when divergent points of view were present. The methodology included open-ended survey, quantitative data collected by an outside organization, one-on-one interviews, and direct observations of PLC meetings. The findings indicated that the participants reported the implementation of PLCs allowed for sufficient time for teachers to collaborate. It was also concluded that the implementation of PLCs alleviated isolation by providing opportunities for PLCs to meet on a regular basis, promoting collaboration, and helping teachers build relationships. Finally, the majority of the teachers indicated that their PLC had developed a process to effectively resolve conflict.

Huffman and Jacobson (2003) analyzed core processes of PLCs and perceived relationships to school effectiveness. Their research examined perceptions and beliefs about how well the leadership in school learning communities organizes and institutionalizes change to achieve desired results. Of the 83 educators enrolled in master's-level administration classes, all completed questionnaires as the study instrumentation. The core processes most often named were providing a safe environment for diverse ideas, beliefs, and strategies as well as being a democratic organization guided by positive principles, ethics, and values. Ultimately, participants believed a collaborative or transformational style of leadership by the principal influenced the presence of PLC characteristics. Significant relationships between organizational description and leadership styles of principals were found.

Similarly, Siguroardottir (2010) studied the school as a PLC and sought explanations as to whether improvements in the PLC would result in an improvement in

the level of effectiveness of that school. Both a mixed methods approach that utilized a correlation of survey data on schools as PLCs and an experimental methodology were used. In both phases of the study strong evidence was obtained on the relationship between the extent of effectiveness of a school and its level as a PLC. Also, the findings indicated that improvements in the PLC can improve the level of effectiveness of the school; schools can be changed to support better student achievement through individual and collaborative learning, even though the teachers did not perceive this happening. However, how to actually improve the PLC effects on school life still remains largely unanswered.

Kapp (2009) designed a study with the intent of evaluating a team-building intervention that was created to improve the cooperativeness of students who work together successfully in teams. Perspectives of both male and female participants were documented through comment quotes. Results of the study indicated that 85 percent of students reported a positive perception of their team performance and 93 percent reported a positive attitude toward academic teamwork, in general. Ultimately results authenticated that team-building interventions can achieve better-performing student results.

Summers, Beretvas, Svinicki, and Gorin (2005) evaluated collaborative learning and learning communities by conducting a study that assessed the effects of collaborative group learning methods in real classrooms on three specific dependent variables: (a) feelings of campus connectedness, (b) academic classroom community, and (c) effective group processing. Confirmatory factor analyses were conducted to evaluate the factor model utilizing hierarchical linear modeling techniques. Results indicated that campus

connectedness and collaborative learning, compared to no collaborative learning, predicted a positive classroom community. For classes using more formal cooperative work, campus connectedness and group processing evaluation predicted positive academic classroom community.

Learning communities are often developed to provide connections that intend to assist with cognitive engagement of students in high-poverty urban settings. O'Neil and Barton (2005) found that learning communities must be created so that students will have an opportunity to develop ownership. Collaboration is commonly present in a PBL community. Student collaborative projects have numerous advantages over more traditional classroom-based instruction for improved student learning such as achieving higher goals and exhibiting greater productivity (Kapp, 2009).

Various scholars in education have identified the need to develop PLCs that foster rigorous critical dialogue within a supportive environment. The purpose of a study undertaken by Costantino (2010) was to investigate, through practitioner inquiry methodology, how the use of the Critical Friends (CF) protocol influenced the development of support among an intellectual community. Results showed that emergent themes indicated that the CF protocol was essential in creating the framework that allowed for critical feedback in a supportive environment. Another key finding was the value of informal peer dialogue that developed outside the CF discussions. Students reflected on how much they learned about the research process by reading and commenting on the work of other participants. Using the CF protocol within an intellectual community produces valuable targeted criticism within a collegial environment focused on meaningful educational questions (Costantino).

Brownell, Adams, Sindelar, Waldren, and Vanhover (2006) conducted a study demonstrating that teachers who readily incorporate new practices differed in important ways from teachers who did not. Teachers who have a strong knowledge base to build on, who are able to consider the individual needs of students while responding to the whole class, and whose beliefs closely align with the innovations presented seem to understand how to successfully adopt novel strategies. The study exposed how knowledge, beliefs, skills, and reflective ability work together to influence the extent to which teachers benefit from collaborative professional development efforts. Whether or not the ultimate benefit, improvement of student learning, is achieved, it is important to note that collaborative efforts are advantageous only if they help teachers change in ways that promote student learning (Brownell at el.).

Results from an investigation on organizational learning administered by Leonard and Leonard (1999) indicated that principals were seen as important for motivation, but they were not always the strongest advocates of innovation. The data also emulated the contention that professionally-oriented schools must be characterized by various forms of leadership and by participative decision-making processes and structures. Teachers considered informal collaboration to be more effective in terms of leadership provision for change than the more formal structures of planned collaboration. Therefore, two main conclusions emerged from this study. First, information needs to be discovered about factors that influence innovation and change in schools. Second, collaboration should be first and foremost spontaneous, voluntary, and founded in a shared commitment to the task at hand (Leonard & Leonard). A greater understanding of all

facets of teacher collaborative practice can only lead to the progression of educational goals.

Harnell-Young (2006) conducted a study to find out how clusters, networks, and communities use computers to provide support within and across classrooms. The study addressed two major research questions: What roles do knowledge-building teachers play in classrooms using computers? and, What characteristics of communities of practice are evident in these classrooms? Results regarding the role of the teacher in designing the learning environment indicated that teachers in the study expressed a constructivist approach to teaching and learning and, within the classrooms, there were many instances of explicit learning theories and tools expressed as symbols and posters. However, the ability of teachers to affect the physical environment was often constrained. Results regarding managing people and resources indicated that some teachers were able to deal with computer problems themselves as well as pushing forward into new uses that required telecommunications assistance. Results regarding mediating learning indicated that teachers and students were consciously sharing teaching and learning roles. Finally, results with respect to improving practice demonstrated that the teachers in the Harnell-Young study showed their commitment to the moral purpose of teaching by engaging in continual professional learning to improve their practice. Most teachers participating in the study attempted to cover all four identified roles, placing extreme stress on their time and abilities to be experts across the range. It was concluded that this circumstance could be alleviated if more teachers viewed themselves as a part of a community of practice with a shared purpose.

Educators, in particular administrative teams, often demonstrate significant deficiencies in their ability to work together to create a shared vision. The need for the learning organization to have this shared purpose was expounded on by Senge (2006): "It can truly be said that nothing happens until there is vision. But it is equally true that vision with no underlying sense of purpose, no calling, is just a good idea, all sound and fury, signifying nothing" (p. 138).

Integrated Technology

Integration of technology is the process in which technology is used as a tool to actively support the task of teaching and learning (Keengwe & Onchwari, 2011). The National Center for Educational Statistics (NCES) (2012) provides a more in-depth definition of technology integration as the following:

> Technology integration is the incorporation of technology resources and technology-based practice into the daily routines, work, and management of schools. Technology resources are computers and specialized software, network-based communication systems, and other equipment and infrastructure. Practices include collaborative work and communication, Internet-based research, remote access to instrumentation, network-based transmission and retrieval of data, and other methods. This definition is not in itself sufficient to describe successful integration: it is important that integration be routine, seamless, and both efficient and effective in supporting school goals and purposes. (para. 3)

According to the U.S. Department of Education (2012), citing the NCES (2010), in 2009 97 percent of teachers had one or more computers located in their classrooms every day, while 54 percent could bring computers into the classroom. That same year,

internet access was available for 93 percent of the computers located in classrooms every day and for 96 percent of the computers that could be brought into the classroom. The ratio of students to computers in the classroom everyday was 5.3 to1. Teachers reported that they or their students used computers in the classroom during instructional time often (40 percent) or sometimes (29 percent). Teachers reported that they or their students used computers in other locations in the school during instructional time often (29 percent) or sometimes (43 percent). Teachers reported having the following technology devices either available as needed or in the classroom every day: Liquid Crystal Display (LCD) or Digital Light Processing (DLP) projectors (36 and 48 percent, respectively), interactive whiteboards (28 and 23 percent, respectively), and digital cameras (64 and 14 percent, respectively). Of the teachers with the device available, the percentage that used it sometimes or often for instruction was 72 percent for LCD or DLP projectors, 57 percent for interactive whiteboards, and 49 percent for digital cameras (U.S. Department of Education, National Center for Education Statistics, 2010).

Emerging technologies potentially impact teaching, learning, and creative expression within the environment of pre-college education. In 2012, the following key trends were ranked by the International Society for Technology in Education (ISTE) according to how significant each was likely to be for K-12 education in the next five years: (a) education paradigms are shifting to include online learning, hybrid learning, and collaborative models; (b) the abundance of resources and relationships made easily accessible via the Internet is increasingly challenging us to revisit our roles as educators; (c) as the cost of technology drops and school districts revise and open their access policies, it is becoming increasingly common for students to bring their own mobile

devices; (d) people expect to be able to work, learn, and study whenever and whatever they want; (e) technology continues to profoundly affect the way we work, collaborate, communicate, and succeed; and (f) there is a new emphasis in the classroom on more challenged-based, active learning. Although local and organizational constraints are often the most important factors in any decision to integrate or not integrate a given technology, the NMC Horizon Report (2012) also considers the following constraints and challenges: (a) digital media literacy continues its rise in importance as a key skill in every discipline and profession, especially teaching; (b) K-12 must address the increase blending of formal and informal learning; (c) the demand for personalized learning is not adequately supported by current technology or practices; (d) institutional barriers present formidable challenges to moving forward in constructive ways with emerging technologies; (e) learning that incorporates real-life experiences is not occurring enough and is undervalued when it does take place; and (f) many activities related to learning and education take place outside the walls of the classroom and thus are not part of traditional learning metrics (International Society for Technology in Education, 2012).

In 2001, legislation was passed by the United States government with the intent of ensuring technology integration into classrooms across the nation. The *Enhancing Education Through Technology Act of 2001* had the primary goal of improving student academic achievement through the use of technology in elementary schools and secondary schools. Additional goals of the legislation include the following: (a) assist every student in crossing the digital divide by ensuring that every student is technologically literate by the time the student finishes the eighth grade regardless of the race, ethnicity, gender, family income, geographic location, or disability of that student;

and (b) encourage the effective integration of technology resources and systems with teacher training and curriculum development to establish research-based instructional methods that can be widely implemented as best practices by state educational agencies and local educational agencies (U.S. Department of Education, 2012).

Educational researchers are now compelled to embrace the integration of technology into daily occurrences of the classroom. Computer technology is an effective means for widening educational opportunities, but many teachers neither use technology as an instructional delivery system nor integrate technology into their curriculum. Bauer and Kenton (2005) found that even though teachers were highly skilled with technology and adept at overcoming obstacles, they did not integrate technology on a consistent basis as both a teaching and learning tool. Two key issues were that their students did not have enough time at computers and that teachers need extra time planning for technology lessons.

More recently, Palak and Walls (2009) conducted research utilizing a sequential mixed methods design that sought to examine the relationship between the beliefs of teachers and their instructional technology practices among technology-using teachers who worked at technology-rich schools to ultimately describe if change in practice toward a student-centered paradigm occurred. Results of the study provided evidence for the following: (a) teachers use technology most frequently for preparation, management, and administrative purposes; (b) use of technology by teachers to support student-centered practice is rare even among those who work at technology-rich schools and hold student-centered beliefs; (c) teachers in technology-rich schools continue to use technology in ways that support their already existing teacher-centered instructional

practices. Palak and Walls concluded that technology professional development efforts need to focus on integration of technology into curriculum via student-centered pedagogy while attending to multiple contextual conditions.

The introduction of computers and the spread of constructivist teaching approaches have generated much discussion about the changing role of teachers. Proponents of technology integration in the classroom have long argued how the use of technology can have transformative power on teaching and learning, particularly toward a more student-centered constructivist pedagogical paradigm (Becker, 1999; Becker, 2000; Dexter, 1999; Matzen & Edmunds, 2007); non-proponents argue no significant relationship exists between frequent computer use and teacher change in practice toward a student-centered paradigm (Cuban, Kirkpatrick, & Peck, 2001; Judson, 2006; Saye, 1998; Wang, 2002). This is most evident among new or pre-service teachers, as Wang (2002) determined when he investigated the perceptions of pre-service teachers role with computers in the classroom. According to the results, pre-service teachers perceived that they were likely to engage in teacher-centered activities and student-centered activities on an equal basis when teaching in classrooms with computers. Nevertheless, when tested on their choice of computer uses, pre-service teachers shifted to teacher-centered computer uses. There was a significant difference between the pre-service teachers' choice of teacher-centered computer use and student-centered computer use. The pre-service teachers would more likely use the computer as a teacher-centered tool than as a student-centered tool (Wang).

Although educators may be surrounded by technology in their personal lives and are able to use it in a variety of ways, Donovan, Green, and Hansen (2011) questioned

whether teacher candidates have the instinctive ability to effectively integrate technology into their teaching practices. Their study compared teacher candidates' initial and changed beliefs, dispositions, and uses of technology in two credential program models: one-to-one laptop program and a traditional program. Survey analysis found that pre-test candidates who self-selected to be involved in the laptop program had lower ratings on beliefs about technology use than candidates who did not. At post-test laptop candidates showed development in all three areas, whereas non laptop candidates showed no change over time. Findings of this study seem to indicate that programs in which technology use is ubiquitous better prepare teaching candidates for technology rich classrooms.

Schwartz (2013) reported that more than 1,400 educators responded to the annual Software and Information Industry Association's (SIIA) 2013 Vision K-20 survey to determine if technology is being used to help all learners achieve in a connected and digital world. The point of the survey is to provide a snapshot of how educators currently use technology and give educators a way to benchmark progress. The Vision K-20 survey asks educators about five benchmarks including: (a) using 21st century learning tools for teaching and learning, (b) providing anytime/anywhere educational access, (c) using technology to close the achievement gap, (d) using technology-based assessment tools, and (e) enabling enterprise through technology.

Many teachers are aware that technology use and integration are effective means for widening educational opportunities, yet, many teachers neither use technology as instructional delivery systems nor integrate technology into their curriculum (Bauer & Kenton, 2005). Likewise, the SIIA Vision K-20 (2013) survey reports that technology implementation data has stayed steady over the past three years. Twenty percent of K-12

school educators report that their schools are integrating technology at a high level and 30 percent of post-secondary educators report the same. Educators also report that schools are integrating technology at the highest level when it comes to security, bandwidth and creating website portals for the community to access online content. Galizio, Ledesma, and Schrum (2011) found that most states and institutions do not require formal preparation in understanding or implementing technology for instructional purposes, and that it is likely their graduates are not prepared to implement technology systemically in their school. Hall (2010) argued that an inherent characteristic of technology integration is the continual development of new technologies as well as the creation of innovative applications for already existing technologies. Schwartz (2013) highlighted the SIIA Vision K-20 survey that reported because technology often moves faster than the educator can keep up with, educators and students alike are frequently challenged to accomplish high levels of technology implementation.

Increasingly, demands are being placed on schools to develop 21st century technological competencies among their students. Spektor-Levy and Granot-Gilat (2012) conducted a study to examine the impact of a one-to-one program on the implementation of learning skills, information literacy, and the usage of computerized tools among students. Findings indicated that students from 1:1 classes performed significantly better than students from the comparison group. Their higher competencies were manifested in the final score as well as in skills such as organizing information in a table, evaluating information and its reliability, quality of argumentation, and presentation of knowledge while using computerized tools. These results indicate the positive effects of learning with personal laptops.

Becker (1999) explored how the use of computers may be a powerful catalyst leading to more constructivist practices on the part of teachers. Survey research at 153 schools of the National School Network provided evidence that, under favorable conditions, schools with informational and social support as well as sufficient technological infrastructure in place, sustained use of computers and exploration of Internet resources by teachers. It is believed that this 'sustained use' was related to their increase use of constructivist teaching practices that may even ultimately change the pedagogical beliefs of that teacher. Dexter (1999) examined the use of computers by teachers and their perception of the impact of computers on their classroom practice. Results indicated that teachers who adopted more progressive teaching practices over time felt that computers helped them change; however, they did not acknowledge computers as the catalyst of change. Instead, they cited reflection upon experience, classes taken, and the context or the culture of the school. This finding did not diminish the basic need of the teacher to access technology, technical support, training, and time to learn. Consequently, it framed these needs in the larger context of factors conducive to a teacher learning to teach effectively with technology. Matzen and Edmunds (2007) wrote an analysis from results of an evaluation of The Centers for Quality Teaching and Learning that focused on the relationship between the professional development and the use of technology by teachers in their classroom and their general instructional practices. Results from this study indicated teachers increased their use of technology in ways viewed as more constructivist, regardless of their broader instructional practices. This transpired more often after professional development presented technology within the context of student-centered instructional practices; consequently teachers were more

likely to change their instructional practices with their use of technology (Matzen & Edmunds).

Results from research conducted by Grant, Ross, Weiping, and Porter (2005) identified three factors as indicators for change impacting technology integration: (a) teacher technological knowledge and efficacy, (b) pedagogical knowledge, (c) and a supportive professional community. Meaningful integration of technology into instruction occurs when the application directly: (a) supports the curriculum objectives being assessed; (b) provides opportunities for student collaboration and project/inquiry based learning; (c) adjusts for student ability and prior experience, and provides feedback to the student and teacher about student performance; (d) is integrated throughout the lesson; (e) provides opportunities for students to design and implement projects that extend the curriculum content being assessed; and (f) is used in environments where the organization leaderships supports technological innovation (Keengwe & Onchwari, 2011; Kidd, 2009; Kulik, 2003). Kozman (2003) highlighted the global impact that integrated technologies were having in education noting that technology supported innovative classroom practices in many countries around the world have many qualities in common. Proper technology integration complements a constructivist pedagogical theory where the traditional role of the teacher as a dispenser of information is challenged and the new role of the teacher is that of a guide who challenges the way the student thinks and encourages reflection in the learning process (Brooks & Brooks, 2001).

More recent technological educational enhancements include tablet or wireless capabilities. Enriquez (2010) focused a study on how tablet PCs and wireless technology create Interactive Learning Networks (ILN) that are designed to increase the ability of the

instructor to solicit active participation from all students during lectures in order to conduct immediate and meaningful assessment of student learning. Two case studies that involved comparing two ILN model courses with two traditional instructor-centered courses show that the implementation of the ILN model has a statistically significant positive impact on student performance. The interactive classroom environment developed using wireless tablet PCs has the potential to be more effective teaching pedagogy in problem solving intensive courses compared with traditional instructor-centered teaching environments.

Likewise, ChanLin (2007) conducted a study on the perceived importance and manageability of teachers on the factors in technology integration determined that teachers must be supported in collaborating with other educators for educational change to occur. The NCES (2012) claims the following as the ultimate goal of integrated technologies:

> The goal of perfect technology integration is inherently unreachable: technologies change and develop, students and teachers come and go, things change. It is the process by which people and their institutional setting adapt to the technology that matters most. The process of technology integration is one of continuous change, learning, and hopefully improvement. (para. 4)

The NCES' claim of technology being "inherently unreachable," notwithstanding, a 2010 report from *Project Red* found that "schools employing a 1:1 student-computer ratio out-performed other schools, and reveal significant opportunities for improving education return on investment by transforming teaching and learning." Further, the study reported that ubiquitous technology in high schools somewhat greatly improved

college enrollment, AP course enrollment, plans for higher education attendance, graduation rates, and rates of high school completion (Hanover Research, January 2013).

New Tech Reform Model

The New Tech High School (NTHS) model is administered by the New Tech Network (NTN), a nonprofit organization based in Napa, California. The NTHS model merges PBL with integrated technology use and empowering school culture. According to the New Tech Network (2011), three key elements are featured in the model. First, NTHS utilizes instructional strategies like PBL that emphasize technology use, standards-based projects, and cultivation of community partnerships. Second, NTHS aims to develop a school culture of "trust, respect, and responsibility," whereby students and teachers are empowered to make meaningful contributions to school policy and learning. Third, NTHS prioritizes full-scale technology integration into classrooms through one-to-one computing ratios, Internet access, and the use of learning management system that transforms students into self-directed learners and teachers into learning facilitators.

The New Tech Network (2012) documents that many schools that have adopted the NTHS model have done so in one of three ways: (a) small learning community (SLC), which is a small school program in shared facility for whole school cooperation; (b) whole school conversion (WSC), where an entire school adopts the New Tech model, usually transitioning by adding one grade each year so that all students eventually will become New Tech students; or (c) autonomous school (AS), which is a school located on a separate site from existing district schools and admitting students from throughout the district. In 2009-2010, NTN had 42 schools in nine states. Community locations were diverse with 37 percent of the schools in urban locations, 38 percent of the schools in

suburban locations, and 25 percent of the schools in rural communities. That same year, 17 percent of NTHS were considered WSC, 40 percent were considered AS, and 43 percent were considered an SLC (New Tech Network, August 2010). In 2010-2011, the NTN had 63 schools in 14 states. One third of these schools were in their first year of implementation, and two-thirds of those NTHS had not yet graduated their first class. Additionally, 10 percent of NTHS were considered WSC, 40 percent were considered AS, and 50 percent were considered a SLC. Community settings that year varied with 37 percent of the schools in urban locations, 25 percent of the schools in suburban locations, and 38 percent of the schools in rural communities (New Tech Network, April 2012). By 2012-2013, the NTN consisted of 120 schools on two continents in 18 states with 2,400 teachers and 35,000 students (New Tech Network, April 2013). Campus type continued to evenly vary with 37 percent of NTHS considered WSC, 30 percent were considered AS, and 33 percent were considered a SLC. That same year, the NTHS community settings were described as 47.5 percent of the schools in urban locations, 14 percent of the schools in suburban locations, 16 percent of the schools in rural communities, and 22.5 percent considered in town communities (New Tech Network, April 2013). Most recent demographic reports indicate that the NTN student body is diverse in the following proportions: 24 percent African American, less than one percent American Indian, five percent Asian, 21 percent Hispanic, 48 percent white, two percent multi-racial or other, 54 percent male, 46 percent female, five percent English Language Learners, nine percent special education, and 47 percent free and reduced lunch (New Tech Network, April 2013).

Technology literacy, citizenship, ethics, oral communication, curricular literacy, collaboration, career preparation, critical thinking, and written communication all serve as tools for learning and living in a global economy. All course subjects at a NTHS are to be integrated, so while learning literature, students may also be engaged in aspects of biology, social studies and math. Students will not likely take exams to test their knowledge, but are more likely to present a self-created presentation as a capstone for their project. Rather than imparting information, teachers help students engage in a discovery process for new knowledge in a NTHS classroom. Teachers are more likely to spend more time sitting next to student teams asking questions to guide learning rather than lecturing at the front of the classroom. Using a collaborative PLC approach, teachers work together to integrate course content design projects that incorporate multiple areas of learning. Teachers design real-world projects and require students to present their work to external audiences that provide unique insight and feedback. NTHS teachers receive in-depth training at national and local conferences in order to transition to the PBL environment. On-site coaching is also available throughout the school year to improve teaching strategies (Center of Excellence in Leadership and Learning from the University of Indianapolis, 2012).

The NTN vision of creating self-directed life-long learners by teaching students the skills they need for today and workforce of tomorrow (New Tech Network, 2011) cannot be measured with a single standard assessment. Therefore, to complement mandatory state standard testing, a series of benchmarks has been created to monitor progress of students throughout their high school years. The goal is for all NTN students to develop proficiency across a range of skills and academic content areas that is assessed

through: (a) monitoring, annually collecting and analyzing a range of academic indicators to ensure that schools are demonstrating adequate performance levels across content and skill areas as well as closing achievement gaps where they exist; (b) benchmarking, comparing NT schools in relation to the performance of other high school and college students across the country by evaluating their progress in ways that are aligned to world class standards predictive of postsecondary success; and (c) knowledge capture, reflecting upon implementation and outcome data to identify areas of needed support (New Tech Network, January 2011).

The following measures are used by the NTN to survey success: (a) Content Mastery - results from state proficiency test in math, English/language arts, and science are analyzed to determine growth and performance in relation to comparison school and district averages; (b) College Readiness Indicators - high school graduation rates, SAT/ACT scores, college course credits earned, and college application and acceptance rates are monitored across sites when available; (c) Postsecondary Enrollment - college enrollment data are collected from the National Student Clearinghouse during the Fall of each year to track enrollment, retention, and completion rates; (d) Deeper Learning Outcomes- all NT sites establish and monitor annual school wide learning outcome targets to assess critical thinking, communication, collaboration, creativity and other deeper learning skills; (e) College and Work Readiness Assessment- NTN is currently piloting the College and Work Readiness Assessment (CWRA), published by the Council for Aid to Education (CAE), in several schools to measure the impact of the NT model on students' critical thinking, problem solving, and written communication skills; (f) Federal Accountability- annual yearly progress status and the percentage of criteria met are

monitored; and (g) Student Voice- NTN is piloting the Center for Effective Philanthropy' *YouthTruth* survey to assess school culture and student empowerment in over half of the NTN schools (New Tech Network, January 2011).

In August of 2011, the NTN began posting results along several measures of academic progress including reading, math, and science achievement, post-secondary readiness including college acceptance and persistence rates, and behavioral indicators. Proficiency rates for math achievement in 2008-2009 indicated that 50 percent of the NTHS surpassed comparison school rates in Algebra 1, 38 percent of NTHS outperformed comparison schools in Algebra 2, and 43 percent of NTHS outperformed comparison schools in Geometry (New Tech Network, August 2010). In 2009-2010, 52 percent of NTHS met or surpassed comparison schools on their state math tests (New Tech Network, August 2011). Results analyzed from each NTHS's reading state test compared to comparison schools indicate that reading achievement was strong at 9th grade, but decreased somewhat in upper grade levels. Overall, 89 percent of NTHS outperformed the 9th grade reading rates of their comparison sites. In contrast, slightly lower rates were evident in 10th and 11th grade reading between 63 and 67 percent of NTHS sites surpassed comparison schools (New Tech Network, August 2010). In 2009-2010, 70 percent of NTHS met or surpassed comparison schools in their state English/Language Arts test (New Tech Network, August 2011). Results analyzed from each NTHS's reading state test compared to comparison schools indicate that the majority of NTHS performed well in life science and biology and had lower achievement in chemistry. In life science and biology, NTHS outperformed comparison sites at high rates (75 percent and 69 percent, respectively). However, the success rate for chemistry

was lower at only 36 percent (New Tech Network, August 2010). In 2009-2010, 65 percent of NTHS met or surpassed comparison schools on their state Science test (New Tech Network, August 2011).

Of the 42 NTHS in 2009-2010, 19 were designated as NTN Demonstration Sites. These were exemplary schools within the NTN that operated with fidelity to the model for two or more years. School-wide learning outcomes that promote deeper learning skills like collaboration and communication in addition to content mastery as well as school-wide use of PBL, deep integration of technology, and a school culture built on trust respect and responsibility are all characteristics of a NTN Demonstration site. There is at least a moderate relationship between the NTHS model fidelity and student achievement. Several schools implementing the model at high levels based on NTN commitment criteria also demonstrated high achievement patterns in reading and math state test scores. In 2008-2009 among NTN demonstration schools, six of seven surpassed comparison schools in 9th grade reading, while six of eight schools did so in 10th grade reading. That same year eight of ten demonstration schools surpassed comparison schools in Algebra I (New Tech Network, August 2010). In 2009-2010, 71 percent of NTHS demonstration schools outperformed comparison schools in Math, compared to 47 percent of non-demonstration sites; 77 percent of NTHS demonstration schools outperformed comparison schools in English/language arts, compared to 75 percent of non-demonstration sites; and, 74 percent of NTHS demonstration schools outperformed comparison schools in science, compared to 60 percent of non-demonstration schools (New Tech Network, August 2011).

Evidence indicates that NTHS succeed in preparing students for post-secondary options of their choice. In 2008-2009, 85 percent of NTHS seniors applied to one or more colleges. Among these students, a total of 98 percent were accepted to at least one postsecondary institution. The acceptance rate for students who applied to a two-year college was 100 percent, while the rate to those who applied to a four-year college was 85 percent. In 2010, 71 percent of NTHS graduates enrolled in college (New Tech Network, August 2011). In 2010-2011 62 percent of graduating seniors enrolled in a four-year college while 37 percent of graduating seniors enrolled in a two-year college (New Tech Network, April 2012). On average, 74 percent of students who graduated from NTN schools in 2011 enrolled in post-secondary education (New Tech Network, April 2013); this is a rate nine percent greater than the national average (National Center for Educational Statistics, 2012).

The post-secondary persistence rate, students remaining in post-secondary studies from their freshmen year to their sophomore year, of NTHS students is attractive as well. While the rate of NTHS students enrolling in four-year institutions is virtually the same as the national average 43 and 42 percent, respectively, NTHS students enroll in two-year colleges at a rate of 31 percent compared to the national average of 26 percent (New Tech Network, April 2013). Out of the five schools that had a graduating class in 2009, 91 percent of students remained in college (New Tech Network, April 2012); of the 11 schools with a graduating class in 2010, 90 percent of students who enrolled in four-year institutions continue enrollment into their sophomore year (New Tech Network, April 2013) a rate 17 percent greater than the national average (National Center for Educational Statistics, 2012). Furthermore, 79 percent of NTHS enrolled in two-year institutions

continued the following year (New Tech Network, April 2013), a rate 46 percent greater than the national average (National Center for Educational Statistics, 2012).

While the college acceptance, enrollment, and persistence rates are high, the average SAT/ACT scores of NTHS students were initially below national averages, but they have seen steady increases. The average SAT scores for NTHS students ranged between 452 (writing) to 493 (critical reading). The average critical reading score was only eight points below the national average, the average math and writing scores were 41 points lower. The average ACT scores ranged from a low 18.7 in English to 20.1 in science. The science scores more closely approached the national average (0.9 point lower). At 1.9 points fewer, the largest gap was in English (New Tech Network, August 2010). In 2009-2010, NTHS students averaged 1317 in SAT scores with an average of 20.2 in ACT scores (New Tech Network, August 2011), while in 2010-2011, NTHS students averaged 1375 in SAT scores with an average of 21.1 in ACT scores (New Tech Network, April 2012). By 2012, 31 NTN schools reported an average score of 20.8 on the ACT, nearly equivalent to the 21.1 national average score (New Tech Network, April 2013).

In 2008-2009, the NTN documented high rates of attendance and low dropout and suspension rates. Overall, 93 percent of NTHS had attendance rates between 90 and 100 percent. In 2009-2010, NTHS has an average attendance rate of 91 percent across all schools (New Tech Network, August 2011) while in 2010-2011 attendance rates averaged 95 percent (New Tech Network, April 2012). Almost two-thirds of NTHS had a zero percent dropout rate across grades in 2008-2009 (New Tech Network, August 2010), however, by 2010-2011 dropout rates were recorded at three percent (New Tech

Network, April 2012). That same year almost half of NTHS had a suspension rate between zero and five percent. An additional 40 percent of the schools had suspension rates between six and 10 percent (New Tech Network, August 2010). In 2009-2010, the annual graduation rate was 95 percent and the four-year cohort rate was 80 percent (New Tech Network, August 2011) while in 2010-2011 it was reported the annual graduation rate for NTHS was 97 percent and the four-year cohort rate was 86 percent (New Tech Network, April 2012).

Positive results are posted for the NTHS model along several measures of academic progress (reading, math, and science state testing scores), post-secondary readiness (college acceptance and persistence rates), and behavioral indicators (attendance, drop-out, and suspension rates). Schools within the NTN that operate with fidelity to the model for two or more years out-performed comparison schools in measures of academic progress as it relates to reading, math, and science state test scores. Furthermore, evidence indicates that NTHS models succeed in preparing students for post-secondary options of their choice as NTHS student application and acceptance rate to college remains above 85 and 98 percent respectively. Additionally, the post-secondary persistence rate, students remaining in post-secondary studies from their freshmen year to their sophomore year, of NTHS students is also 17 percent greater than the national average (National Center for Educational Statistics, 2012). However, while college acceptance, enrollment, and persistence rates are high, the average SAT/ACT scores of NTHS students were initially below national averages, but they have seen steady increases. Finally, the NTN documented high rates of attendance and low drop-out and suspension rates (New Tech Network, April 2012).

CHAPTER THREE

METHODOLOGY

The New Tech High School (NTHS) model embeds learning outcomes in instructional approaches that are centered on project-based learning (PBL), a culture that empowers students and teachers as a professional learning community (PLC), and classrooms with integrated technology. The New Tech Network (NTN) touts enhanced educational outcomes obtained through student collaboration on projects that require critical thinking and communication intended for learning to remain contextual, creative, and shared. Likewise, the use of technology supports the approach to instruction and culture of the NTN by ensuring that all students have a one-to-one student-to-computer ratio by securing access to web-enabled computers and the latest in collaborative learning technology. Finally, each NTHS is expected to maintain a PLC culture that promotes trust, respect, and responsibility, thereby allowing students and teachers ownership of the learning experience and the school environment (New Tech Network, 2012).

Many schools that have adopted the NTHS model have done so in one of three ways: (a) small learning community (SLC), which is a small school program within a shared facility for whole school cooperation; (b) whole school conversion (WSC), where an entire school adopts the New Tech model, usually transitioning by adding one grade each year so that all students eventually will become New Tech students; or (c) autonomous

school (AS), which is a school located on a separate site from existing district schools and admitting students from throughout the district.

In this chapter, the research problem, research questions, and research hypotheses are again presented. A description of the research methodology is also provided. The study examined the relationship between adopted NTHS model types and student achievement. The studied model configurations will include small learning community (SLC), whole school conversion (WSC), and autonomous school (AS). The NTHS model configurations were examined in relationship to three identified intended outcomes of the New Tech Network (NTN). This chapter also addresses the research design, sample, instrumentation, reliability, data collection, and analysis techniques associated with the study.

Problem

The purpose of this study was to examine the relationship between the three NTHS models and desired student and school achievement outcomes of the NTN as indicated by state proficiency exams, that is: End of Course (EOC) exams; college and career readiness exams, American College Test (ACT); and overall school accountability scores, known in Louisiana as School Performance Scores (SPS).

Research Questions

The following four questions guided this study:

1. Is there an association between the New Tech High School model configurations examined and student achievement scores on English/language arts, mathematics, and science state proficiency exams?

2. How do students from the examined New Tech High School model configurations of Small Learning Community, Whole School Conversion, or Autonomous School compare to the Louisiana state average score on college readiness exams, the American College Test (ACT)?
3. How do the examined New Tech High School model configurations of Small Learning Community, Whole School Conversion, or Autonomous School compare to state average School Performance Scores (SPS)?
4. Is there a relationship between principal/teacher perceptions of implementation of the New Tech Network instructional approaches and principal/teacher perceptions of meeting the New Tech Network desired student outcomes?

Null Hypotheses

The following null hypotheses were formulated:

1. Based upon the New Tech High School model used by each school and when compared to each of the model configurations used for this study, there will be no association between New Tech High School model configurations and student achievement scores on the:
    a. English language arts state proficiency exams;
    b. Math state proficiency exams;
    c. Science state proficiency exams;
2. Based upon the New Tech High School model configurations used for this study and when compared to the Louisiana state average composite ACT score, the New Tech High School model configurations will not report higher student

achievement scores on college readiness indicator exams, specifically ACT scores.

3. Each New Tech High School model configuration (Small Learning Community, Whole School Conversion, or Autonomous School) will not report higher program success than the average Louisiana high school as identified by School Performance Scores (SPS).
4. Based upon the School Success Rubric (SSR) utilized by each school to self-assess learning, cultural, and college/career outcomes, a positive correlation will not be found in principal/teacher perceptions of implementation of the New Tech Network instructional approaches and principal/teacher perceptions of meeting the New Tech Network desired student outcomes.

Research Design

An ex post facto research design was used to test all hypotheses. Gall, Gall, and Borg (2007) defined ex post facto research design as a design that relies "on the observations of relationships between naturally occurring variations in the presumed independent and dependent variables" (p. 306). A nonparametric test, like the X^2 (chi-square) distribution, is a statistical test of significance that requires fewer assumptions than parametric tests. Hinkle, Wiersma, Jurs (2003) defined the X^2 (chi-square) distribution as an analysis of nominal data where comparisons are made between "observed frequencies of occurrence with theoretical or expected frequencies" (p. 547). A X^2 (chi-square) distribution was used in testing the first hypothesis to ascertain whether an association exist between NTHS model configuration and student achievement scores on state proficiency exams.

The NTHS models were divided into three types based on criteria outlined by the NTN. These models consisted of SLC, WSC, and AS. The independent variable was the examined NTHS model configurations that include autonomous school (AS) – *Louisiana New Tech A*, whole school conversion (WSC) – *Louisiana New Tech B*, small learning community (SLC) – *Louisiana New Tech C*. Data for the independent variable for the first null hypothesis was generated from NTHS model characteristics specific to WSC, SLC, and AS models. The dependent variable for the first null hypothesis was student performance scores on state proficiency exams (English I and II, Biology I, and Algebra I End of Course Exams). This dependent variable was not the raw student performance, but rather the percentage of students who achieved the following levels of performance: (a) needs improvement, (b) fair, (c) good, and (d) excellent.

Hinkle, Wiersma, Jurs (2003) explained that standard scores, also called *z scores*, use the standard deviation as the unit of measure, therefore describing a relative position of a single score in the entire distribution of scores in terms of the mean and the standard deviation. Such scores are calculated and then converted to percentile rank that gives the percent of scores falling at or below the specified score. Percentile rank allows the researcher to draw more meaningful data that demonstrate the positions of the school's average score in relation to the average student scores across the state. To address the second and third null hypotheses, *z scores* and percentile ranks were calculated to determine whether the three NTHS model configurations (WSC, SLC, and AS) report significantly higher student achievement on college readiness indicator exams compared to the Louisiana state average and to determine whether the NTHS model configurations

(WSC, SLC, and AS) lead significantly higher school achievement compared to the Louisiana state average as indicated by SPS.

For null hypothesis two, the independent variable was the examined NTHS model configurations that include autonomous school (AS) – *Louisiana New Tech A*, whole school conversion (WSC) – *Louisiana New Tech B*, small learning community (SLC) – *Louisiana New Tech C*. Data for the independent variable were generated from NTHS model characteristics specific to AS – *Louisiana New Tech A*, WSC – *Louisiana new Tech B*, SLC – *Louisiana New Tech C*. The dependent variables for the second null hypothesis was an average of composite student performance on college and career readiness indicator exams (ACT), ranging from zero to 36 (Louisiana Department of Education, 2013). Hinkle, Wiersma, and Jurs (2003) explained that standard scores, also called *z scores*, use the standard deviation as the unit of measure therefore describing a relative position of a single score in the entire distribution of scores in terms of the mean and the standard deviation. To calculate the *Z score*, the researcher took the individual NTHS average composite American College Test (ACT) score and subtracted the state average composite ACT score and divided it by the state standard deviation (ACT, 2014). This procedure allowed the researcher to make a conclusion at a course level the degree of difference between state averages and averages of the NTHS model configurations. In other words, how well were the NTHS performing relative to the state average.

For null hypothesis three, again the independent variable was the examined NTHS model configurations that include autonomous school (AS) – *Louisiana New Tech A*, whole school conversion (WSC) – *Louisiana New Tech B*, small learning community (SLC) – *Louisiana New Tech C*. Data for the independent variable were generated from

NTHS model characteristics specific to AS – *Louisiana New Tech A*, WSC – *Louisiana new Tech B*, SLC – *Louisiana New Tech C*. Data for the dependent variables (SPS score) were obtained from both the Louisiana Department of Education and from individual school records. School performance score (SPS) data were collected from the Louisiana Department of Education. The SPS are calculated by the Department of Education for every public school in Louisiana and is reflective of student achievement, attendance, and dropout rates. This data are made publically available on the Louisiana Department of Education website.

To test the fourth null hypothesis, which proposed a positive correlation would not be evident in principal/teacher perceptions of implementation of NTN instructional approaches and principal/teacher perceptions of the NTN desired outcomes, a principal/teacher survey was administered based upon the School Success Rubric (SSR) utilized by each school to self-assess learning, cultural, and college/career outcomes. Hinkle, Wiersma, and Jurs (2003) explained that a correlation is present when performance on two variables is related. The correlation coefficient is an index that describes the extent to which two sets of data are related; it is the measure of the relationship between two variables. Utilizing results from the survey a statistical analysis, Pearson product-moment correlation coefficient (r), was used to examine the relationship between the independent variable, NTHS principal/teacher perceptions of instructional approach implementation, and the dependent variable, NTHS principal/teacher perceptions of meeting NTN outcomes.

Sample

The sample for this study was obtained from three Louisiana New Tech High Schools. In order to maintain anonymity the following pseudonyms were given to each school: *Louisiana New Tech A*, *Louisiana New Tech B*, and *Louisiana New Tech C*. All three NTHS used for this study participated in the NTN during the 2012-2013 school year and together represent all three model configurations of the NTN. *Louisiana New Tech A* is an autonomous school (AS) model with 329 students and 47 faculty members with 86.3% of the student population receiving free and reduced lunch. Male student population was reported as 45.3%, while female student population was reported as 54.7%. White students made up .3% of the school population while black students make up 99.4% of the school population. *Louisiana New Tech B* is a whole school conversion (WSC) model with approximately 229 students, 35 faculty members with 78.6% of the student population receiving free and reduced lunch. Male population was reported as 50.7% while female population was reported as 49.3%. White students make up 34.9% of the school population while 64.6% of the school population is black. *Louisiana New Tech C* is a small learning community (SLC) model with approximately 246 students, 14 faculty members with 45.6% of the student population receiving free and reduced lunch. Male population is reported as 56.0% and female population is reported as 44.0%. White students made up 48.0% while black students made up 48.0% of the student population. Asian students made up 1% while Hispanic students made up 3% of the student population. The sample school descriptions and demographics according to the NTN and the Louisiana Department of Education are presented in Table 1.

Table 1

Sample School Descriptions and Demographics According to the New Tech Network, 2012 and the Louisiana Department of Education, 2013

Demographic Variables	Louisiana New Tech A	Louisiana New Tech B	Louisiana New Tech C
Grade-level	9-12	6-12	9-12
NTN Configuration	Autonomous School (AS)	Whole School Conversion (WSC)	Small Learning Community (SLC)
Faculty Size	47	35	14
Student Population	329	229	246
Free/Reduced Lunch	86.3	78.6	45.6
Gender			
Male	45.3	50.7	56.0
Female	54.7	49.3	44.0
Ethnicity			
African American	99.4	64.6	48.0
Asian	0.0	0.0	1.0
Caucasian	.3	34.9	48.0
Hispanic	0.0	0.0	3.0
Pacific Island	0.0	0.4	0.0

Note: Free/Reduced lunch, Gender, and Ethnicity listed as percent.

Instrumentation

Criterion-referenced measurement involves the interpretation of an individual's score by comparing it to a pre-specified standard of performance. Such assessments are designed to typically focus on a narrow domain of knowledge or skills. Criterion-referenced measurement reliability can be defined as the consistency with which the measure accurately estimates each individual's level of mastery of the test domain. Procedures for determining the reliability of these assessments parallel the split-half, test-retest, and alternate form methods used with norm-referenced tests. Reliability is reported in terms of percentage of agreement (Gall, Gall, & Borg, 2007). Instrumentation for the

research included state proficiency exams (English I and II, Biology I, and Algebra I End of Course Exams), student performance on college and career readiness indicator exams (ACT), and school performance score (SPS) data reflective of student achievement, attendance, and dropout rates.

End of Course (EOC) exams are assessments developed collaboratively by the State of Louisiana and a coalition of states called the Partnerships for Assessment of Readiness for College and Careers (PARCC). These identical criterion-referenced assessments measure students on a set of specified criteria allowing Louisiana to benchmark its progress against other states (Louisiana Department of Education, 2013). Student scores on EOC exams are categorized as: (a) excellent: a student demonstrates superior performance of the course content; (b) good: a student demonstrates mastery of course content and is well prepared for the next level of course work in that subject; (c) fair: a student only demonstrates fundamental knowledge and skills needed for the next level of course work in the subject; and (d) needs improvement: a student does not demonstrate the fundamental knowledge and skills needed for the next level of course work in the subject.

Louisiana students in the eleventh grade of high school are required to take the ACT, as an indicator of readiness to graduate from high school on time and with the knowledge and skills to succeed in college and challenging 21st century careers (Louisiana Department of Education, 2013). This exam assesses student achievement in English, reading, math, and science. Students earn a score in each subject as well as a composite score that reflects all subjects. The exam is scored on a scale of 0-36 with the

State of Louisiana reporting an average of 20.1 in 2011(Louisiana Department of Education, 2013).

School Performance Scores (SPS) are based on student achievement on state standardized tests and additional measures of student success, such as credit accumulation, completion of rigorous courses and graduation. In high school, half of each school's grade is based on student achievement (25% on the ACT and 25% on EOC tests) and half of the school grade is based on graduation (25% on the graduation index and 25% on the graduation cohort rate) (Louisiana Department of Education, 2013).

Schools earn points for the highest ACT score earned by a student through the spring of his/her senior year. A school's composite score is derived from adding the points assigned to each ACT score for all students. Higher student scores increase the school's total score. Schools earn 2.8 points for each one point increase in the scores between 18 and 36. Student ACT scores' contribution to SPS point value are presented in Table 2.

Table 2

Student ACT Scores Contribution to School Performance Score Point Value

ACT Score	Points Per Student
36	150.4
18 to 35	100 to 147.6
Less than 18	0

Note: American College Test (ACT)

All high school students who are enrolled in courses with an EOC test must take the test to earn credit for the course. End-of-Course tests are administered for Algebra I, Geometry, English II, English III, Biology and U.S. History. In 2012-2013, U.S. History

was the only course that was not included in the SPS. All courses are included in 2013-2014. Schools earn points for each student who scores Good or Excellent on the EOC test. Total points are divided by the total number of tests to calculate the SPS. Student EOC score contribution to SPS point value is presented in Table 3.

Table 3

Student EOC Score Contribution to School Performance Score Point Value

EOC Score	Points Per Student
Excellent	150
Good	100
Fair	0
Needs Improvement	0

Note: End of Course Exam (EOC)

Schools earn points for each student who earns a high school diploma. Schools earn the most points for students who earn a diploma and score three or above on an Advanced Placement (AP) exam or four or above on an International Baccalaureate (IB) exam (Diploma ++). Schools earn additional points for students who earn a diploma and take an AP test and score below three, take an IB exam and score below four, earn credit through dual enrollment, or earn industry-based certification approved by the Board of Elementary and Secondary Education (BESE) (Diploma +). Student graduation index contribution to SPS point value is presented in Table 4.

Table 4

Student Graduation Index Contribution to School Performance Score Point Value

Graduation Index	Points Per Student
Diploma ++	150
Diploma+	110
Diploma	100
5th year Graduate	75
GED	25
Drop-out	0

Note: (Diploma ++) - Students who earn a diploma but also score three or above on an Advance Placement Exam or four or above on an international Baccalaureate exam. (Diploma +) - Students who earn a diploma and take an Advanced Placement test and score below three, take an International Baccalaureate exam and score below four, earn credit through dual enrollment, or earn industry-based certification approved by the Board of Elementary and Secondary Education.

Schools also earn points for the percent of students who graduate from high school within four years. This rate is calculated by dividing the number of students who graduate by the number of students who entered 9th grade four years earlier. Schools can earn bonus points by demonstrating significant academic growth of lowest-performing students. High schools can earn up to 10 bonus points for students who are identified as non-proficient on state English language arts or math exams and who exceed growth expectations on ACT tests (Louisiana Department of Education, 2013). Table 5 presents examples of the highest-rated school per letter grade according to the Louisiana Department of Education, 2012.

Table 5

Example of Highest-Rated School Per Letter Grade According to the Louisiana Department of Education, 2012

School/District	Letter Grade	Annual SPS	EOC Assessment Index	ACT Assessment Index	Cohort Graduation Rate
Benjamin Franklin High School, Orleans Parish	A	138.5	138.6	128.1	146.2
Jennings High School, Jefferson Davis Parish	B	99.7	76.9	80	119
Haughton High School, Bossier Parish	C	84.9	71.7	79.1	100.2
Westgate High School, Iberia Parish	D	69.8	62.1	49.4	88.8
St. Helena Central High School, St. Helena Parish	F	48	20.2	24.1	76.4

Note: School Performance Score (SPS), End of Course Exam (EOC), American College Test (ACT).

Data Collection

The NTHS model configurations were examined in relationship to three identified intended outcomes of the NTN. The studied NTHS model configurations included small learning community (SLC), whole school conversion (WSC), and autonomous school (AS). For the purpose of this study, student achievement data were collected from students who attended any of the three participating schools, which were located in three different school districts in Louisiana. Student achievement data were obtained through

the Louisiana Department of Education (LDOE) and was compiled into a data spreadsheet for data analysis. All personal identifiers were removed. Data consisted of EOC scores in core academic areas of ELA, math and science as well as ACT scores of all tested eleventh graders at the three different NTHS. School performance scores used to assess model configuration as a predictor of program success were also obtained from the LDOE. Data from this study were statistically analyzed in aggregate form and presented in group summary format.

Data concerning student achievement on criterion-referenced assessments, NTHS model configuration characteristics, and SPS of each tested NTHS were analyzed using a chi-square distribution test, descriptive comparisons, and a correlation coefficient. To test the first null hypothesis, which examined the differences in student achievement on ELA, math and science EOC exams among the tested three NTHS models, a statistical analysis was conducted on both the student achievement proficiency rates on each exam and the student achievement proficiency rates for each school. A chi-square distribution was used to examine the relationship between the independent variable, NTHS model configuration, and the dependent variable, student achievement.

To address the second and third null hypotheses, *z scores* and percentile ranks were calculated to determine whether the three NTHS model configurations (WSC, SLC, and AS) report significantly higher student achievement on college readiness indicator exams compared to the Louisiana state average and to determine whether the NTHS model configurations (WSC, SLC, and AS) lead significantly higher school achievement compared to the Louisiana state average as indicated by SPS. A principal and teacher survey was conducted to test the fourth null hypothesis, which identified the desired

outcomes of the NTHS that best facilitated the realization of the NTN goals. This principal and teacher survey was developed based upon the School Success Rubric (SSR) that is utilized by each NTHS to self-assess learning, cultural, and college/career outcomes. Utilizing results from the survey a statistical analysis was conducted from data based on the perceptions of teachers and principals. Pearson product-moment correlation coefficient was used to examine the relationship between the independent variables, NTHS principal and teacher perceptions, and the dependent variables, NTN outcomes.

Procedural Details

Several sequential procedures were used to complete this study.

1. A request was made to the Human Use Committee Review Board at Louisiana Tech University for approval to conduct the study and was subsequently qualified (see Appendix B). Approval was given.
2. The researcher sent a letter requesting permission for school and school district participation in the study to each superintendent of the school districts examined (see Appendix C). Permission was given.
3. In addition to collecting NTHS model configuration characteristics, the researcher collected information pertaining to student achievement on ELA, math, and science EOC state proficiency exams; college readiness indicator exams; and SPS of each examined NTHS from the LDOE website for the 2012-2013 school year.
4. The researcher sent a letter to all principals (see Appendix D) and teachers (see Appendix E) in the research sample requesting voluntary participation in an online survey.

5. An online survey, utilizing *Survey Monkey*, was developed by the researcher in order to ascertain which desired outcomes of the NTHS model best facilitated the NTN goals. A link to the survey was sent via email to all principals and teachers in the research sample for voluntary participation (See Appendix F).
6. All data received were de-identified as needed, and transferred into an Excel worksheet.

All de-identified student data were archived for a period following conclusion of the investigation.

CHAPTER FOUR

RESULTS

The purpose of this study was to ascertain whether the New Tech High School (NTHS), as a reform model, is an effective vehicle to increase student achievement. This study examined the relationship between NTHS models and desired outcomes of the New Tech Network (NTN) as indicated by: state proficiency exams, End of Course (EOC) exams; a college and career readiness exam, the American College Test (ACT); and, School Performance Scores (SPS). An attempt was made to determine if the participating NTHS have been meeting the intended outcomes of the NTN and if this reform model has the potential to successfully transform educational practices.

Description of Sample

The sample for this study was obtained from three Louisiana New Tech High schools. In order to maintain anonymity the following pseudonyms were given to each school: *Louisiana New Tech A*, *Louisiana New Tech B*, and *Louisiana New Tech C*. All three NTHS used for this study participated in the NTN during the 2012-2013 school year and together represent all three model configurations of the NTN. *Louisiana New Tech A* is an autonomous school (AS) model with 329 students and 47 faculty members with 86.3% of the student population receiving free and reduced lunch. Male student population was reported as 45.3%, while female student population was reported

as 54.7%. White students made up .3% of the school population while black students make up 99.4% of the school population. *Louisiana New Tech B* is a whole school conversion (WSC) model with approximately 229 students, 35 faculty members with 78.6% of the student population receiving free and reduced lunch. Male population was reported as 50.7% while female population was reported as 49.3%. White students make up 34.9% of the school population while 64.6% of the school population is black. *Louisiana New Tech C* is a small learning community (SLC) model with approximately 246 students, 14 faculty members with 45.6% of the student population receiving free and reduced lunch. Male population is reported as 47.4% and female population is reported as 52.6%. White students made up 49.4% while black students made up 47.3% of the student population.

Statistical Analysis

The first step in the statistical analysis involved the researcher collecting all student achievement data as indicated by: state proficiency exams, End of Course (EOC) exams; college and career readiness exams, American College Test (ACT); and, overall school accountability scores, known in Louisiana as School Performance Scores (SPS).

Research Question One

Q1: Is there an association between the New Tech High School model configurations examined and student achievement scores on English/language arts, mathematics, and science state proficiency exams?

Null Hypotheses One

H_{01}:Based upon the NTHS model used by each school and when compared to each of the model configurations used for this study, there will be no association between New Tech High School model configurations and student achievement scores on the:

a. English language arts state proficiency exams;

b. Math state proficiency exams;

c. Science state proficiency exams;

To test null hypothesis one, a X^2 (chi-square) distribution was used to ascertain whether an association existed between student achievement scores on state proficiency exams. The NTHS models were divided into three types based on criteria outlined by the NTN. These models consisted of SLC, WSC, and AS. The independent variable was the examined NTHS model configurations that include small learning community (SLC), whole school conversion (WSC), and autonomous school (AS). Data for the independent variable were generated from NTHS model characteristics specific to WSC, SLC, and AS models. The dependent variables for the first null hypothesis was student performance scores on state proficiency exams (English I and II, Biology I, and Algebra I End of Course Exams), ranging from zero to 150 (Louisiana Department of Education, 2013). As indicated in Tables 6, 7, 8, and 9.

Table 6

English II EOC Results for Tested New Tech Schools

Achievement Level % 2012-2013	Louisiana New Tech A	Louisiana New Tech B	Louisiana New Tech C
% NI	26	6	0
% Fair	28	39	14
% Good	42	33	52
% Excellent	4	21	33
% Proficient	46	54	85

Note: %Proficient is sum of % Good and % Excellent
Source: http://www.louisianabelieves.com/resources/library/test-reults

Table 7

English III EOC Results for Tested New Tech Schools

Achievement Level % 2012-2013	Louisiana New Tech A	Louisiana New Tech B	Louisiana New Tech C
% NI	21	10	3
% Fair	48	28	32
% Good	29	48	44
% Excellent	<1	14	21
% Proficient	<30	62	65

Note: %Proficient is sum of % Good and % Excellent
Source: http://www.louisianabelieves.com/resources/library/test-reults

Table 8

Geometry EOC Results for Tested New Tech Schools

Achievement Level % 2012-2013	Louisiana New Tech A	Louisiana New Tech B	Louisiana New Tech C
% NI	55	32	17
% Fair	32	41	30
% Good	13	21	24
% Excellent	<1	6	28
% Proficient	<14	27	52

Note: %Proficient is sum of % Good and % Excellent
Source: http://www.louisianabelieves.com/resources/library/test-reults

Table 9

Biology EOC Results for Tested New Tech Schools

Achievement Level % 2012-2013	Louisiana New Tech A	Louisiana New Tech B	Louisiana New Tech C
% NI	54	19	8
% Fair	38	38	34
% Good	8	34	45
% Excellent	<1	9	14
% Proficient	<9	43	59

Note: %Proficient is sum of % Good and % Excellent
Source: http://www.louisianabelieves.com/resources/library/test-reults

A chi-square test of independence was conducted in order to test the null hypothesis that model configuration is not associated with student achievement level for English II EOC exams. The critical chi-square value for six degrees of freedom at an alpha level of .05 is 12.53, which is the critical value for rejecting the null hypothesis. The observed chi-square value was larger than this critical value, $X^2(6) = 194.20$. Therefore, the analysis revealed a significant association between model configuration and student achievement level on English II EOC exams. Based on the odds ratio, the odds of students scoring proficient (at least "good" or "excellent") were 6.2 (6.07, 0.98) times higher if they were from Louisiana New Tech C than if they were from the other NTHS model configurations examined in this study.

A chi-square test of independence was conducted in order to test the null hypothesis that model configuration is not associated with student achievement level for English III EOC exams. The critical chi-square value for six degrees of freedom at an alpha level of .05 is 12.53, which is the critical value for rejecting the null hypothesis. The observed chi-square value was larger than this critical value, $X^2(6) = 125.48$. Therefore, the analysis revealed a significant association between model configuration

and student achievement level on English III EOC exams. Based on the odds ratio, the odds of students scoring proficient (at least "good" or "excellent") were 2.4 (1.85, 0.77) times higher if they were from Louisiana New Tech C than if they were from the other NTHS model configurations examined in this study.

A chi-square test of independence was conducted in order to test the null hypothesis that model configuration is not associated with student achievement level for Geometry EOC exams. The critical chi-square value for six degrees of freedom at an alpha level of .05 is 12.53, which is the critical value for rejecting the null hypothesis. The observed chi-square value was larger than this critical value, $X^2(6) = 175.27$. Therefore, the analysis revealed a significant association between model configuration and student achievement level on Geometry EOC exams. Based on the odds ratio, the odds of students scoring proficient (at least "good" or "excellent") were 4.6 (1.1, 0.24) times higher if they were from Louisiana New Tech C than if they were from the other NTHS model configurations examined in this study.

A chi-square test of independence was conducted in order to test the null hypothesis that model configuration is not associated with student achievement level for Biology EOC exams. The critical chi-square value for six degrees of freedom at an alpha level of .05 is 12.53, which is the critical value for rejecting the null hypothesis. The observed chi-square value was larger than this critical value, $X^2(6) = 225.05$. Therefore, the analysis revealed a significant association between model configuration and student achievement level on Biology EOC exams. Based on the odds ratio, the odds of students scoring proficient (at least "good" or "excellent") were 4.8 (1.40, 0.3) times higher if they

were from Louisiana New Tech C than if they were from the other NTHS model configurations examined in this study.

Research Question Two

Q2: How do students from the examined New Tech High School model configurations of Small Learning Community, Whole School Conversion, or Autonomous School compare to the Louisiana state average score on college readiness exams, the American College Test (ACT)?

Null Hypothesis Two

H_{02}: Based upon the New Tech High School model configurations used for this study and when compared to the Louisiana state average composite ACT score, the New Tech High School model configurations will not report higher student achievement scores on college readiness indicator exams, specifically ACT scores.

To address research question two, *z scores* and percentile ranks were calculated to determine whether the three NTHS model configurations (WSC, SLC, and AS) examined report significantly higher student achievement on college readiness indicator exams compared to the Louisiana state average. The independent variable was the examined NTHS model configurations that include autonomous school (AS) – *Louisiana New Tech A*, whole school conversion (WSC) – *Louisiana New Tech B*, small learning community (SLC) – *Louisiana New Tech C*. Data for the independent variable were generated from NTHS model characteristics specific to AS – *Louisiana New Tech A*, WSC – *Louisiana new Tech B*, SLC – *Louisiana New Tech C*. The dependent variables were student

performance on college and career readiness indicator exams (ACT), ranging from zero to 36 (Louisiana Department of Education, 2013) (Table 10).

Hinkle, Wiersma, and Jurs (2003) explained that standard scores, also called *z scores*, use the standard deviation as the unit of measure therefore describing a relative position of a single score in the entire distribution of scores in terms of the mean and the standard deviation. To calculate the *z score*, the researcher took the individual NTHS average composite American College Test (ACT) score and subtracted the state average composite ACT score and divided it by the state standard deviation (ACT, 2014) (Table 10). This procedure allowed the researcher to make a conclusion at a course level the degree of difference between state averages and averages of the NTHS model configurations. In other words, how well were the NTHS performing relative to the state average.

Table 10

ACT Results at Tested New Tech Schools vs. State Avg.

	Louisiana New Tech A	Louisiana New Tech B	Louisiana New Tech C	Louisiana State Average
ACT Composite Average	15.9	16.9	17.1	19.5
*ACT Composite Standard Deviation	N/A	N/A	N/A	4.9

Note: Scores are for graduating class of 2013
Louisiana State and National Averages of both public and nonpublic schools
Source: http://www.louisianabelieves.com/resources/library/test-results
*Source: http://www.act.org/newsroom/data/2013/pdf/profile/Louisiana.pdf

Specific to this study, *Louisiana New Tech A* reported a *z score* of (- .7347) = (15.9 – 19.5)/(4.9), therefore indicating that average composite ACT scores for *Louisiana*

New Tech A is (.7347) deviations below the Louisiana state average composite ACT score. Percentile rank conversions reveal that average composite ACT for *Louisiana New Tech A,* place them at the 23rd percentile. *Louisiana New Tech B* reported a *z score* of (- .5306) = (16.9 – 19.5)/(4.9), therefore indicating that average composite ACT scores for *Louisiana New Tech B* is (.5306) deviations below the Louisiana state average composite ACT score. Percentile rank conversions reveal that average composite ACT for *Louisiana New Tech B,* place them at the 30th percentile. *Louisiana New Tech C* reported a *z score* of (- .4898) = (15.9 – 19.5)/(4.9), therefore indicating that average composite ACT scores for *Louisiana New Tech C* is (.4898) deviations below the Louisiana state average composite ACT score. Percentile rank conversions reveal that average composite ACT for *Louisiana New Tech C,* place them at the 31st percentile.

Research Question Three

Q3: How do the examined New Tech High School model configurations of Small Learning Community, Whole School Conversion, or Autonomous School compare to state average School Performance Scores (SPS)?

Null Hypothesis Three

H_{03}: Each New Tech High School model configuration (Small Learning Community, Whole School Conversion, or Autonomous School) will not report higher program success than the average Louisiana high school as identified by School Performance Scores (SPS).

To address research question three, comparisons were conducted to determine whether the three NTHS model configurations (WSC, SLC, and AS) lead significantly

higher school achievement compared to the reported Louisiana state average as indicated by School Performance Score (SPS). As indicated in Table 11, *Louisiana New Tech A* earned a SPS of 59.6 assigning them a letter grade of "D." *Louisiana New Tech B* earned a SPS of 73.3 assigning them a letter grade of "C." The home school for *Louisiana New Tech C* earned a SPS of 96 assigning them a letter grade of "B." It should be noted that the reported SPS for *Louisiana New Tech C* includes the entire school of which the SLC New Tech program is a subsidiary. Both *Louisiana New Tech A* and *Louisiana New Tech B* report SPS lower than the average Louisiana School site SPS of 79.9, letter grade C. Specific to this study only the home school of which *Louisiana New Tech C* is a small learning community (SLC), reported a higher SPS than the average Louisiana School site SPS of 79.9 (letter grade C). Figure 1 depicts the graphical representation of these results.

Table 11

SPS Results at Tested New Tech Schools vs. State Avg.

	Louisiana New Tech A	Louisiana New Tech B	Louisiana New Tech C	Average of all Louisiana School Site SPS
SPS	59.6	73.3	96	79.9
SPS Letter Grade	D	C	B	C

Note: SPS reported for Louisiana New Tech C is for combined NTHS and whole school for which it shares.
Source: http://www.louisianabelieves.com/resources/library/test-results

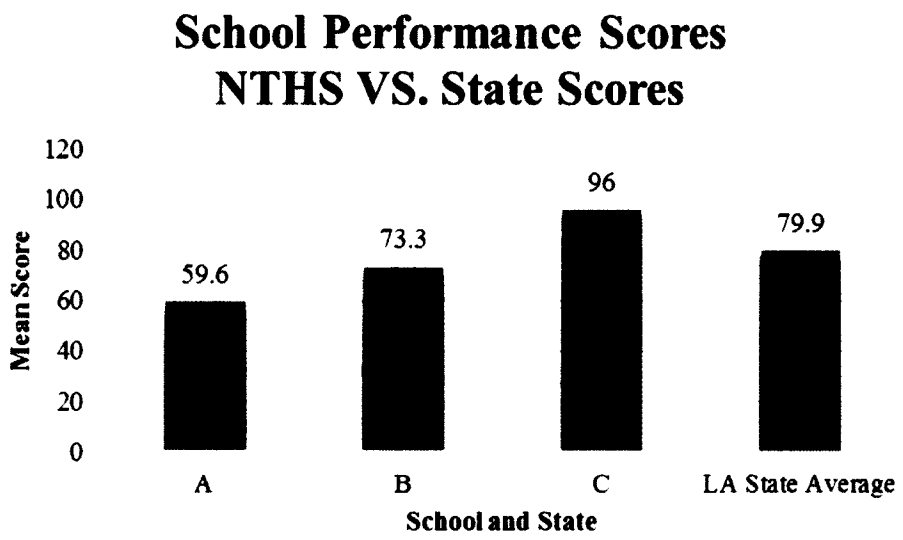


Figure 1 *NTHS School Performance Scores vs. State School Performance Scores*

Research Question Four

Q4: Is there a relationship between principal/teacher perceptions of implementation of the New Tech Network instructional approaches and principal/teacher perceptions of meeting the New Tech Network desired student outcomes?

Null Hypothesis Four

H_{04}: Based upon the School Success Rubric (SSR) utilized by each school to self-assess learning, cultural, and college/career outcomes, a positive correlation will be evident in principal/teacher perceptions of implementation of the New Tech Network instructional approaches and principal/teacher perceptions of meeting the New Tech Network desired student outcomes.

To test null hypothesis four, a Pearson product moment correlation coefficient was computed and a one-tailed test of correlation was conducted. In order to reject the null hypothesis of no correlation, the observed correlation coefficient must exceed a

value of 0.257, which is the critical value associated with a one-tailed test, a sample with (n-2) degrees of freedom, an alpha level of .05. The observed correlation is 0.879. This value is greater than the 0.257, thus rejecting the null hypothesis. Hinkle, Wiersma, and Jurs (2003) explained that a correlation is present when performance on two variables is related. The correlation coefficient is an index that describes the extent to which two sets of data are related; it is the measure of the relationship between two variables. Utilizing results from the survey a statistical analysis, Pearson product-moment correlation coefficient (r), was used to examine the relationship between the independent variables, NTHS principal/teacher perceptions of implementation of the NTN instructional approaches, and the dependent variable, NTHS principal/teacher perceptions of meeting the NTN desired student outcomes.

Survey Response Rates

Participants were required to log on to *SurveyMonkey* (2014) website to access, respond to, and electronically return the completed questionnaire. The first question of the survey instrument required participants to give their consent (Appendix F) by answering the question "Do you wish to participate?" The responses to the first question and the remaining 21 questions were captured electronically. The analyses for this study were limited to data collected from completed responses from teachers surveyed. Data were collected from 45 respondents using the *SurveyMonkey* (2014) website from a target population of 96 making the return rate a total of 46.8% of the target population that actually accessed the website but with only 44 respondents (45.8%) actually agreeing to participate by notating "Yes" to the first item in the questionnaire (see Table 12 and Figure 2).

Table 12

Survey Participant Voluntary Consent or Refusal to Participate in Study

I understand that my choice below (i.e, Yes or No) signifies my voluntary consent or refusal to participate in this study.		
Answer Options	Response Percent	Response Count
Yes, I agree to participate in this study	97.8%	44
No, I do not wish to participate in this study	2.2%	1
answered question		45
skipped question		0

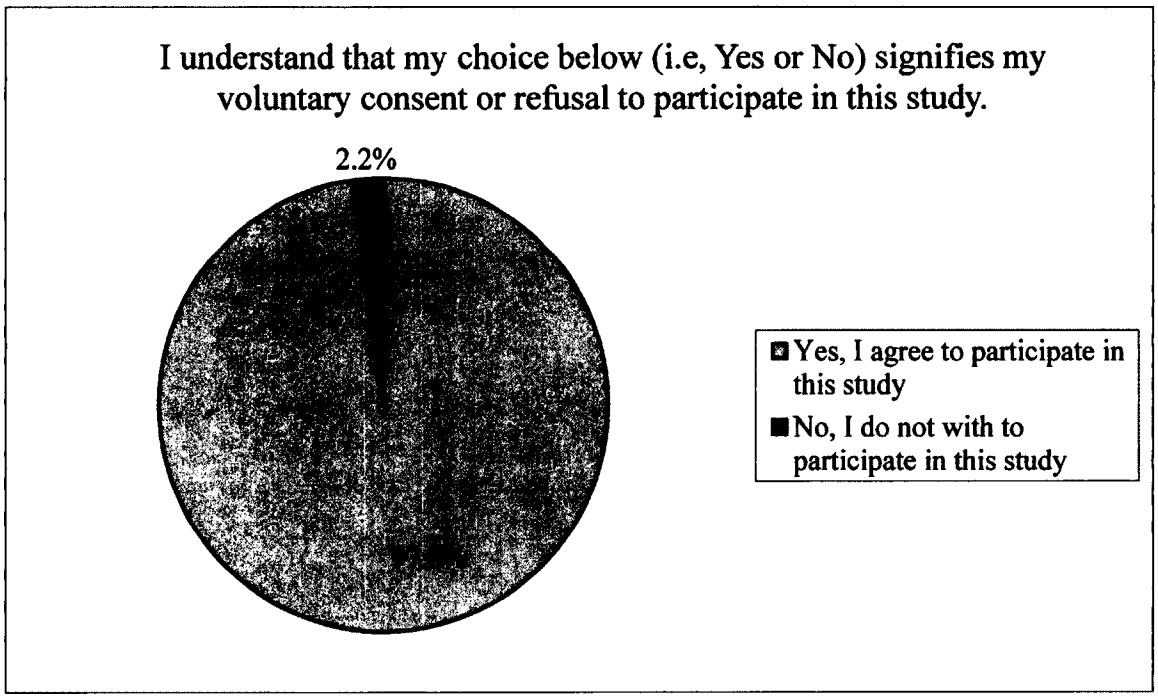


Figure 2 *Illustration of Survey Participant Consent or Refusal*

Survey Descriptive Data Analysis

The researcher collected data for use in summarizing New Tech High School (NTHS) model configuration characteristics as well as principal and teacher characteristics such as: (a) identifying school in which the survey participant was currently employed; (b) identifying which model description best describes the NTHS in

which they are employed; (c) describing individual teaching responsibilities; (d) identifying total years of experience as a teacher; (e) identifying total years employed in the New Tech Network (NTN); (d) estimating total training hours received as a NTHS teacher; and (e)providing perceived school priority learning outcomes. Table 7 shows the cumulative responses of survey participants when asked to identify the NTHS in which they currently worked. Responses are recorded according to pseudonyms that were given to each school. Forty-one participants answered the question while four participants skipped the question. *Louisiana New Tech A* had 14 identified participants that accounted for 34.1% of the responses, *Louisiana New Tech B* had 17 identified participants that accounted for 41.5% of the responses, and *Louisiana New Tech C* had 10 identified participants that accounted for 24.4% of the responses (see Table 13). A pie chart in Figure 3 illustrates survey participant school assignments.

Table 13

Survey Participant School Identification

In which school do you currently work?		
Answer Options	Response Percent	Response Count
Louisiana New Tech A	34.1%	14
Louisiana New Tech B	41.5%	17
Louisiana New Tech C	24.4%	10
answered question		41
skipped question		4

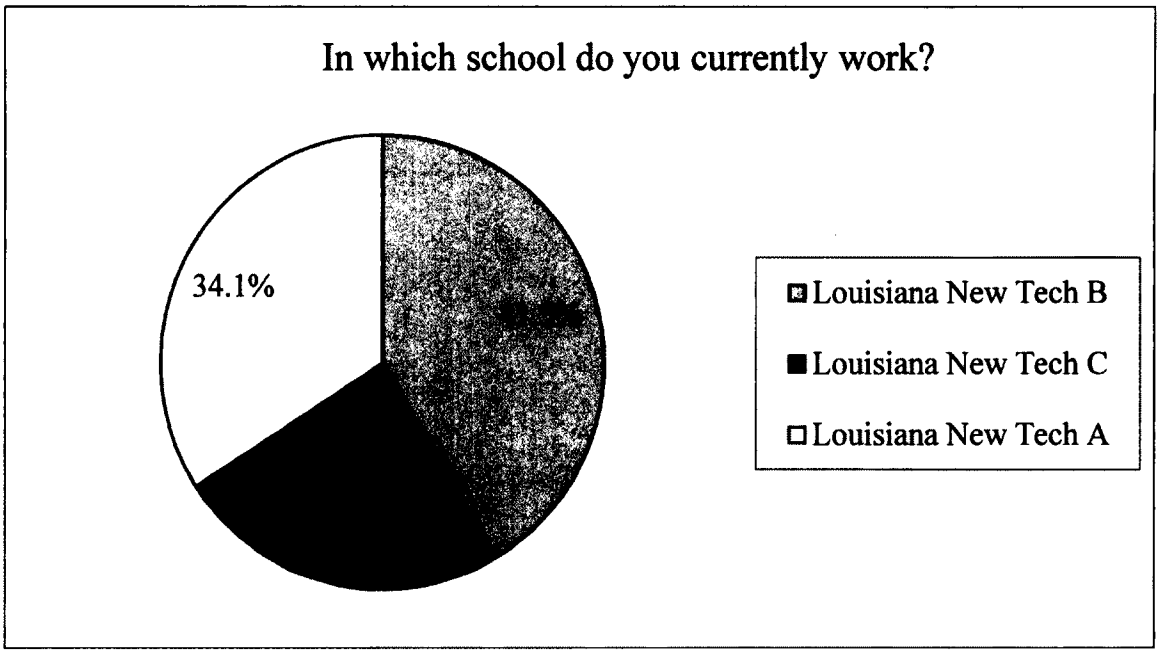


Figure 3 *Illustration of Survey Participant School Identification*

Survey participants were asked to indicate which NTHS model configuration best described the school in which they currently worked. Descriptions of the NTHS model configurations were provided by the New Tech Network (2012) as one of three ways: (a) small learning community (SLC), which is a small school program in shared facility for whole school cooperation; (b) whole school conversion (WSC), where an entire school adopts the New Tech model, usually transitioning by adding one grade each year so that all students eventually will become New Tech students; or (c) autonomous school (AS), which is a school located on a separate site from existing district schools and admitting students from throughout the district. A total of 41 respondents answered the question. Table 8 presents the findings that 46.3% of respondents perceived their school as a (SLC) model configuration, 53.7% of respondents perceived their school as a (WSC) model configuration, and 0.0% of respondents described their school as a (AS) model

configuration (see Table 14). Survey participant perceived school model configurations are illustrated by bar graph in Figure 4.

Table 14

Survey Participant Indication of NTHS Model Configuration

Which of the three New Tech High School model configurations describes the school in which you currently work?		
Answer Options	Response Percent	Response Count
Small Learning Community (SLC)- small school program in a shared facility for whole school cooperation	46.3%	19
Whole School Conversion (WSC)- the entire school has adopted the New Tech Model	53.7%	22
Autonomous School (AS)- a school located on a separate site from existing schools and admitting students from throughout the district	0.0%	0
answered question		41
skipped question		4

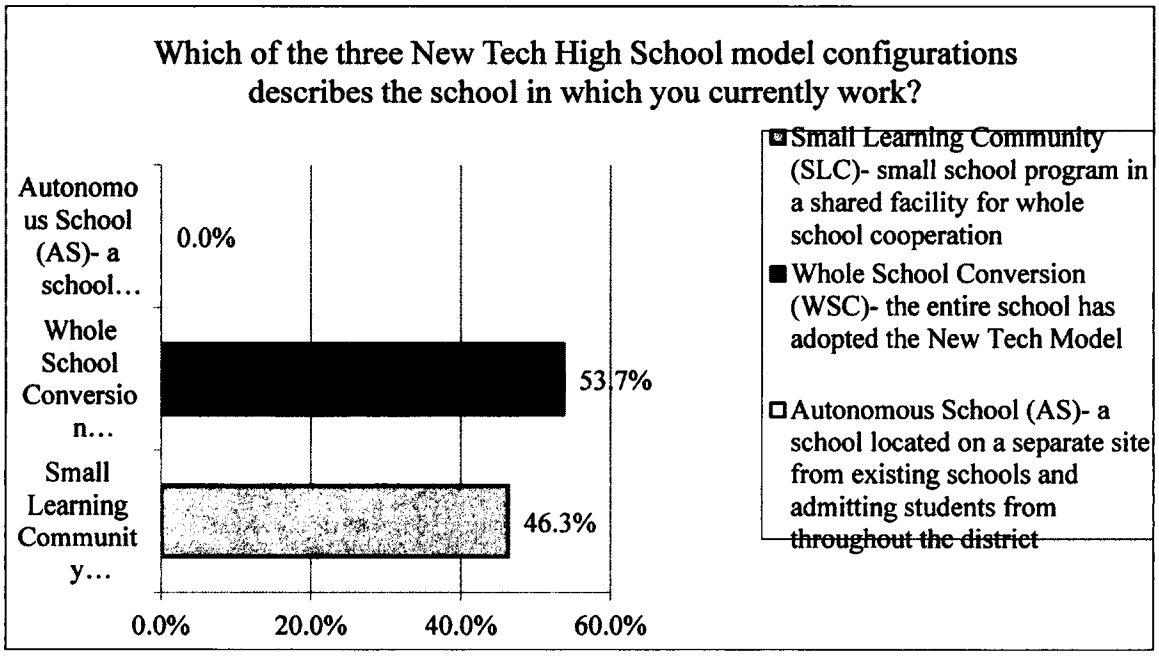


Figure 4 *Illustration of Survey Participant Indication of NTHS Model Configuration*

Tables 15, 16, and 17 present data related to principal and teacher characteristics. Survey participants were asked to classify their position at their current school. Again 41 of the 45 survey participants answered the question with 85.4% of them identifying themselves as regular teachers, 12.2% identified themselves as administrators, and 2.4% identified themselves as other professional staff such as a counselor, curriculum coach, coordinator or social worker (see Table 9). Job descriptions of participants are also illustrated by bar graphs in Figure 5. Table 16 reflects responses regarding how long survey participants have worked as a full-time teacher in the NTN. Again, 41 out of the 45 participants answered with 10 participants indicating one year experience in the NTN, 12 participants with two years of experience in the NTN, nine participants with three years of experience in the NTN, three participants with four years of experience in the NTN, and seven participants with five years of experience in the NTN (see Table 16). Table 17 reflects responses regarding how long survey participants have work full time as a teacher. Forty-one of the 45 participants answered with 12 participants indicating zero-five years of teaching experience, 10 participants indicating six-10 years of teaching experience, four participants indicating 11-15 years of teaching experience, six participants indicating 16-20 years of teaching experience, seven participants indicating 21-25 years of teaching experience, and two participants indicating 26-30 plus years of teaching experience (see Table 17).

Table 15

Survey Participant Teaching Classification

How do you classify your position at your current school, that is, the activity at which you spend most of your time during the school year?		
Answer Options	Response Percent	Response Count
Regular teacher	85.4%	35
Itinerant teacher	0.0%	0
Administrator (e.g., principal, assistant principal, director)	12.2%	5
Library media specialist or librarian	0.0%	0
Other professional staff (e.g., counselor, curriculum coach, coordinator, social worker)	2.4%	1
answered question		41
skipped question		4

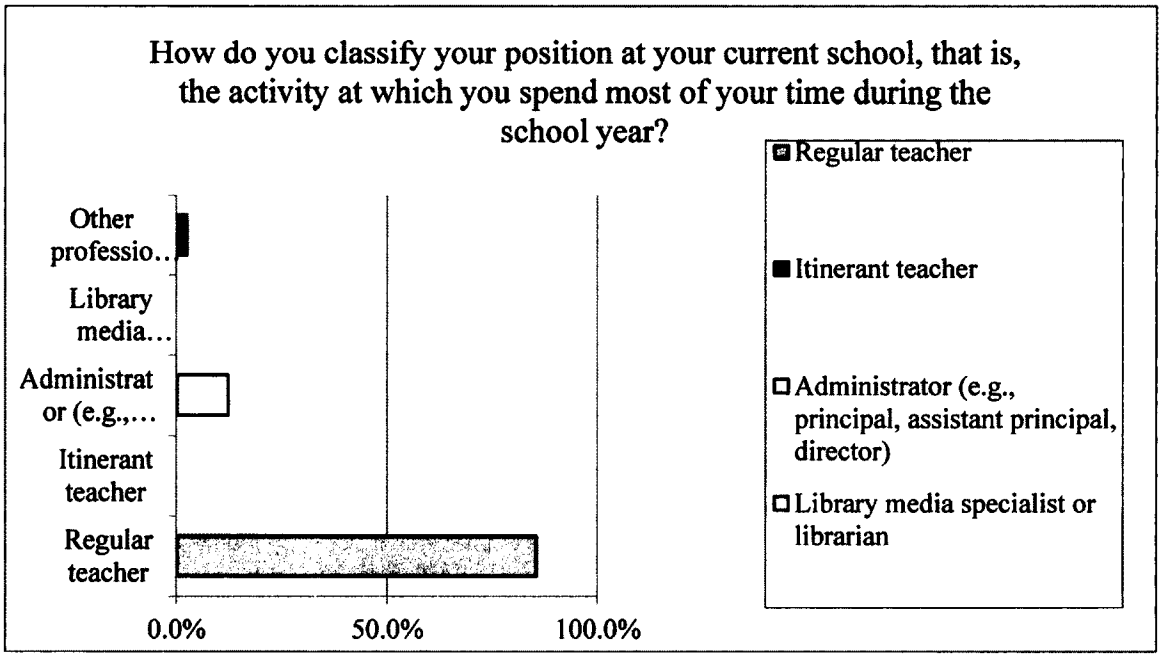


Figure 5 *Illustration of Survey Participant of Teaching Classification*

Table 16

Survey Participant NTN Teaching Experience

How many years have you worked as a full time teacher in the New Tech Network?						
Years						
Answer Options	1	2	3	4	5	Response Count
Years worked as teacher in the NTN	10	12	9	3	7	41
						Question Totals
answered question						41
skipped question						4

Table 17

Survey Participant Overall Teaching Experience

How many years have you worked as a full time teacher?							
Years							
Answer Options	(0-5)	(6-10)	(11-15)	(16-20)	(21-25)	(26-30+)	Response Count
Years work as full time teacher	12	10	4	6	7	2	41
							Question Totals
answered question							41
skipped question							4

Tables 18 and 19 present data related to survey participant involvement in teacher in-services, conferences, or training specific in preparing them to provide instructional services in a NTHS. Eighty-five point four percent of survey participants indicated "yes" they had attended or participated in teacher in-services, conferences, or training specific

to preparing them to provide instructional services in a NTHS while 14.6% of survey participants indicated "no" (see Table 18). Figure 6 illustrates teacher in-service participation with a pie chart. Table 19 presents data specific to the duration of in-service, conference or training by survey participants. Thirty-nine of 45 participants answered the question. 17.9% of the survey participants indicated completing zero-one hour of training, 10.3% of the survey participants indicated completing two-four hours of training, 5.1% of survey participants indicating completing five-eight hours of training, and 66.7% of survey participants indicated completing more than16 hours of training to prepare them to provide instructional services in a NTHS (see Table 19). Figure 7 illustrates the duration of teacher training with a bar graph.

Table 18

Survey Participant New Tech Instructional Training

Have you attended or participated in any in-services, conferences, or training specific to preparing you to provide instructional services in a New Tech School?		
Answer Options	Response Percent	Response Count
Yes	85.4%	35
No	14.6%	6
answered question		41
skipped question		4

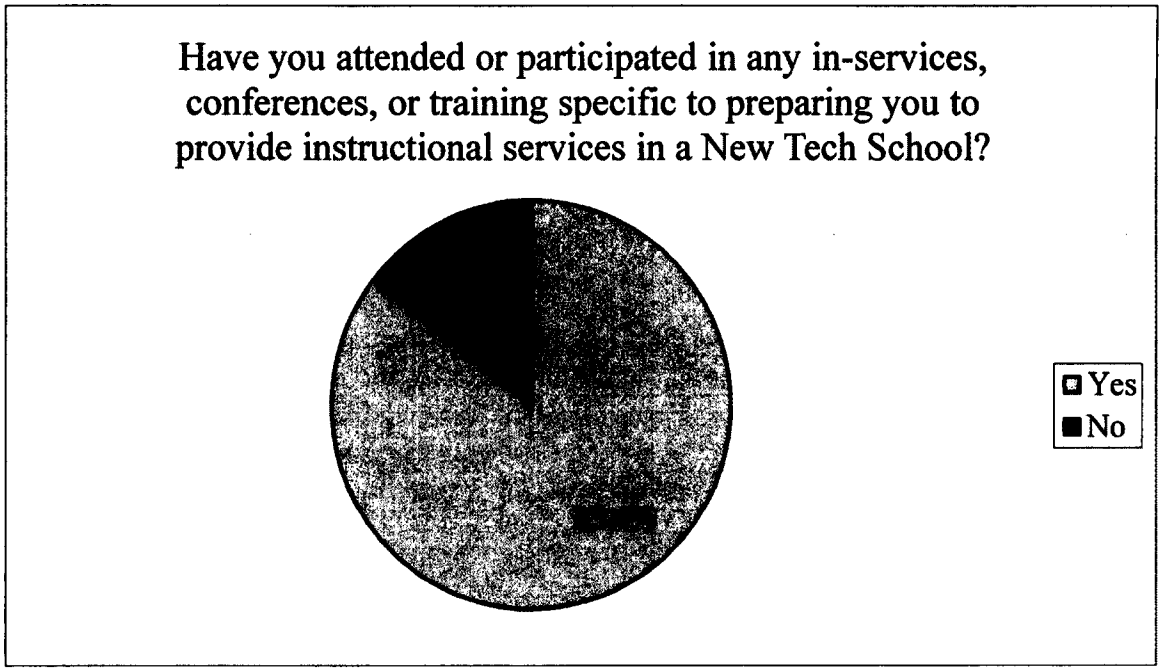


Figure 6 *Illustration of Survey Participant New Tech Instructional Training*

Table 19

Duration of Survey Participant New Tech Instructional Training

If yes, the duration of in-service, conference, or training hours was:		
Answer Options	Response Percent	Response Count
0-1 hour	17.9%	7
2-4 hours	10.3%	4
5-8 hours	5.1%	2
9-15 hours	0.0%	0
> 16 hours	66.7%	26
answered question		39
skipped question		6

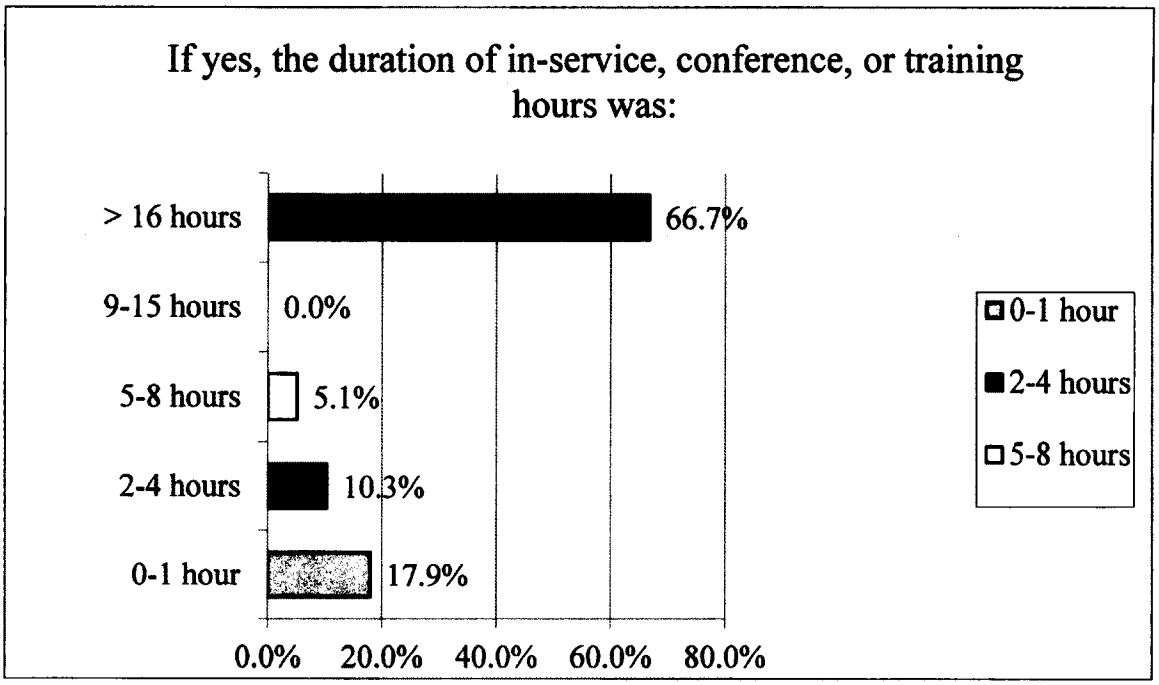


Figure 7 *Illustration of Duration of Survey Participant New Tech Instructional Training*

Survey participants were then asked to identify which of the defined NTN learning outcomes they felt were priorities at their school. The learning outcomes included: content standards, collaboration, critical thinking, oral communication, written communication, career preparation, citizenship/ethics, and technology literacy (New Tech Network, January 2011). Survey participants were encouraged to choose all that applied. Table 20 presents data indicating that learner outcome "content standards" was chosen as a priority 34 times, "collaboration" was chosen as a priority 30 times, "critical thinking" was chosen as a priority 27 times, "oral communication" was chosen as a priority 24 times, "written communication" was chosen as a priority 27 times, "career preparation" was chosen as a priority 11 times, "citizenship/ethics" was chosen as a priority 10 times, and "technology literacy" was chosen as a priority 17 times. Figure 8 illustrates defined NTN learning outcomes that were perceived as priorities by survey participants at their respective NTHS.

Table 20

Survey Participant NTN Learning Outcome Priorities

Of the defined New Tech Network learning outcomes, which learning outcome(s) do you feel is/are a priority/priorities at your school?		
Answer Options	Response Percent	Response Count
Content standards	82.9%	34
Collaboration	73.2%	30
Critical thinking	65.9%	27
Oral communication	58.5%	24
Written communication	65.9%	27
Career preparation	26.8%	11
Citizenship and ethics	24.4%	10
Technology literacy	41.5%	17
answered question		41
skipped question		4

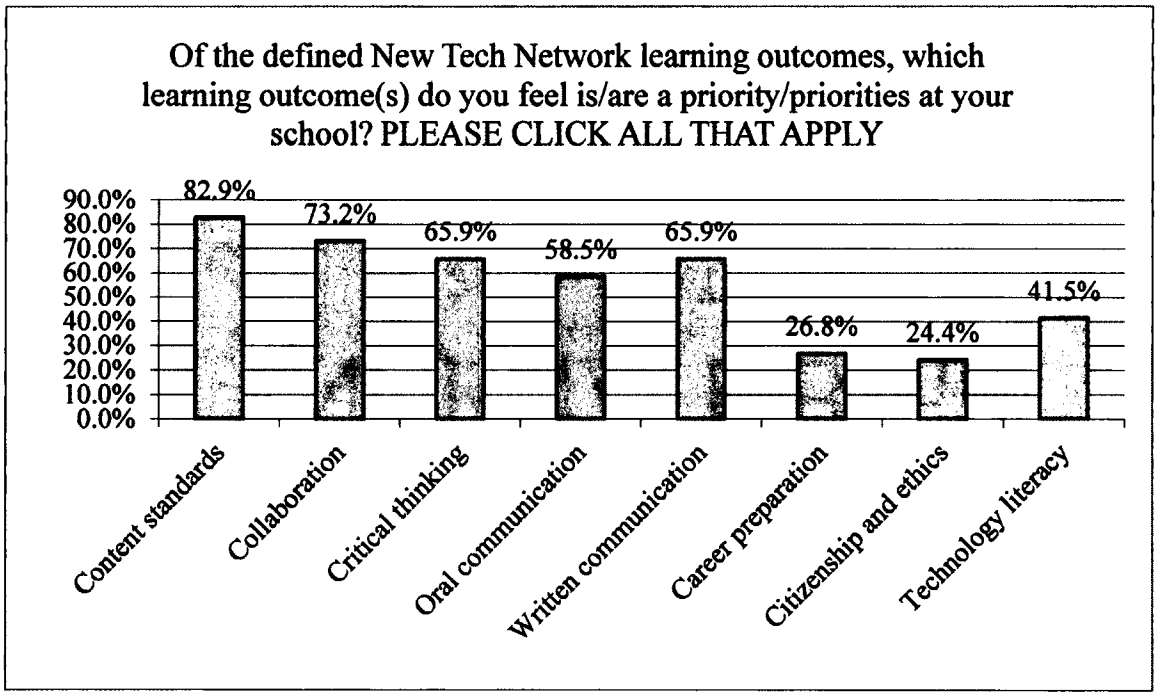


Figure 8 *Illustration of Survey Participant NTN Learning Outcome Priorities*

A detailed analysis was then performed on the survey participants' appraisal to determine if a correlation existed between their schools successfully implementing NTN components and their schools achieving NTN desired student outcomes. The desired NTN components included the following: (a) project-based learning (PBL) - a student centered instructional approach that emphasizes technology use, standards-based projects, and cultivation of community partnerships; (b) professional learning communities (PLC) – a culture of trust, respect, and responsibility whereby students and teachers are empowered to make meaningful contributions to school policy and learning; (c) integrated technologies (IT) – full-scale technology integration into classrooms through one-to-one computing ratios, internet access, and the use of a learning management system that transforms students into self-directed learners and teachers into learning facilitators. The desired student outcomes of the NTN were organized around the School Success Rubric (SSR) and included the following: (a) students are demonstrating mastery of core knowledge across all discipline areas as defined by state and national standards; (b) students can effectively communicate complex ideas in well organized and engaging oral presentations to a variety of audiences and for many purposes; (c) students can effectively collaborate with others on complex task and can adopt different roles including leadership based on group needs; (d) students are very confident in many settings and demonstrate the attributes of highly effective people; (e) students accept the responsibility of their actions; (f) students have positive relationships with adults and peers; (g) students feel empowered to contribute positively to the community and take on leadership roles; (h) students have the capacity to successfully complete authentic, complex, and rigorous task that require active exploration, higher order thinking, and

application of what they have learned; (i) students expect to attend college; and (j) students are meeting course requirements needed for 4-year college eligibility. Responses to these questions were marked as "Disagree," Somewhat disagree," Somewhat agree," "Agree," and "Strongly agree."

Hinkle, Wiersma, and Jurs (2003) explained that a correlation is present when performance on two variables is related. The correlation coefficient is an index that describes the extent to which two sets of data are related; it is the measure of the relationship between two variables. Utilizing results from the survey, the Pearson product-moment correlation coefficient (r) was applied to examine the relationship between the independent variable, NTHS principal/teacher perceptions of implementation of the NTN instructional approaches, and the dependent variable, NTHS principal/teacher perceptions of meeting the NTN desired student outcomes.

A Pearson product-moment correlation coefficient (r) was calculated in order to test the null hypothesis that a negative correlation will be evident in principal/teacher perceptions of implementation of the NTN instructional approaches and principal/teacher perceptions of meeting the NTN desired student outcomes. The Pearson product-moment coefficient (r) value is 0.879, which is the critical value for rejecting the null hypothesis. The observed Pearson product-moment coefficient (r) is positive. Therefore, the analysis revealed a positive correlation between principal/teacher perception of implementation of NTN instructional approaches and principal/teacher perceptions of meeting the NTN desired student outcomes.

Evaluation of Findings

The data sets included in this study were collected from a variety of sources. Student achievement data and SPS were collected from the Louisiana Department of Education. Principal/teacher appraisal data were collected from the online survey conducted through *SurveyMonkey*. A X^2 (chi-square) distribution was used to ascertain whether an association existed between NTHS model configuration and student achievement scores on state proficiency exams. The chi-square tests of independence were conducted and revealed a significant association between NTHS model configuration and student achievement level on English II, English III, Geometry, and Biology End of Course Exams. This demonstrates there is a difference in student achievement according to which NTHS model configuration the student attends. Based on the results of the statistical application utilized in this study, the association between the independent and dependent variables has not proved that model configuration is the sole determining factor for increased student achievement however, this study has demonstrated that there is a relationship between model configuration and student achievement.

Likewise, the odds ratio was computed to quantitatively describe the association between model configuration and student achievement. Based on the odds ratio, the odds of students from *Louisiana New Tech C* scoring proficient (at least "good" or excellent") in English II were 6.2 times higher than if they were from the other NTHS model configurations examined in this study. The odds of students from *Louisiana New Tech C* scoring proficient (at least "good" or excellent") in English III were 2.4 times higher than if they were from the other NTHS model configurations examined in this study. The

odds of students from *Louisiana New Tech C* scoring proficient (at least "good" or excellent") in Geometry were 4.6 times higher than if they were from the other NTHS model configurations examined in this study. The odds of students from *Louisiana New Tech C* scoring proficient (at least "good" or excellent") in Biology were 4.8 times higher than if they were from the other NTHS model configurations examined in this study.

In order to determine whether the three NTHS model configurations (WSC, SLC, and AS) report significantly higher student achievement on college readiness indicator exams compared to the Louisiana state average, *z scores* and percentile ranks were calculated. *Louisiana New Tech A* reported a *z score* of (- .7347) = (15.9 – 19.5)/(4.9), therefore indicating that average composite ACT scores for *Louisiana New Tech A* is (.7347) deviations below the Louisiana state average composite ACT score. Percentile rank conversions reveal that average composite ACT for *Louisiana New Tech A,* place them at the 23rd percentile. *Louisiana New Tech B* reported a *z score* of (- .5306) = (16.9 – 19.5)/(4.9), therefore indicating that average composite ACT scores for *Louisiana New Tech B* is (.5306) deviations below the Louisiana state average composite ACT score. Percentile rank conversions reveal that average composite ACT for *Louisiana New Tech B,* place them at the 30th percentile. *Louisiana New Tech C* reported a *z score* of (- .4898) = (15.9 – 19.5)/(4.9), therefore indicating that average composite ACT scores for *Louisiana New Tech C* is (.4898) deviations below the Louisiana state average composite ACT score. Percentile rank conversions reveal that average composite ACT for *Louisiana New Tech C,* place them at the 31st percentile.

Comparisons were conducted to determine whether the three examined NTHS model configurations (WSC, SLC, and AS) lead significantly higher school achievement

compared to the reported Louisiana state average as indicated by School Performance Score (SPS). *Louisiana New Tech A* earned a SPS of 59.6 assigning them a letter grade of "D." *Louisiana New Tech B* earned a SPS of 73.3 assigning them a letter grade of "C." The home school for *Louisiana New Tech C* earned a SPS of 96 assigning them a letter grade of "B." It should be noted that the reported SPS for *Louisiana New Tech C* includes the entire school of which the SLC New Tech program is a subsidiary. Both *Louisiana New Tech A* and *B* report school performance scores lower than the average Louisiana School site SPS of 79.9, letter grade C. Specific to this study only the home school of which *Louisiana New Tech C* is a small learning community (SLC), reported a higher SPS than the average Louisiana School site SPS of 79.9 (letter grade C).

Utilizing results from the survey, the Pearson product-moment correlation coefficient (r) was applied to examine the relationship between the independent variable, NTHS principal/teacher perceptions of implementation of the NTN instructional approaches, and the dependent variable, NTHS principal/teacher perceptions of meeting the NTN desired student outcomes. A positive correlation was found in principal/teacher perceptions of implementation of NTN instructional approaches and principal/teacher perceptions of meeting the NTN desired outcomes, a principal/teacher survey was conducted based upon the School Success Rubric (SSR) utilized by each school to self-assess learning, cultural, and college/career outcomes.

Summary

In this study, the researcher found that there is an association between New Tech High School model configuration and student achievement scores on state proficiency exams. This statement is based on significant differences on state proficiency exams

across the three New Tech High School models examined. However, the researcher also found that the New Tech High Schools examined reported lower student achievement scores on the college readiness indicator exam, the American College Test, when compared to the Louisiana state average composite score. The researcher found that the New Tech High School model configurations of Whole School Conversion and Autonomous School both reported School Performance Scores lower than the average Louisiana School Site School Performance Score while the entire school of the Small Learning Community configuration reported a higher School Performance Score than the state average Louisiana School Site School Performance Score. Finally, a positive correlation was found in participating principal/teacher perceptions of implementation of New Tech Network instructional approaches and principal/teacher perceptions of meeting the New Tech Network desired student outcomes based upon the New Tech Network School Success Rubric utilized by each school to self-assess learning, cultural, and college/career outcomes. These findings may have potential policy implications for the school districts examined in this study, and, possibly, other school districts. The research findings will be discussed at length in Chapter 5.

CHAPTER FIVE

DISCUSSION AND CONCLUSIONS

The purpose of this study was to ascertain whether the New Tech High School (NTHS), as a reform model, is an effective vehicle to increase student achievement. This study examined the relationship between NTHS models and desired outcomes of the New Tech Network (NTN) as indicated by: state proficiency exams, End of Course (EOC) exams; a college and career readiness exam, the American College Test (ACT); and, School Performance Scores (SPS). An attempt was made to determine if the participating NTHS have been meeting the intended outcomes of the NTN and if this reform model has the potential to successfully transform educational practices.

In the review of literature for this study, traditional educational environments were documented as being potential barriers to improving student achievement. As a result, reform models like the NTHS were created in order to enable schools to fundamentally rethink teaching and learning. The NTN defines the Learning Outcomes of the NTHS model with content standards, collaboration, critical thinking, oral communication, written communication, career preparation, citizenship and ethics, and technology literacy (New Tech Network, 2012). The NTHS model embeds the afore mentioned learning outcomes in instructional approaches that are centered on project-based learning (PBL), a culture that empowers students and teachers as professional learning communities (PLCs), and classrooms with integrated technology

(New Tech Network, 2012). Many schools that have adopted the NTHS model have done so in one of three ways: (a) small learning community (SLC), which is a small school program in a shared facility for whole school cooperation; (b) whole school conversion (WSC), where an entire school adopts the New Tech model, usually transitioning by adding one grade each year so that all students eventually will become New Tech students; or (c) autonomous school (AS), which is a school located on a separate site from existing district schools and admitting students from throughout the district.

In this study, the researcher found that there is an association between NTHS model configuration and student achievement scores on state proficiency exams. In other words, higher student achievement was reported on state proficiency scores by specific model configurations examined in this study. This statement is based on significant differences on state proficiency exams across the three NTHS models examined. However, the researcher also found that the NTHS examined reported lower student achievement scores on the college readiness indicator exam, the ACT, when compared to the Louisiana state average composite score. The researcher found that the NTHS model configurations of Whole School Conversion (WSC) and Autonomous School (AS) both reported SPS lower than the average Louisiana School Site SPS while the entire school of the Small Learning Community (SLC) configuration reported a higher SPS than the state average Louisiana School Site SPS. Finally, a positive correlation was found in participating principal/teacher perceptions of implementation of NTN instructional approaches and principal/teacher perceptions of meeting the NTN desired student outcomes based upon the NTN School Success Rubric (SSR) utilized by each school to

self-assess learning, cultural, and college/career outcomes. This concluding chapter contains the discussion of the findings, overview of the study, limitations of the study, conclusions, implications of conclusions, recommendations to the school districts examined, and suggestions for future research.

Overview of the Study

The primary focus of this study was to ascertain whether the New Tech High School (NTHS), as a reform model, is an effective vehicle to increase student achievement. More specifically, this study examined the relationship between NTHS models and desired outcomes of the NTN as indicated by state proficiency exams, End of Course (EOC) exams; a college and career readiness exam, the American College Test (ACT); and School Performance Scores (SPS). An attempt was made to determine if the participating NTHS have been meeting the intended outcomes of the NTN and if this reform model has the potential to successfully transform educational practices.

The sample for this study was obtained from three Louisiana New Tech High schools. In order to maintain anonymity the following pseudonyms were given to each school: *Louisiana New Tech A*, *Louisiana New Tech B*, and *Louisiana New Tech C*. All three NTHS used for this study participated in the NTN during the 2012-2013 school year and together represent all three model configurations of the NTN. *Louisiana New Tech A* is an autonomous school (AS) model with 329 students and 47 faculty members with 86.3% of the student population receiving free and reduced lunch. Male student population was reported as 45.3%, while female student population was reported as 54.7%. White students made up .3% of the school population while black students make up 99.4% of the school population. *Louisiana New Tech B* is a whole school conversion

(WSC) model with approximately 229 students, 35 faculty members with 78.6% of the student population receiving free and reduced lunch. Male population was reported as 50.7% while female population was reported as 49.3%. White students make up 34.9% of the school population while 64.6% of the school population is black. *Louisiana New Tech C* is a small learning community (SLC) model with approximately 246 students, 14 faculty members with 45.6% of the student population receiving free and reduced lunch. Male population is reported as 56.0% and female population is reported as 44.0%. White students made up 48.0% while black students made up 48.0% of the student population. Asian students made up 1% while Hispanic students made up 3% of the student population.

The first research question, *Is there an association between the New Tech High School model configurations examined and student achievement scores on English/language arts, mathematics, and science state proficiency exams?*, was formulated to determine whether an association existed between the NTHS model configuration and student achievement scores on state proficiency exams. To test this research question, a X^2 (chi-square) distribution was used to ascertain whether an association exist between the NTHS model configurations examined and student achievement scores on state proficiency exams. The results revealed a significant association between model configuration and student achievement level on English II, English III, Geometry, and Biology End of Course Exams. Additionally, based on the odds ratio, the odds of students from *Louisiana New Tech C* scoring proficient (at least "good" or excellent") in English II were 6.2 times higher than if they were from the other NTHS model configurations examined in this study. The odds of students from

Louisiana New Tech C scoring proficient (at least "good" or excellent") in English III were 2.4 times higher than if they were from the other NTHS model configurations examined in this study. The odds of students from *Louisiana New Tech C* scoring proficient (at least "good" or excellent") in Geometry were 4.6 times higher than if they were from the other NTHS model configurations examined in this study. The odds of students from *Louisiana New Tech C* scoring proficient (at least "good" or excellent") in Biology were 4.8 times higher than if they were from the other NTHS model configurations examined in this study.

The second research question, *How do students from the examined New Tech High School model configurations of Small Learning Community, Whole School Conversion, or Autonomous School compare to the Louisiana state average score on college readiness exams, the American College Test?*, was formulated to determine whether the three NTHS model configurations (WSC, SLC, and AS) report significantly higher student achievement on college readiness indicator exams compared to the Louisiana state average. To address this research question, *z scores* and percentile ranks were calculated allowing the researcher to make a conclusion at a course level the degree of difference between state averages and averages of the NTHS model configurations. In other words, how well were the NTHS performing relative to the state average. The results revealed, the average composite ACT scores for *Louisiana New Tech A* is (.7347) deviations below the Louisiana state average composite ACT score placing *Louisiana New Tech A* at the 23rd percentile. The average composite ACT scores for *Louisiana New Tech B* is (.5306) deviations below the Louisiana state average composite ACT score placing *Louisiana New Tech B* at the 30th percentile. The average composite ACT scores

for *Louisiana New Tech C* is (.4898) deviations below the Louisiana state average composite ACT score placing *Louisiana New Tech C* at the 31st percentile.

The third research question, *How do the examined New Tech High School model configurations of Small Learning Community, Whole School Conversion, or Autonomous School compare to state average School Performance Scores (SPS)?*, was formulated to determine how the examined NTHS model configurations SPS compared to the state average Louisiana school site SPS. To address this research question, comparisons were conducted to determine whether the three NTHS model configurations (WSC, SLC, and AS) lead significantly higher school achievement compared to the reported Louisiana state average as indicated by School Performance Score (SPS). The results revealed that *Louisiana New Tech A* earned a SPS of 59.6 assigning them a letter grade of "D." *Louisiana New Tech B* earned a SPS of 73.3 assigning them a letter grade of "C." The home school for *Louisiana New Tech C* earned a SPS of 96 assigning them a letter grade of "B." It should be noted that the reported SPS for *Louisiana New Tech C* includes the entire school of which the SLC New Tech program is subsidiary of. Both *Louisiana New Tech A* and *B* report school performance scores lower than the average Louisiana School site SPS of 79.9, letter grade C. Specific to this study only the home school of which *Louisiana New Tech C* is a small learning community (SLC), reported a higher SPS than the average Louisiana School site SPS of 79.9 (letter grade C).

The fourth research question, *Is there a relationship between principal/teacher perceptions of implementation of the New Tech Network instructional approaches and principal/teacher perceptions of meeting the New Tech Network desired student outcomes?*, was formulated to examine the relationship between the independent variable,

NTHS principal/teacher perceptions of implementation of the NTN instructional approaches, and the dependent variable, NTHS principal/teacher perceptions of meeting the NTN desired student outcomes. To test this research question, a principal/teacher survey was conducted based upon the School Success Rubric (SSR) utilized by each school to self-assess learning, cultural, and college/career outcomes. The statistical analysis, Pearson product-moment correlation coefficient, revealed a positive correlation was found in principal/teacher perceptions of implementation of NTN instructional approaches and principal/teacher perceptions of meeting the NTN desired outcomes.

Limitations of the Study

The limitations of this study must be considered in order to interpret its results and recommendations. This study was limited by the small sample size of three NTHS in northern Louisiana, only one academic year of data collection, and by the non-consideration of socio-economic structures of the schools tested. These limitations are divided into two parts: (a) threats to internal validity and (b) threats to external validity. Each is discussed further below.

Threats to Internal Validity

Gall, Gall, and Borg (2007) characterized the internal validity of an experiment as the extent to which extraneous variables have been controlled by the researcher. In the case of this study, internal validity refers to the authenticity of the obtained relationship between NTHS model configuration and student achievement. Threats to internal validity represent a loss of control over the relationship between the independent and dependent variables. Threats to internal validity are issues, limitations, challenges, and other variables in the research design that weaken the validity of the study thus reducing

the probability that explanations other than the independent variable, NTHS model configuration, exist for changes in the dependent variable, student achievement. Even though this study did find an association between NTHS model configuration and student achievement, it is important to note that student achievement levels are affected and influenced by numerous variables.

Because an ex post facto research design was used to test all hypotheses, the researcher must be mindful that research design may potentially impact research outcomes. Some of these extraneous variables that are related to the research design include: (a) ex post facto research design, (b) history, (c) maturation, and (d) selection. Gall, Gall, Borg (2007) defined *ex post facto* research design as a design that relies "on the observations of relationships between naturally occurring variations in the presumed independent and dependent variables" (p. 306). Specific to this study the researcher utilized the *ex post facto* methodology by identifying achievement levels that have already occurred and by collecting data to investigate a possible relationship between variables. Because there were neither direct manipulations of the independent variable nor any control elements, this research design could be considered a potential threat to internal validity.

The variables categorized as *history* by Gall, Gall, and Borg (2007), are characterized as experimental treatments that are extended over a period of time that inevitably provide opportunities for other events to occur besides the experimental treatment. Specific to this study, student achievement was measured using EOC exams and the ACT test. While all students attended one of three different NTHS model configurations, there was no way to control events outside the experimental treatment.

Variables which are not directly related to the NTHS model configuration or the NTN that may alter student achievement and thereby impact internal validity include: (a) the demographic variables of the school, (b) the local socio-economic variables related to the school, and (c) the amount of parental involvement in the classroom or at the school level. All of these variables may alter student achievement and are potential threats to internal validity; none of these variables were investigated in this study.

The demographic and socio-economic variables of the school may refer to the racial, cultural, and economic context as well as the social environment of a school. Schools are often reflective of the communities they serve and tend to face identical problems of their community at large. Hence, demographic and socio-economic variables may explain student achievement. Likewise, local economic variables related to the school impact the tax base for the school. New Tech High School model configurations that are located in an affluent area and/or a highly commercialized area may have greater financial resources as compared to the schools without such a revenue base. Additionally, the amount of parental involvement refers to the amount of learning support at home and the active participation of parents in the school or classroom. Schools with greater parental involvement often have more resources available as well.

The variables categorized as *maturation* by Gall, Gall, and Borg (2007), are present when subjects change over time. Examination of student achievement rates must always take into account that physical or physiological changes in students are inevitable. Students might mature and their ability to concentrate may change as they progress through schooling. Both permanent changes, such as physical growth and temporary ones like fatigue, provide "natural" alternative explanations; thus, they may change the way a

student would react to the independent variable, the NTHS model configuration. Consequently upon completion of student achievement studies, the researcher was not able to definitively determine if the cause of the association is due to time or the independent variable.

The variables categorized as *selection* by Gall, Gall, and Borg (2007), are portrayed when researchers and participants bring to the experiment a myriad of characteristics, some learned and other inherent. The subjects are not alike with regard to the independent variable but similar in one or more of the related variables. Some of these variables are related to the organization as a whole and school districts may have some control over their impact. These organizational variables may include, but are not limited to: (a) teacher quality, (b) the assigned duties of teachers, (c) administrative leadership style of the school, (d) curriculum alignment between EOC exam and that of the curriculum of the NTHS models examined, and (e) presence or absence of assessment remediation.

The quality of teachers who served in the NTHS examined may have impacted the results. While all teachers serving in the three schools examined met at least the minimal state of Louisiana certification requirements, teaching experience as well as effectiveness varied from one school to another. Assigned duties of a teacher refer to the amount of responsibilities assigned to the teacher. Teachers with the largest workload or multiple subjects/classes to prepare for may or may not have the necessary time available to devote to proper preparations therefore indirectly affecting teacher quality. The administrative leadership style of the examined school may refer to the way in which the examined school is operated. Leadership styles may have varied at each school examined

in this study. While the leadership style of each of the three schools could have played a role in the findings, leadership style was not a focus of this study nor was it investigated.

The curricular alignment between the EOC exam, the ACT, and that of the curriculum of the NTHS may have also impacted the results. The EOC and ACT are standardized assessments used to measure student achievement. While a curriculum that is closely aligned to the standardized assessments increases the probability of strong student achievement, curricular alignment was not examined in this study. Likewise, this study did not account for the presence or absence of EOC or ACT remediation. End of Course exam or ACT remediation refers to any additional instruction given to a study in order to prepare that student specifically for those exams. The researcher assumed that all students received the same amount of instructional minutes required by Bulletin 741 of the Louisiana Department of Education (Louisiana Department of Education, 2014).

Investigations of all extraneous variables would have required additional resources that were not available to the researcher. However, further investigations into these variables are suggested by the researcher. Threats to internal validity are issues, limitations, challenges, and other variables in the research design that weaken the validity of the study thus reducing the probability that explanations other than the independent variable, NTHS model configuration, exist for changes in the dependent variable, student achievement. Therefore this study can conclude that there is an association between variables, but provide no evidence that one variable caused the difference or change in the other.

Threats to External Validity

Threats to external validity are issues, limitations, challenges, and other variables in the research design that weaken the ability of a study to be generalized. Though the sample consists of three NTHS located in northern Louisiana, it is not entirely representative of Louisiana schools, the NTN, or American public education in general. Also, this study was limited to only three schools for data and sampling. Therefore, the demographic characteristics of teachers and students in this study may not be representative of teachers and students more generally. Due to this fact, the sampling and research context may not generalize to other school settings or other reform models.

Conclusions

The purpose of this study was to ascertain whether the NTHS, as a reform model, is an effective vehicle to increase student achievement. Conclusions were based on results from the application of a chi-square distribution test, comparisons of calculated z scores with percentile ranks, and a Pearson product-moment correlation coefficient. The data sets used in this study were constructed from reported student achievement and principal/teacher appraisals at three NTHS located in northern Louisiana. This study found that there is an association between NTHS model configuration and student achievement scores on state proficiency exams. Conclusions were based on a chi-square test of association which found that a significant relationship existed between NTHS model configuration and student achievement.

In addition, this study also determined that the NTHS examined reported lower student achievement scores on the college readiness indicator exam, the ACT, when compared to the Louisiana state average composite score. Likewise, the researcher found

that the NTHS model configurations of WSC and AS both reported SPS lower than the average Louisiana School Site SPS while the entire school of the SLC configuration reported a higher SPS than the state average Louisiana School Site SPS. Notwithstanding the lack of a significant relationship between NTHS model configurations and student achievement on the ACT as well as state reported SPS, the descriptive analysis of data collected indicate a reported performance in these areas that should cause concern. The school districts examined in this study may need to address this matter further. In particular, the districts might examine the direct financial cost of such reform efforts and how it relates to reported student achievement results as well as reported school performance.

Finally, a positive correlation was found to be evident in participating NTHS principal/teacher perceptions of implementation of the NTN instructional approaches and principal/teacher perceptions of meeting the NTN desired student outcomes based upon the NTN School Success Rubric utilized by each school to self-assess learning, cultural, and college/career outcomes. In other words, participating principals and teachers felt that their NTHS was more likely to achieve school success of meeting learning, cultural, and college/career outcomes when the school itself was properly implementing the instructional approaches of the NTN. While the introduction of reform models like the NTHS represent an effort to revitalize student achievement in preparation for college and career readiness, it is recommended districts carefully investigate and examine options only implementing the model configuration that will have the greatest impact on student achievement.

Implications of Conclusions

A review of the literature (Chapter 2) explained that many current formal educational practices are antiquated as they prepare students for the world of the past as opposed to proper preparation for probable worlds of the future (Gardner, 2006). Bell (2010) indicated that 21st century workforce evaluations will not only be based on individual performance outcomes, but also from the collaborative, negotiating, planning and organizational skills of the individual (Bell, 2010). Likewise, Wagner (2008) identifies a disconnect between teaching and assessment techniques in schools today as well as between how students are expected to learn versus the requirements the world will demand of them as adults and what may motivate them to optimum productivity. Consequently, there appears to be concern that traditional educational environments fail to address contemporary skills that students need in order to achieve modern-day success. With the current emphasis now being placed on educational reform, this study proved beneficial identifying which reform models are realizing academic improvement.

The NTN touts higher educational outcomes obtained through making learning relevant in order for engagement to reach new levels. The NTN operates as a subsidiary of *KnowledgeWorks*, a social enterprise created to provide innovative tools, training and assistance to school leaders, teachers and community stakeholders (KnowledgeWorks, 2014). Services and support are provided to enable schools to fundamentally rethink teaching and learning. The NTN defines the Learning Outcomes of the NTHS model with content standards, collaboration, critical thinking, oral communication, written communication, career preparation, citizenship and ethics, and technology literacy (New Tech Network, 2012). The NTHS model embeds the afore mentioned learning outcomes

in instructional approaches that are centered on project-based learning (PBL), a culture that empowers students and teachers as professional learning communities (PLCs), and classrooms with integrated technology (New Tech Network, 2012).

Many schools that have adopted the NTHS model have done so in one of three ways: (a) small learning community (SLC), which is a small school program in a shared facility for whole school cooperation; (b) whole school conversion (WSC), where an entire school adopts the New Tech model, usually transitioning by adding one grade each year so that all students eventually will become New Tech students; or (c) autonomous school (AS), which is a school located on a separate site from existing district schools and admitting students from throughout the district.

The overall stated goal of the NTN is to enable students to gain the knowledge and skills they need to succeed in life, college, and the careers of today and tomorrow. Although students are evaluated on how proficient they are in traditional subject matter, the NTN School Success Rubric (SSR) enables schools to self-assess their progress as it relates to *learning outcomes*, *cultural outcomes*, and *college and career outcomes*. *Learning outcomes* are assessed according to what knowledge, skills, and attributes every NTHS graduate should demonstrate. While *cultural outcomes* are assessed according to what students should experience in the NTHS learning environment as it relates to being connected, engaged, and challenged. Finally, *college and career outcomes* assessed whether students are prepared, eligible, and aware of what they need to enter and be successful in postsecondary learning opportunities (New Tech Network, 2013). Utilization of the SSR provides for assessment by multiple measures rather than a single point in time test (see Appendix A).

Based on the findings and concluding statements of this research study, several considerations related to NTHS reform models, NTHS model configurations, the research questions, and the purpose framing this body of research emerged. Implications that inform the understanding of effective reform models that contribute to the development of new knowledge in order to increase student achievement include the following:

- *Learning outcomes*, this study found that there is an association between NTHS model configurations and student achievement on state proficiency exams. Based upon the schools examined in this study, students who attended the NTHS model configurations of WSC and AS did not perform as well as students that attended the NTHS model configuration of SLC on state proficiency exams. This finding indicates that the NTHS model configuration of SLC is more inclined to meet desired learning outcomes by reporting the highest scores on state proficiency exams. Because the SLC model configuration provides students a choice of attending, one not provided for students that are enrolled in the WSC or AS model configuration, students were likely to perform better on state proficiency exams because the student knowingly chooses to the NTHS instructional approach. Therefore, it appears that student choice has contributed to the effectiveness of the SLC model configuration.
- *College and career outcomes*, this study determined that the NTHS examined reported lower student achievement scores on the college readiness indicator exam, the ACT, when compared to the Louisiana state average composite score. It could be determined that ACT scores are reported lower at the

examined NTHSs because while all students are required to take the ACT not all students have college aspirations. Some students may have vocational school intentions after attending a NTHS. Because NTHS have a curriculum that is completely project based in its approach, the instructional approach may limit practice with standardized test taking skills. Therefore, the absence of regular and routine standardized test taking may contribute to lower ACT scores in the examined NTHS model configurations. These findings indicate that the NTHS model configurations of WSC, AS, and SLC have no positive influence on college readiness indicator exams. Additionally, the researcher found that of the examined NTHS model configurations of WSC and AS both reported a SPS lower than the average Louisiana School Site SPS while the entire school of the examined SLC configuration reported a higher SPS than the state average Louisiana School Site SPS. These findings indicate that the NTHS model configurations of WSC, AS, and SLC have no positive influence on calculated Louisiana SPS.

- *Cultural outcomes*, this study found a positive correlation in participating NTHS principal/teacher perceptions of implementation of NTN instructional approaches and principal/teacher perceptions of meeting the NTN desired student outcomes based upon the NTN School Success Rubric. In other words, participating principals and teachers felt that their NTHS was more likely to achieve school success when the school itself was properly implementing the NTN instructional approaches with fidelity. This correlation was most evident in participating SLC principal/teacher survey

responses therefore indicating that the NTHS model configuration of SLC was not only the higher performing NTHS model examined in this study but according to principal/teacher perceptions because of instructional approach fidelity they were more likely to achieve school success by meeting the NTN goals.

Recommendations

Responding to Gardner's (2006) assertion that many current formal educational practices are antiquated as they prepare students for the world of the past as opposed to preparation for probable worlds of the future, the NTN (2013) presents a reform model that intends to enable students to gain the knowledge and skills they need to succeed in life, college, and the careers of today and tomorrow. A review of related literature combined with quantitative data collected and analyzed using a chi-square distribution test, comparisons of calculated z scores with percentile ranks, and product moment correlation coefficient methodology, supports the endorsement of the SLC model configuration of the NTHS models. Recognizing the potential impact of properly implemented reform models, with an emphasis on the core values of learning, cultural, and college/career outcomes leads to the following recommendations:

- Reform efforts must be implemented with instructional strategies that utilize project-based learning (PBL), embedded within professional learning communities (PLC), that are harmonious with ubiquitous integrated technology (IT);
- In order to effectively accomplish the defined NTN desired learning outcomes, implementation of the NTHS model should be done so with

complete fidelity to the following conditions: (a) a small school size of less than 250 students, (b) provision of a computer for every student with school-wide access, (c) scheduling flexibility to support team teaching and cross-curricular projects, (d) all courses having PBL as the primary method of instruction, and (e) the creation of physical learning spaces that support team teaching and student collaboration; and

- Based on the results of the examined NTHS models, the SLC model configuration should be promoted as a model to emulate at other school districts around the nation.

The school districts examined in this study may need to address this matter further. In particular, the districts might examine the direct financial cost of such reform efforts and how it relates to reported student achievement results as well as reported school performance. While the introduction of reform models like the NTHS represents an effort to revitalize student achievement in preparation for college and career readiness, it is recommended districts carefully investigate and examine options only implementing the model configuration that will have the greatest impact on student achievement.

Suggestions to Future Research

Replications of this study are needed in other settings in order to further define the relationship between NTHS model configurations and student achievement. This study examined three NTHS located in northern Louisiana during the 2012-203 school year. Two of these schools were located in rural or suburban areas. Future research could include data collected from different settings. Another researcher might examine NTHS model configurations in different areas of the state of Louisiana, in different states

completely, with different economic, social, and cultural environments. Such research might include an investigation of larger urban school districts. Therefore the researcher recommends that future research involve larger numbers of participants and that the study not be limited to NTHS practicing in a particular region such as northern Louisiana.

This study was also limited in that it used data from only one school year. Other studies might take a more longitudinal perspective and collect data for several school year. Such investigations might illustrate trends in the NTHS or NTN in regards to student achievement and/or further explain reasons for student achievement or lack thereof. Furthermore, future research might also track the college acceptance and/or college retention rates of students specific to the NTHS model configuration they attended. This might better determine whether or not the NTHS model configuration had an impact on prolonged college and career readiness. Additional recommendations for future research related to the NTHS model configuration include:

- Conduct a longitudinal case study of a student cohort from the time it enters into the NTHS model through graduation and perhaps beyond;
- Propose research to identify specific components contributing to effective implementation of NTHS model configurations;
- Design a study that examines specific practices used by NTHS model teachers that exemplify the NTN reform efforts;
- Examine the perceptions of college instructors or employers of graduates from the NTHS in relation to the graduates college and career readiness; and
- Critically analyze current state/federal mandated reform initiatives to evaluate its alignment with 21st century skills.

Summary

Traditional educational environments were documented as being potential barriers to improving student achievement therefore becoming problematic. Reform models like the New Tech High School were created to enable schools to fundamentally rethink teaching and learning as well as revitalize student achievement in preparation for college and career readiness. With the current emphasis now being placed on education reform, it is likely to be beneficial to know which reform models are realizing academic improvement. The purpose of this study was to ascertain whether the New Tech High School, as a reform model, is an effective vehicle to increase student achievement. In this study, the researcher found that there is an association between New Tech High School model configuration and student achievement scores on state proficiency exams. A positive correlation was found to in participating principal/teacher perceptions of implementation of New Tech Network instructional approaches and principal/teacher perceptions of meeting the New Tech Network desired student outcomes.

REFERENCES

ACT. (2014). ACT *profile Report- State: Graduating class 2013 Louisiana.* Retrieved from http://www.act.org/newsroom/data/2013/pdf/profile/Louisiana.pdf

Bass, L. (2010). Redefining tradition in education: invoking an ethic of community. Journal of School Public Relations, 31(1), 68+. Retrieved from http://go.galegroup.com/ps/i.do?id=GALE%7CA238654444&v=2.1&u=lap01benton&it=r&p=GPS&sw=w

Battaglia, C., Bird, C., Foote, C., Harris-Ewing, S., Mesibov, D., & Vermette, P. (2001). Understanding constructivism(s): a primer for parents and school board members. Education, 122(1), 87+. Retrieved from http://go.galegroup.com/ps/i.do?id=GALE%7CA80856259&v=2.1&u=lap01benton&it=&p=GPS&sw=w

Bauer, J., & Kenton, J. (2005). Toward technology integration in the schools: why it isn't happening. Journal of Technology and Teacher Education, 13(4), 519+. Retrieved from http://go.galegroup.com/ps/i.do?id=GALE%7CA138483291&v=2.1&u=lap01benton&it=r&p=PROF&sw=w

Becker, H. (1999). The Influence of Computer and Internet Use on Teachers' Pedagogical Practices and Perceptions. *Journal Of Research On Computing In Education, 31*(4), 356.

Becker, H. (2000). Findings from the Teaching, Learning, and Computing Survey: Is Larry Cuban Right?. *Education Policy Analysis Archives, 8*(51).

Bell, S. (2010). Project-Based Learning for the 21st Century: Skills for the Future. *Clearing House, 83*(2), 39-43. doi:10.1080/00098650903505415 Retrieved from http://ezproxy.latech.edu:2220/ehost/pdfviewer/pdfviewer?vid=2&hid=101&sid=4aedfc28-fd68-4019-b474-459c0cebb073%40sessionmgr113

Bentley, M., Fleury, S. C., & Garrison, J. (2007). Critical Constructivism for Teaching and Learning in a Democratic Society. *Journal of Thought, 42*(3/4), 9.

Blumenfeld, P. C., Soloway, E., Marx, R. W., Krajcik, J. S., Guzdial, M., & Palincsar, A. (1991). Motivating Project-Based Learning: Sustaining the Doing, Supporting the Learning. *Educational Psychologist, 26*(3/4), 369. Retrieved from http://ezproxy.latech.edu:2220/ehost/pdfviewer/pdfviewer?vid=3&hid=5&sid=de0e57ad-4c1e-4153-a90d-6125e3c69a7c%40sessionmgr13

Brooks, J. J., & Brooks, M. M. (2001). *In search of understanding: the case for constructivist classrooms.* Upper Saddle River, NJ: Prentice Hall.

Boss, S., & Krauss, J. (2007). *Reinventing project-based learning: Your field guide to real-world projects in the digital age.* Eugene, OR: International Society for Technology in Education.

Bourgeois, N. E. (2007). The Scholar-Practitioner: Constructing a critical and practical leadership philosophy toward democratic practice (Doctoral dissertation).

Brownell, M T, Adams, A., Sindelar, P., Waldron, N., & Vanhover, S. (Wntr 2006). Learning from collaboration: the role of teacher qualities. Exceptional Children, 72, 2. p.169(17). Retrieved January 10, 2011, from Educator's Reference Complete via Gale: http://find.galegroup.com/gtx/start.do?prodId=PROF&userGroupName=lap01benton

Bruner, J. S. (1966). *Toward a theory of instruction, by Jerome S. Bruner.* Cambridge, Mass., Belknap Press of Harvard University, 1966.

Center of Excellence in Leadership and Learning. (2012). University of Indianapolis. *Successful Schools: New Tech High @ Arsenal Tech.* Retrieved from http://cell.uindy.edu/research/resources.php

ChanLin, L. (2007). Perceived importance and manageability of teachers toward the factors of integrating computer technology into classrooms. *Innovations In Education & Teaching International, 44*(1), 45-55. doi:10.1080/14703290601090390 Retrieved from http://ezproxy.latech.edu:2220/ehost/pdfviewer/pdfviewer?vid=27&hid=116&sid=f85db6c5-2bfe-424c-82ad-e6c3c10f39d8%40sessionmgr111

Clark, A.-M. (Fall 2006). Changing classroom practice to include the project approach. Early Childhood Research & Practice, 8, 2. p.NA. Retrieved February 20, 2010, from General One File via Gale: http://find.galegroup.com/gps/start.do?prodId=IPS&userGroupName=lap01bento n

Common Core State Standards Initiative (2012). Common Core State Standards. Retrieved from http://www.corestandards.org/

Costantino, T. (2010). The Critical Friends Group: A strategy for Developing Intellectual Community in Doctoral Education. i.e.: inquiry in education: Vol. 1: Iss.2, Article 5. Retrieved January 3, 2011 from: http://digitalcommons.nl.edu/ie/vol1/iss2/5

Cuban, L. (1984). *How teachers taught : constancy and change in American classrooms, 1890-1980 / Larry Cuban.* New York : Longman, c1984.

Cuban, L., Kirkpatrick, H., & Peck, C. (2001). High Access and Low Use of Technologies in High School Classrooms: Explaining an Apparent Paradox. *American Educational Research Journal, 38*(4), 813-834.

Dewey, J. (1897). My Pedagogic Creed. *The School Journal*, Vol.LIV, No 3, 77-80. Retrieved November 16, 2011 from http://edweb.sdsu.edu/people/dkitchen/TE655/my_pedagogic_creed.htm

Dewey, J. (1910). *How we think / by John Dewey* .. Boston : D.C. Heath & Co., 1910.

Dewey, J. (1915). *The School and Society*. Chicago: University of Chicago Press.

Dexter, S. (1999). Teachers' views of computers as catalysts for changes in their teaching practice. *Journal Of Research On Computing In Education, 31*(3), 221.

Doll, R. C. (1996). *Curriculum improvement: Decision making and process* (9th ed.). Boston: Allyn and Bacon

Donovan, L., Green, T., & Hansen, L. E. (2011). One-to-one laptop teacher education: does involvement affect candidate technology skills and dispositions? *Journal of Research on Technology in Education, 44*(2), 121+. Retrieved from http://go.galegroup.com/ps/i.do?id=GALE%7CA277675317&v=2.1&u=lap01benton&i=r&p=GPS&sw=w&asid=861a00fd5c73e6e48f95992f81f9bfa6

Doppelt, Y. (2003). Implementation and Assessment of Project-Based Learning in a Flexible Environment. *International Journal of Technology & Design Education, 13*(3), 255-272. Retrieved from http://ezproxy.latech.edu:2220/ehost/results?sid=771e297a-5058-42dd-b448-f43326a22f82%40sessionmgr112&vid=1&hid=124&bquery=Implementation+and+assessment+of+Project+Based+Learning+in+an+Flexible+Environment&bdata=JmRiPWE5aCZ0eXBlPTEmc2l0ZT1laG9zdC1saXZlJnNjb3BlPXNpdGU%3d

DuFour, R., DuFour, R., Eaker, R., & Many, T. (2010). *Learning by doing: A handbook for professional learning communities at work.* (2nd ed). Bloomington, IN: Solution Tree Press.

DuFour, R., & Marzano, R.J. (2011). *Leaders of learning: How district, school, and classroom leaders improve student achievement.* Bloomington, IN: Solution Tree.

Dunleavey, M. P. (1994, February 21). Reforming the 3 R's: blueprints for the schools of tomorrow. Publishers Weekly, 241(8), 33+. Retrieved from http://go.galegroup.com/ps/i.do?id=GALE%7CA14870656&v=2.1&u=lap01bent on&it=r &p=GPS&sw=w

Enriquez, A. G. (2010). Enhancing Student Performance Using Tablet Computers. *College Teaching*, *58*(3), 77-84. doi:10.1080/87567550903263859 Retrieved from http://ezproxy.latech.edu:2220/ehost/pdfviewer/pdfviewer?vid=26&hid=116&sid =f85db6c5-2bfe-424c-82ad-e6c3c10f39d8%40sessionmgr111

Farbman, D. A., Goldberg, D. J., & Miller, T. D. (2014). Redesigning and expanding school time to support common core implementation. Center for American Progress. Retrieved from:http://www.americanprogress.org/issues/education/report/2014/01/31/81861 /redesi ning-and-expanding-school-time-to-support-common-core-implementation/

Finn, C. E. (2008). Troublemaker: A personal history of school reform since Sputnik. Princeton, NJ: Princeton University Press.

Fullan, M., Hill, P., & Crevola, C. (2006). Breakthrough. Thousand Oaks, CA: Corwin Press.

Galizio, L. M., Ledesma, P., & Schrum, L. (2011). Educational leadership and technology integration: an investigation into preparation, experiences, and roles. *Journal of School Leadership*, *21*(2), 241+. Retrieved from http://go.galegroup.com/ps/i.do?id=GALE%7CA259381178&v=2.1&u=lap01benton&i=r&p=GPS&sw=w&asid=76f3989d23d7f2cee511c7cb23c14856

Gall, G.D., Gall, J.P., & Borg, W.R. (2007). *Educational research: An introduction* (8th ed.) Boston: Pearson Education , Inc.

Gardner, H. (1993). *Frames of mind : the theory of multiple intelligences / Howard Gardner ;[with a new introduction by the author]*. New York, NY: BasicBooks, c1993.

Gardner, H. (2006). Five Minds for the Future. Boston: Harvard Business School Press

Grabe, M. M., & Grabe, C. C. (2008). *Integrating technology for meaningful learning.* (5th ed.). Boston, MA: Houghton Mifflin Company.

Grant, M. (2009). *Understanding projects in project-based learning: A student's perspective*. Paper presented at Annual Meetings of the American Educational Research Association. San Diego, CA. April, 2009. Retrieved from http://www.bie.org/research/study/students_perspective

Grant, M. M., Ross, S. M., Weiping, W., & Potter, A. (2005). Computers on wheels: an alternative to 'each one has one'. *British Journal of Educational Technology*, *36*(6), 1017-1034. doi:10.1111/j.1467-8535.2005.00571.x Retrieved from http://ezproxy.latech.edu:2220/ehost/pdfviewer/pdfviewer?vid=21&hid=116&sid=f85db6c5-2bfe-424c-82ad-e6c3c10f39d8%40sessionmgr111

Gültekin, M. (2005). The Effect of Project Based Learning on Learning Outcomes in the 5th Grade Social Studies Course in Primary Education. *Educational Sciences: Theory & Practice*, *5*(2), 548-556. Retrieved from http://ezproxy.latech.edu:2220/ehost/pdfviewer/pdfviewer?vid=5&hid=124&sid=771e297a-5058-42dd-b448-f43326a22f82%40sessionmgr112

Hackmann, D. G. (2004). Constructivism and Block Scheduling: Making the Connection. Phi Delta Kappan, 85(9), 697. Retrieved from http://go.galegroup.com/ps/i.do?id=GALE%7CA116362447&v=2.1&u=lap01benton&it=r&p=GPS&sw=w

Hall, G. E. (2010). Technology's Achilles heel: achieving high-quality implementation. *Journal of Research on Technology in Education*, *42*(3), 231+. Retrieved from http://go.galegroup.com/ps/i.do?id=GALE%7CA221849728&v=2.1&u=lap01benton&i=r&p=GPS&sw=w&asid=54f8378e77b6c49f21e33469677b2f82

Hall, M. W., & Resnick, L. B. (1998). Learning organizations for sustainable education reform. Daedalus, 127(4), 89+. Retrieved from http://go.galegroup.com/ps/i.do?id=GALE%7CA21262647&v=2.1&u=lap01benton&it=r&p=GPS&sw=w

Hanover Research. (2013, January). New Tech Schools and Student Achievement. Retrieved from the New Tech Network website: http://www.newtechnetwork.org/newtech_model

Hatch, T. (1998). How comprehensive can comprehensive reform be? Phi Delta Kappan, 79(7), 518+. Retrieved from http://go.galegroup.com/ps/i.do?id=GALE%7CA20521086&v=2.1&u=l0b

Hartnell-Young, E. (Autumn 2006). Teachers' roles and professional learning in communities of practice supported by technology in schools. *Journal of Technology and Teacher Education*, 14, 3. p.461(20). Retrieved January 10, 2011, from General OneFile via Gale: http://findgalegroup.com/gps/start.do?prodId=IPS&userGroupName=lap01benton

Helle, L., Tynjälä, P., Olkinuora, E., & Lonka, K. (2007). 'Ain't nothin' like the real thing'. Motivation and study processes on a work-based project course in information systems design. *British Journal of Educational Psychology*, 77(2), 397-411. doi:10.1348/000709906X105986 Retrieved from http://ezproxy.latech.edu:2220/ehost/pdfviewer/pdfviewer?vid=3&hid=5&sid=2665a939-07fc-4888-a10e-957b2f25c2bb%40sessionmgr11

Hertel, N. (2013). *As Schools Implement Common Core, controversy arises.* Wisconsin State Journal. Retrieved from http://host.madison.com/news/local/education/local_schools/as-schools-implement-common-core-controversy-arises/article_d3ad2c56-4702-5469-85aa-0358a83b6708.html#ixzz2rXATqiHF

Hinkle, D.E., Wiersma, W., Jurs, S.G. (2003). *Applied Statistics: for the behavioral sciences* (5th ed.) Boston: Houghton Mifflin Company

Huffman, J. B., & Jacobson, A. L. (2003). Perceptions of professional learning communities. *International Journal of Leadership in Education*, *6*(3), 239-250. Retrieved from http://ezproxy.latech.edu:2220/ehost/pdfviewer/pdfviewer?vid=62&hid=22&sid=b29872 c3-61b4-48af-97b7-0a9f8f2eca76%40sessionmgr4

International Society for Technology in Education. (2012). New Media Consortium Horizon Report. Retrieved from http://www.iste.org/learn/reports

Iran-Nejad, A. (1995). Constructivism as substitute for memorization in learning: meaning is created by learner. Education, 116(1), 16+. Retrieved from http://go.galegroup.com/ps/i.do?id=GALE%7CA17855126&v=2.1&u=lap01benton&it=r&p=GPS&sw=w

Judson, E. (2006). How teachers integrate technology and their beliefs about learning: Is there a connection? *Journal of Technology and Teacher Education (JTATE)*, *14*(3), 581-597.

Kalina, C. J., & Powell, K. C. (2009). Cognitive and social constructivism: developing tools for an effective classroom. Education, 130(2), 241+. Retrieved from http://go.galegroup.com/ps/i.do?id=GALE%7CA216181184&v=2.1&u=lap01benton&it=r&p=GPS&sw=w

Kapp, E. (2009). Improving student teamwork in a collaborative project-based course [Electronic version]. College Teaching, 57(3), 139-143. (5). Retrieved January 14, 2011, from Galegroup database.

Kidd, T. T. (2009). The dragon in the school's backyard: A review of literature on the uses of technology in urban schools. *International Journal of Information and Communication Technology Education*, *5*(1), 88-102. doi:10.4018/jicte.2009010107

Keengwe, J., & Onchwari, G. (2011). Fostering meaningful student learning through constructivist pedagogy and technology integration. *International Journal of Information and Communication Technology Education*, 7(4), 1+. Retrieved from http://go.galegroup.com/ps/i.do?id=GALE%7CA270150227&v=2.1&u=lap01benton&it=r&p=PROF&sw=w

KnowledgeWorks. (2014, February). *What we do.* Retrieved February 8, 2014, from the KnowledgeWorks website:http://knowledgeworks.org/about/what-we-do

Kozma, R. B. (2003). Technology and Classroom Practices: An International Study. *Journal of Research on Technology in Education*, *36*(1), 1-14. Retrieved from http://ezproxy.latech.edu:2220/ehost/pdfviewer/pdfviewer?vid=15&hid=1&sid=f85db6c5-2bfe-424c-82ad-e6c3c10f39d8%40sessionmgr111

Kulik, J. J. (2003). Effects of using instructional technology in elementary and secondary schools: What controlled evaluation studies say. Arlington,VA: SRI International

Learning Theories Knowledgebase. (2012). Constructivism. Retrieved from http://www.learning-theories.com/constructivism.html

Leonard, L J, & Leonard, P E (March 1999). Reculturing for Collaboration and Leadership. The Journal of Educational Research, 92, 4. p.237(1). Retrieved December 15, 2010, from Educator's Reference Complete via Gale: http://find.galegroup.com/gtx/start.do?prodId=PROF&userGroupName=lap01benton

Louisiana Department of Education (2013). *Annual assessments.* Retrieved from http://www.louisianabelieves.com/assessment/annual-assessments

Louisiana Department of Education (2014). *Bulletin 741.* Retrieved from http://bese.louisiana.gov/documents-resources/policies-bulletins

Louisiana Department of Education (2013). *End of course test.* Retrieved from http://www.louisianabelieves.com/assessment/end-of-course-tests

Louisiana Department of Education (2013). *Explore, PLAN, ACT.* Retrieved from http://www.louisianabelieves.com/assessment/explore-plan-act

Louisiana Department of Education (2013). *School performance scores.* Retrieved from http://www.louisianabelieves.com/accountability/school-performance-scores

Louisiana Department of Education (2014). *Common Core State Standards Implementation.* Retrieved from http://www.louisianabelieves.com/docs/webinars/ccss-implementation

Lujan, N., & Day, B. (2009). Professional Learning Communities: Overcoming the Roadblocks. *Delta Kappa Gamma Bulletin, 76*(2), 10-17. Retrieved from http://ezproxy.latech.edu:2220/ehost/pdfviewer/pdfviewer?vid=29&hid=115&sid=b2982c3-61b4-48af-97b7-0a9f8f2eca76%40sessionmgr4

Matzen, N. J., & Edmunds, J. A. (2007). Technology as a Catalyst for Change: The Role of Professional Development. *Journal of Research on Technology in Education, 39*(4), 417-430.

McChesney, J. (1999). Whole-School Reform. Teacher Librarian, 26(5), 23. Retrieved from http://go.galegroup.com/ps/i.do?id=GALE%7CA54805835&v=2.1&u=lap01benton&it=r&p=GPS&sw=w

McLeod, S. A. (2007). *Edward Thorndike.* Retrieved from http://www.simplypsychology.org/edward-thorndike.html

Mergendoller, J.R., Maxwell, N., & Bellisimo, Y. (2007). The effectiveness of problem based instruction: A Comparative Study of Instructional Methods and Student Characteristics. *Interdisciplinary Journal of Problem-based Learning,* 1(2), 49-69. Retrieved from http://docs.lib.purdue.edu/ijpbl/vol1/iss2/5/.

Meier, D., & Wood, G. H. (2004). *Many children left behind : how the No Child Left Behind Act is damaging our children and our schools / edited by Deborah Meier and George Wood.* Boston : Beacon Press, c2004.

National Center for Education Statistics. (2012). Institute of Education Sciences. Retrieved from http://nces.ed.gov/pubs2003/tech_schools/index.asp#5

New Tech Network. (2010, August). *New Tech Network Student Achievement Results.* Retrieved June 25, 2012, from the New Tech Network website: http://www.newtechnetwork.org/newtech_model

New Tech Network. (2011, January). *New Tech Outcomes.* Retrieved June 25, 2012, from theNew Tech Network website: http://www.newtechnetwork.org/newtech_model

New Tech Network. (2011, August). *2009-10 Powerful Results.* Retrieved June 25, 2012, fromthe New Tech Network website: http://www.newtechnetwork.org/newtech_model

New Tech Network. (2012, April). *New Tech Network Outcomes 2010-11.* Retrieved January 10, 2013, from the New Tech Network website: http://www.newtechnetwork.org/newtech_model

New Tech Network. (2012, June). *What fuels our success.* Retrieved June 25, 2012, from theNew Tech Network website: http://www.newtechnetwork.org/newtech_model

New Tech Network. (2013, April). *Student Outcomes Report 2013.* Retrieved May 4, 2013, from the New Tech Network website: http://www.newtechnetwork.org/newtech_model

New Tech Network. (2013, June). *NTN School Success Rubric.* Retrieved February 16, 2014, from the New Tech Network website: http://www.newtechnetwork.org/sites/default/files/fpfiles/schoolsuccessrubric2013.pdf

O'Neill, T., & Barton, A. C. (Oct 2005). Uncovering student ownership in science learning: the making of a student created mini-documentary. *School Science and Mathematics*, 105, 6. p.292(10). Retrieved February 20, 2010, from Educator's Reference Complete via Gale: http://findgalegroup.com/gps/start.do?prodId=IPS&userGroupName=lap01benton

Ornstein, A. C., & Hunkins, F. P. (2009). *Curriculum Foundations, Principles, and Issues* (5th ed.). Boston: Pearson.

Oxford Bibliographies. (February, 2014). School Reform. Retrieved February 22, 2014, from: http://www.oxfordbibliographies.com/view/document/obo-9780199756810/obo_9780199756810-0035.xml

Palak, D., & Walls, R. T. (2009). Teachers' beliefs and technology practices: a mixed-methods approach. *Journal of Research on Technology in Education*, 41(4), 417+. Retrieved from http://go.galegroup.com/ps/i.do?id=GALE%7CA202073847&v=2.1&u=lap01benton&it=r&p=GPS&sw=w

Piaget, J. (1966). *The origins of intelligence in children / Jean Piaget ; translated by Margaret Cook.* New York : International Universities Press, 1966, c1952.

Partnership for 21st Century Skills. (2014). *Framework for 21st Century Learning.* Retrieved from http://www.p21.org/storage/documents/1._p21_framework_2-pager.pdf

Ravitz, J. (2010). Beyond Changing Culture in Small High Schools: Reform Models and Changing Instruction with Project-Based Learning, *Peabody Journal of Education*, 85:3,290-312 Retrieved from http://ezproxy.latech.edu:2220/ehost/detail?sid=771e297a-5058-42dd-b448-f43326a22f82%40sessionmgr112&vid=56&hid=124

Ravitz, J., Hixson, N., English, M., & Mergendoller, J. (2011). *Using project based learning to teach 21st century skills: Findings from a statewide initiative.* Proposal version of paper to be presented at Annual Meetings of the American Educational Research Association. Vancouver, BC. April, 2011. Available: http://www.bie.org/research/study/PBL_21CS_WV

Saye, J. W. (1998). Technology in the Classroom: The Role of Dispositions in Teacher Gatekeeping. *Journal of Curriculum and Supervision, 13*(3), 210-34.

Schwartz, K. (2013). Are schools meeting their technology goals? *Mind Shift* Retrieved from http://blogs.kqed.org/mindshift/2013/07/are-schools-meeting-their-technology-goals/

Senechal, D. (2010). The most daring education reform of all. *American Educator*, 34(1), 4+. Retrieved from http://go.galegroup.com/ps/i.do?id=GALE%7CA233050798&v=2.1&u=lap01benton&it=r&p=GPS&sw=w

Senge, P.M., (2006). The fifth discipline: The art and practice of the learning organization (Rev.ed.). New York, NY: Doubleday.

Sherman, S. C. (2009). Haven't we seen this before? Sustaining a vision in teacher education for progressive teaching practice. *Teacher Education Quarterly*, 36(4), 41. Retrieved from http://go.galegroup.com/ps/i.do?id=GALE%7CA217432855&v=2.1&u=lap01benton&i=r&p=GPS&sw=w

Sigurðardóttir, A. (2010). Professional Learning Community in Relation to School Effectiveness. *Scandinavian Journal of Educational Research, 54*(5), 395-412. doi:10.1080/00313831.2010.508904 Retrieved from http://ezproxy.latech.edu:2220/ehost/pdfviewer/pdfviewer?vid=4&hid=4&sid=b29872c3-61b4-48af-97b7-0a9f8f2eca76%40sessionmgr4

Slavin, R. E. (1989). PET and the Pendulum: Faddism in Education and How to Stop It. *Phi Delta Kappan, 70*(10), 752-758. Retrieved from http://ezproxy.latech.edu

Spektor-Levy, O., & Granot-Gilat, Y. (2012). The impact of learning with laptops in 1:1 classes on the development of learning skills and information literacy among middle school students. *Interdisciplinary Journal of E-Learning and Learning Objects, 8*, 83+. Retrieved from http://go.galegroup.com/ps/i.do?id=GALE%7CA324395692&v=2.1&u=lap01benton&i=r&p=GPS&sw=w&asid=bdeb5a5ef86aea8122a69a3f9f5716e7

Strobel, J. & van Barneveld, A. (2008) "When is PBL More Effective? A Meta-synthesis of Meta-analyses Comparing PBL to Conventional Classrooms," *Interdisciplinary Journal of Problem-based Learning*, 3(1), 44-58. Retrieved from http://docs.lib.purdue.edu/ijpbl/vol3/iss1/4.

Summers, J. J., Beretvas, S., Svinicki, M. D., & Gorin, J. S. (2005). Evaluating Collaborative Learning and Community. *Journal of Experimental Education, 73*(3), 165-188. Retrieved from http://ezproxy.latech.edu:2220/ehost/pdfviewer/pdfviewer?vid=27&hid=2&sid=b29872c3-61b4-48af-97b7-0a9f8f2eca76%40sessionmgr4

Thomas, J. W., Buck Institute for Education. (1999). A review of research on project-based learning. Retrieved February 19, 2010, from the Buck Institute for Education Web site: http://www.bie.org/research/library

Thomas, J. W. & Mergendoller, J. R. (2000). Managing project-based learning: Principles from the field. Paper presented at the Annual Meeting of the American Educational Research Association, New Orleans, LA. Retrieved from http://www.bie.org/images/uploads/general/f6d0b4a5d9e37c0e0317acb7942d27b0.pdf

U.S. Department of Education. (2012). *Built for teachers: how the blueprint for reform empowers educators*. Retrieved from http://www2.ed.gov/policy/elsec/leg/blueprint/teachers/publication.pdf

U.S. Department of Education. (2002). *Comprehensive school reform programs.* Retrieved from http://www2.ed.gov/programs/compreform/csrdoverview/edlite-sld005.html

U.S. Department of Education. (2012). *Enhancing Education Through Technology Act of 2001*. Retrieved from http://www2.ed.gov/policy/elsec/leg/esea02/pg34.html

U.S. Department of Education. (2010). *National Center for Education Statistics.* Retrieved from http://nces.ed.gov/pubs2003/tech_schools/index.asp#5

U.S. Department of Education. (2012). What We Should Be Assessing? Retrieved from http://www.ed.gov/technology/netp-2010/assessment-measure-what-matters

Vision K-20. (2013). 2013 Survey Results. Retrieved from http://www.siia.net/visionk20/evidence.asp

Vygotskiĭ, L. S. (1962). *Thought and language. Edited and translated by Eugenia Hanfmann and Gertrude Vakar.* Cambridge, M.I.T. Press, Massachusetts Institute of Technology, 1962.

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.

Wang, Y. M. (2002). When Technology Meets Beliefs: Preservice Teachers' Perception of the Teacher's Role in the Classroom with Computers. *Journal of Research on Technology in Education, 35*150-161.

White, S. & Smith, R. L. (2010). School improvement for the next generation. Bloomington, IN: Solution Tree Press

Wolk, S. (Nov 1994). Project-based learning: pursuits with a purpose. *Educational Leadership*, 52, n3. p.42(4). Retrieved February 20, 2010, from General OneFile via Gale: http://findgalegroup.com/gps/start.do?prodId=IPS&userGroupName=lap01benton

APPENDIX A

SCHOOL SUCCESS RUBRIC

New Tech Principal and Teacher Survey

Dear Teacher or Principal

The purpose of this study, "The Relationship Between Configurations of the New Tech High School Model and Student Achievement", is to examine the relationship between various New Tech High School (NTHS) models in north Louisiana and desired student and school achievement outcomes. Outcomes will be indicated by state proficiency exams, that is: End of Course (EOC) exams, college and career readiness exams, American College Test (ACT), and overall school accountability scores, known in Louisiana as School Performance Scores (SPS).

I attest by my choice below that I have read and understood the description of the study, and its purposes and methods. I understand that my participation in this research is strictly voluntary and my participation or refusal to participate in this study will not affect my relationship with Louisiana Tech University or my grades in any way. Further, I understand that I may withdraw at any time or refuse to answer any questions without penalty. Upon completion of the study, I understand that the results will be freely available to me upon request. I understand that the results of my survey will be confidential, accessible only to the principal investigators, myself, or a legally appointed representative. I have not been requested to waive nor do I waive any of my rights related to participating in this study.

I understand that my choice below (i.e, Yes or No) signifies my voluntary consent or refusal to participate in this study.

___ Yes, I agree to participate in this study.

___ No, I do not wish to participate in this study.

General Information and New Tech Assignment

1. Do you wish to participate?
   - ☐ Yes
   - ☐ No

2. In which school do you currently work?

3. Which of the three New Tech High School model configurations describes the school in which you currently work?
   - ☐ Small learning community (SLC)- small school program in a shared facility for whole school cooperation

- ☐ Whole school conversion (WSC)- the entire school has adopted the New Tech model
- ☐ Autonomous school (AS)- a school located on a separate site from existing schools and admitting students from throughout the district

4. How do you classify your position at your current school, that is, the activity at which you spend most of your time during the school year?
   - ☐ Regular teacher
   - ☐ Itinerant teacher
   - ☐ Administrator (e.g., principal, assistant principal, director)
   - ☐ Library media specialist or librarian
   - ☐ Other professional staff (e.g., counselor, curriculum coach, coordinator, social worker)

5. How many years have you worked as a full time teacher?
   - ☐ _____

6. How many years have you worked as a full time teacher in the New Tech Network?
   - ☐ _____

7. Have you attended or participated in any in-services, conferences, or training specific to preparing you to provide instructional services in a New Tech School?
   - ☐ Yes
   - ☐ No

8. If yes, the duration of in-service, conference, or training hours was:
   - ☐ 0 -1 hour
   - ☐ 2-4 hours
   - ☐ 5-8 hours
   - ☐ 9-15 hours
   - ☐ > 16 hours

The New Tech High School Model: Instructional Approaches/Learning Outcomes

9. Of the defined New Tech Network learning outcomes, which learning outcome(s) do you feel is/are a priority/priorities at your school? PLEASE CHECK ALL THAT APPLY
   - ☐ Content standards
   - ☐ Collaboration
   - ☐ Critical thinking
   - ☐ Oral communication

- ☐ Written communication
- ☐ Career preparation
- ☐ Citizenship and ethics
- ☐ Technology literacy

10. The New Tech High School in which you work embeds the afore-mentioned learning outcomes in the following instructional approaches:

    a. Project-based learning (PBL) - a student-centered instructional approach that emphasizes technology use, standards-based projects, and cultivation of community partnerships.
        - ☐ Strongly agree
        - ☐ Agree
        - ☐ Somewhat agree
        - ☐ Disagree
        - ☐ Somewhat disagree

    b. Professional learning communities (PLC) - a culture of "trust, respect, and responsibility" whereby students and teachers are empowered to make meaningful contributions to school policy and learning.
        - ☐ Strongly agree
        - ☐ Agree
        - ☐ Somewhat agree
        - ☐ Disagree
        - ☐ Somewhat disagree

    c. Integrated technology (IT) – full-scale technology integration into classrooms through one-to-one computing ratios, Internet access, and the use of a learning management system that transforms students into self-directed learners and teacher into learning facilitators.
        - ☐ Strongly agree
        - ☐ Agree
        - ☐ Somewhat agree
        - ☐ Disagree
        - ☐ Somewhat disagree

New Tech Network: School Success Rubric (SSR)

11. Overall, the school at which I am currently employed is successfully accomplishing the desired school success outcomes by embedding and encouraging the following skill sets and attributes in the daily classroom teacher-student interactions:

    a. Students demonstrate a mastery of core knowledge across all discipline areas (as defined by state and national standards).
        - ☐ Strongly agree
        - ☐ Agree
        - ☐ Somewhat agree
        - ☐ Disagree
        - ☐ Somewhat disagree

    b. Students can effectively communicate complex ideas in well organized and engaging oral presentations to a variety of audiences and for many purposes.
        - ☐ Strongly agree
        - ☐ Agree
        - ☐ Somewhat agree
        - ☐ Disagree
        - ☐ Somewhat disagree

    c. Students can effectively collaborate with others on complex tasks and can adopt different roles including leadership based on group needs.
        - ☐ Strongly agree
        - ☐ Agree
        - ☐ Somewhat agree
        - ☐ Disagree
        - ☐ Somewhat disagree

    d. Students are very confident in many settings and demonstrate the attributes of highly effective people including resilience, patience, adaptability, and persistence.
        - ☐ Strongly agree
        - ☐ Agree
        - ☐ Somewhat agree
        - ☐ Disagree
        - ☐ Somewhat disagree

e. Students accept the responsibility of their actions, and although they recognize external circumstances, focus on their own choices and behaviors instead.
   - ☐ Strongly agree
   - ☐ Agree
   - ☐ Somewhat agree
   - ☐ Disagree
   - ☐ Somewhat disagree

f. Students have positive relationships with adults and peers in the school community and feel a sense of belonging.
   - ☐ Strongly agree
   - ☐ Agree
   - ☐ Somewhat agree
   - ☐ Disagree
   - ☐ Somewhat disagree

g. Students feel empowered to contribute positively to the community and take on leadership roles. They feel trusted and trust others to be respectful and responsible.
   - ☐ Strongly agree
   - ☐ Agree
   - ☐ Somewhat agree
   - ☐ Disagree
   - ☐ Somewhat disagree

h. Students have the capacity to successfully complete authentic, complex, and rigorous tasks that require active exploration, higher-order thinking, and application of what they have learned.
   - ☐ Strongly agree
   - ☐ Agree
   - ☐ Somewhat agree
   - ☐ Disagree
   - ☐ Somewhat disagree

i. Students expect to attend college; have thoroughly researched postsecondary options, financial aid, and career paths; and have applied to several organizations that meet their learning and career objectives.
   - ☐ Strongly agree

- ☐ Agree
- ☐ Somewhat agree
- ☐ Disagree
- ☐ Somewhat disagree

j. Students meet course requirements needed for 4-year college eligibility and therefore have a variety of options for post-secondary learning.
   - ☐ Strongly agree
   - ☐ Agree
   - ☐ Somewhat agree
   - ☐ Disagree
   - ☐ Somewhat disagree

NTN SCHOOL SUCCESS RUBRIC

LEARNING OUTCOMES (What knowledge, skills, and attributes every graduate should demonstrate)

	NOT YET SUCCESSFUL	PARTIALLY SUCCESSFUL	SUCCESSFUL	HIGHLY SUCCESSFUL
KNOWLEDGE	Students demonstrate significant gaps in their knowledge in multiple discipline areas - Students understand facts in isolation and rarely make connections between disciplines - Students are unable to understand and utilize the knowledge and skills of a discipline to reason, problem-solve, and develop sound arguments or decisions.	Students demonstrate proficient knowledge in most disciplines (as defined by state and national standards). - Students make simple connections and find rudimentary patterns within and among discipline areas. - Students have a rudimentary ability to apply the knowledge and skills of a discipline to reason, problem-solve, and develop sound arguments or decisions	Students demonstrate a mastery of core knowledge across all discipline areas (as defined by state and national standards) - Students easily make sophisticated connections and find patterns between and among discipline areas. - Students demonstrate the ability to understand and utilize the knowledge and skills of a discipline to reason, problem-solve, and develop sound arguments or decisions.	In addition, students demonstrate a specialized knowledge in one or more disciplines that are of interest. - In addition, students can identify the limits of their knowledge, understand how that might affect their thinking, and plan further learning
SKILLS	Student writing is disorganized and shows limited control of conventions. - Students cannot effectively communicate ideas orally - Students cannot effectively collaborate with others on complex tasks - Students demonstrate significant gaps in their ability with other college and career readiness skills	Student writing is somewhat organized but insufficiently developed and shows fairly consistent control of conventions. - Students can effectively communicate simple information in rudimentary oral presentations. - Students can effectively collaborate with others on simple, short-term tasks. - Students demonstrate rudimentary development of other college and career readiness skills such as creativity, technology literacy, researching, social interaction, time management, etc.	Student writing is clearly and consistently organized, fully developed, fluent, and generally free from errors, as appropriate to the discipline. - Students can effectively communicate complex ideas in well organized and engaging oral presentations to a variety of audiences and for many purposes. - Students can effectively collaborate with others on complex tasks and can adopt different roles including leadership based on group needs - Students demonstrate mastery of other college and career readiness skills such as creativity, innovation, technology literacy, researching, social interaction, time management, etc	In addition, student writing is engaging, colorful, stimulating, entertaining, or thought provoking - In addition, students can thoughtfully use humor, propaganda techniques, and drama to enhance their message - In addition, students effectively manage and motivate others to maximize team success. - In addition, students demonstrate a developing mastery of a career-specific skills in a field that interests them.
ATTRIBUTES	Students lack confidence and demonstrate few attributes of highly effective people including a persistence, flexibility, and patience - Students avoid challenges, believing that they are good in some disciplines, not good in others, and that working harder will have little effect on that. - Students are passive when faced with choices that will affect their current and future success and rely on direction from others to chart their path - Students view themselves as victims of circumstance and take little responsibility for what happens to them, attributing their success and failure to the actions of others	Students are confident in some settings and demonstrate some attributes of highly effective people including resilience, patience, adaptability and persistence. - Students believe that if they work at something, their performance will improve, but avoid significant challenges and do not regularly revise their work once completed or reflect on how to improve. - Students show some capacity to actively make choices that will affect their current and future success but still rely heavily on external direction - Students are able to describe how their choices lead to their success or failure but often deflect consequences (especially negative ones) to the actions of others.	Students are very confident in many settings and demonstrate the attributes of highly effective people including resilience, patience, adaptability, and persistence - Students see challenges as learning opportunities and believe that if they work at something, their performance will improve. They believe that they are capable of achieving at high levels across a broad spectrum of disciplines. Students regularly refine their work and reflect on their performance - Students demonstrate the capacity to be self-directed in making choices that will affect their current and future success while seeking the advice and guidance of trusted allies - Students accept the responsibility of their actions, and although they recognize external circumstances, focus on their own choices and behaviors instead	In addition, students build the confidence and capacity of others to be highly effective - In addition, students engage with peers and mentors in formal and informal settings outside of the classroom and school settings to give and receive feedback, exchange ideas, and push their personal development in areas of interests to them. - In addition, students "lean in" to their futures by taking leadership roles and seeking opportunities for growth. They understand and act on the value of standing up rather than standing by - In addition, when in a leadership role, students demonstrate responsibility for the actions of their peers and team members

CULTURAL OUTCOMES (what students should experience in the learning environment)

	NOT YET SUCCESSFUL	PARTIALLY SUCCESSFUL	SUCCESSFUL	HIGHLY SUCCESSFUL
CONNECTED	Students feel anonymous or disconnect from the school community --- Students feel physically or emotionally unsafe on campus --- Students engage in disruptive and antisocial behaviors	Students feel connected with a small group of friends. --- Students feel mostly safe while on campus but may not feel trusted or respected --- Students comply with rules and do not engage in disruptive or antisocial behavior	Students have positive relationships with adults and peers in the school community and feel a sense of belonging. --- Students feel emotionally and physically safe, feel accepted "being themselves," can take courageous risks, and will be supported if they fail --- Students feel empowered to contribute positively to the community and take on leadership roles. They feel trusted and trust others to be respectful and responsible	In addition, students contribute proactively and positively in the local community, taking leadership roles and working to make a difference. --- In addition, students have a sense of responsibility to ensure that everyone on campus feels the same way --- In addition, students work to empower others by recognizing individuals' strengths and encouraging others to succeed.
ENGAGED	Students do not see the value in the work they are doing. --- Students are not innovative or creative and tend to do the minimum to get by --- Students rarely interact with adults or experts as part of the learning process	Students see the value of the work they are doing --- Students are innovative or creative in certain disciplines of personal interest. --- Students interact with few adults or experts as part of the learning process.	Students value and are excited about the work they are doing and are interested in how it relates to the work of others. --- Students are often innovative and creative, deriving unique solutions to problems, and defend their ideas and conclusions with enthusiasm. --- Students regularly seek out interactions with adults and experts in a professional manner as part of the learning process.	In addition, students return to earlier work and continue to improve it. --- In addition, students share or present their innovations and creations to audiences unrelated to school. --- In addition, students form working relationships with adults and experts in the course of learning.
CHALLENGED	Students are capable of completing short, simple, inauthentic tasks that require little higher-order thinking. --- Students do not use any measures to evaluate the quality of their work.	Students show some capacity to complete longer, more authentic tasks requiring higher-order thinking and application of what they have learned --- Students evaluate the quality of their work against a set of standards and present their work to teachers and peers	Students have the capacity to successfully complete authentic, complex, and rigorous tasks that require active exploration, higher-order thinking, and application of what they have learned --- Students evaluate the quality of their work against authentic discipline or industry standards in formal publications, exhibitions, and presentations.	In addition, students can design and manage complex tasks that reflect an authentic need or area of interest. --- In addition, students submit their work to academic or professional organizations for review

COLLEGE* AND CAREER OUTCOMES (What students need to enter and be successful in postsecondary learning opportunities)

	NOT YET SUCCESSFUL	PARTIALLY SUCCESSFUL	SUCCESSFUL	HIGHLY SUCCESSFUL
AWARE	Students do not expect to attend college, have done little formal planning for postsecondary education or financial aid, and cannot articulate a thoughtful career path.	Students are aware of some postsecondary options but are unsure about attending college. They have done some preliminary research into postsecondary and financial aid options and have only a rudimentary career path	Students expect to attend college, have thoroughly researched postsecondary options, financial aid, and career paths, and have applied to several organizations that meet their learning and career objectives	In addition, students have planned for and prepared options in case they do not get into their chosen school or program.
ELIGIBLE	Students are not enrolled in courses that meet the minimal requirements for 4 year college eligibility which severely limits their post-secondary options	Students are enrolled in courses that meet the minimal requirements for 4-year college eligibility, but are not successful which limits their post-secondary options	Students meet course requirements needed for 4-year college eligibility and therefore have a variety of options for post-secondary learning	In addition, students have been accepted into a formal post-secondary program of learning or have made a clear case for pursuing a different path to meet their learning and career objectives
PREPARED	Students presently lack significant amounts of the knowledge, skills, or attributes needed to be successful in college	Students have the knowledge, skills, and attributes needed to be successful in college in most areas but may need to take some remedial course work	Students have the knowledge, skills, and attributes needed to be successful in college without having to take remedial courses	In addition, students are successful in college level coursework while still enrolled in high school

* For the purposes of this document, the term "college" refers to a broad range of formal postsecondary experiences that further a person's learning in preparation for a career and lead to a certificate or a degree. In addition to traditional 2- and 4-year college experiences, many technical or trade school experiences and the military could serve as a "college" experience

APPENDIX B

HUMAN SUBJECT APPROVALS

DEPARTMENT HEAD APPROVAL FORM

TO: Project Directors

FROM: Barbara Talbot, Office of University Research
btalbot@latech.edu
318-257-5075 phone
318-257-5079 fax
http://research.latech.edu/

SUBJECT: HUMAN USE COMMITTEE REVIEW

DATE: 03-10-2014

Please submit this page signed by your Department Head or Dean when submitting a proposal to the Human Use Committee for expedited approval.

Their signature is stating that they are aware of this proposal and/or survey being conducted, and all aspects of the study comply with the appropriate University Policies and Procedures.

(print or type below)

Department

Curriculum, Instruction, and Leadership, College of Education

Department Head Name

Dr. Pauline Leonard

_____ _____

Signature Date
(Actual original signature required)

Do you plan to publish this study? ☐ YES X NO
Will this study be published by a national organization? ☐ YES X NO
Are copyrighted materials involved? ☐ YES X NO **Do you have written permission to use copyrighted materials?** ☐ **YES** X NO
COMMENTS: It is not my intention at this time to publish this research.

STUDY/PROJECT INFORMATION FOR HUMAN SUBJECTS COMMITTEE

Describe your study/project in detail for the Human Subjects Committee. Please include the following information.

TITLE: *The Relationship Between Configurations of the New Tech High School Model and Student Achievement*

PROJECT DIRECTOR(S): Doctoral Candidate, Kyle G. Machen

EMAIL: kyle.machen@bossierschools.org

PHONE: 318-655-5567

DEPARTMENT(S): College of Education

DISSERTATION ADVISOR: Dr. Lawrence Leonard

PURPOSE OF STUDY/PROJECT: The purpose of this study is to examine the relationship between the three New Tech High School (NTHS) models and desired student and school achievement outcomes of the New Tech Network (NTN) as indicated by state proficiency exams, that is: End of Course (EOC) exams; college and career readiness exams, American College Test (ACT); and overall school accountability scores, known in Louisiana as School Performance Scores (SPS).

SUBJECTS: Students and teachers assigned to Louisiana New Tech @ Plain Dealing, Booker T. Washington New Technology High School, and Louisiana New Tech @ Ruston.

PROCEDURE: Approximately 183 teachers in three New Tech High Schools in north Louisiana will be solicited for voluntary participation in an online survey for an evaluative assessment of their New Tech School meeting the realization of the New Tech Network's desired outcomes. State proficiency exam scores as well as college and career readiness exam scores of approximately 1,674 students will be collected. Data will be analyzed to determine the relationship between individual New Tech High School model configuration and student achievement.

INSTRUMENTS AND MEASURES TO INSURE PROTECTION OF CONFIDENTIALITY, ANONYMITY: Along with test score data retrieved from the Louisiana Department of Education, a 13-item questionnaire will be employed. All information will be collected over the internet via the Survey Monkey website. All collected information will be held confidential and viewed only by the doctoral committee and me.

RISKS/ALTERNATIVE TREATMENTS: The proposed study represents no risk of harm to students, teachers participating in the survey, or to the schools represented.
BENEFITS/COMPENSATION: None

SAFEGUARDS OF PHYSICAL AND EMOTIONAL WELL-BEING: This study requires neither the identification of students, teachers participating in the survey, nor the schools and districts they represent. All information collected from the survey will be held in strict confidence by the researchers. Access to the survey results will be limited to the researcher.

HUMAN SUBJECTS CONSENT FORM

The following is a brief summary of the project in which you are asked to participate. Please read this information before signing the statement below.

TITLE OF PROJECT: *The Relationship Between Configurations of the New Tech High School Model and Student Achievement*

PURPOSE OF STUDY/PROJECT: The purpose of this study is to examine the relationship between the three New Tech High School (NTHS) models and desired student and school achievement outcomes of the New Tech Network (NTN) as indicated by state proficiency exams, that is: End of Course (EOC) exams; college and career readiness exams, American College Test (ACT); and overall school accountability scores, known in Louisiana as School Performance Scores (SPS).

PROCEDURE: Approximately 183 teachers in three New Tech High Schools in north Louisiana will be solicited for voluntary participation in an online survey for an evaluative assessment of their New Tech School meeting the realization of the New Tech Network's desired outcomes. State proficiency exam and college and career readiness exam scores of approximately 1,674 students will be collected. Data will be analyzed to determine the relationship between individual New Tech High School model configuration and student achievement.

INSTRUMENTS: Along with test score data retrieved from the Louisiana Department of Education, a 13-item questionnaire will be employed. All information will be collected over the internet via the Survey Monkey website. All collected information will be held confidential and viewed only by the doctoral committee and me.

RISKS/ALTERNATIVE TREATMENTS: The participant understands that Louisiana Tech is not able to offer financial compensation nor to absorb the costs of medical treatment should you be injured as a result of participating in this research. The proposed study represents no risk of harm to students, teachers participating in the survey, or to the schools represented.
The following disclosure applies to all participants using online survey tools: This server may collect information and your IP address indirectly and automatically via "cookies".

BENEFITS/COMPENSATION: None

New Tech Principal and Teacher Survey

The purpose of this study, "The Relationship Between Configurations of the New Tech High School Model and Student Achievement", is to examine the relationship between various New Tech High School (NTHS) models in north Louisiana and desired student and school achievement outcomes. Outcomes will be indicated by state proficiency exams, that is: End of Course (EOC) exams, college and career readiness exams, American College Test (ACT), and overall school accountability scores, known in Louisiana as School Performance Scores (SPS).

I attest by my choice below that I have read and understood the description of the study, and its purposes and methods. I understand that my participation in this research is strictly voluntary and my participation or refusal to participate in this study will not affect my relationship with Louisiana Tech University or my grades in any way. Further, I understand that I may withdraw at any time or refuse to answer any questions without penalty. Upon completion of the study, I understand that the results will be freely available to me upon request. I understand that the results of my survey will be confidential, accessible only to the principal investigators, myself, or a legally appointed representative. I have not been requested to waive nor do I waive any of my rights related to participating in this study.

I understand that my choice below (i.e, Yes or No) signifies my voluntary consent or refusal to participate in this study.

___ Yes, I agree to participate in this study.

___ No, I do not wish to participate in this study.

CONTACT INFORMATION: **The principal experimenters listed below may be reached to answer questions about the research, subjects' rights, or related matters.**

Project Director: Kyle G. Machen Major Professor: Dr. Lawrence Leonard
Email: Kyle.machen@bossierschools.org**Email:** lleonard@latech.edu
Phone: 318-655-5567 **Phone: 318-257-3712**

Members of the Human Use Committee of Louisiana Tech University may also be contacted if a problem cannot be discussed with the experimenters:

Dr. Stan Napper (257-3056)
Dr. Mary M. Livingston (257-2292 or 257-5066)

LOUISIANA TECH
UNIVERSITY

MEMORANDUM

OFFICE OF UNIVERSITY RESEARCH

TO: Mr. Kyle Machen and Dr. Lawrence Leonard

FROM: Dr. Stan Napper, Vice President Research & Development

SUBJECT: HUMAN USE COMMITTEE REVIEW

DATE: April 8, 2014

In order to facilitate your project, an EXPEDITED REVIEW has been done for your proposed study entitled:

"The Relationship between Configurations of the New Tech High School Model and Student Achievement"

HUC 1197

The proposed study's revised procedures were found to provide reasonable and adequate safeguards against possible risks involving human subjects. The information to be collected may be personal in nature or implication. Therefore, diligent care needs to be taken to protect the privacy of the participants and to assure that the data are kept confidential. Informed consent is a critical part of the research process. The subjects must be informed that their participation is voluntary. It is important that consent materials be presented in a language understandable to every participant. If you have participants in your study whose first language is not English, be sure that informed consent materials are adequately explained or translated. Since your reviewed project appears to do no damage to the participants, the Human Use Committee grants approval of the involvement of human subjects as outlined.

Projects should be renewed annually. ***This approval was finalized on April 8, 2014 and this project will need to receive a continuation review by the IRB if the project, including data analysis, continues beyond April 8, 2015.*** Any discrepancies in procedure or changes that have been made including approved changes should be noted in the review application. Projects involving NIH funds require annual education training to be documented. For more information regarding this, contact the Office of University Research.

You are requested to maintain written records of your procedures, data collected, and subjects involved. These records will need to be available upon request during the conduct of the study and retained by the university for three years after the conclusion of the study. If changes occur in recruiting of subjects, informed consent process or in your research protocol, or if unanticipated problems should arise it is the Researchers responsibility to notify the Office of Research or IRB in writing. The project should be discontinued until modifications can be reviewed and approved.

If you have any questions, please contact Dr. Mary Livingston at 257-2292 or 257-5066.

APPENDIX C

SUPERINTENDENT LETTERS/APPROVALS

[redacted]

Dear [redacted],

I am Kyle Machen, a principal at Benton Middle School in Bossier Parish and a doctoral candidate in Educational Leadership at Louisiana Tech University. The purpose of this letter is to request your support and your district's participation in my dissertation research study.

My study will examine the relationship between the New Tech High School (NTHS) models and desired outcomes of the New Tech Network (NTN) as indicated by state proficiency exams, End of Course (EOC) exams, a college and career readiness exam, the American College Test (ACT), and School Performance Scores (SPS). Your district's participation in this investigation will assist me in my attempt to determine what components of the NTHS model best facilitate the realization of the NTN goals.

I am hereby requesting your approval to ask teachers and administrators at [redacted] to complete a survey questionnaire addressing their perceptions of the effectiveness of the NTHS model. I know that time is extremely valuable to both your principals and teachers; however, their evaluation of the NTHS model and its realization of the NTN goals is important.

Please be assured that confidentiality will be maintained in the study. Your employees cannot and will not be individually identified with their survey responses. Their data will be studied in an aggregated form only and use of the data will be limited to this research. My major professor at Louisiana Tech, Dr. Lawrence Leonard, and I will be the only individuals to access to the survey data. Should you have any questions regarding this research, please feel free to contact me at 318-655-5567 or Dr. Leonard at 318-257-3712.

A response document is attached to this letter. Please respond by Wednesday, March 26th stating whether or not you will permit your district to be represented in this study. Please respond through email using the attached document. If you have any questions concerning the research study, please contact me via email at kyle.machen@bossierschools.org or by phone at (318) 655-5567.

Thank you in advance for your consideration for taking part in this research.

Sincerely,

Kyle Machen

Superintendent Response

Please:

- Mark your response
- Email this response by Wednesday March 26th, to kyle.machen@bossierschools.org

_____ As Superintendent of [redacted], I consent for Mr. Kyle Machen to contact the principal and teachers of [redacted] seeking participation in a research study focused on the effectiveness of the NTHS model and its realization of the NTN goals.

_____ I do not consent to participation in this study.

Name: [redacted]

Date:

bossierparishschoolboard

P.O. Box 2000 Benton, Louisiana 71006-2000 Telephone (318) 549-5000 FAX (318) 549-5044

D.C. Machen, Jr.
Superintendent

Dr. Jack E. Raley
P.O. Box 85
Houghton, LA 71037
District 1

Brad L. Backhaus
2529 Bloomfield
Houghton, LA 71037
District 2

Frank Kelly
4041 Woodway Drive
Benton, LA 71006
District 3

Tammy A. Smith
183 Willow Bend Road
Benton, LA 71006
District 4

Michael S. Masura II
2400 Churchill Drive
Bossier City, LA 71111
District 5

Glenwood L. Bullard
1501 Lexington Drive
Bossier City, LA 71111
District 6

J. W. Slack
2424 Douglas Drive
Bossier City, LA 71111
District 7

Kenneth M. Wiggins
3209 Parkland Drive
Bossier City, LA 71111
District 8

Eddy Ray Presley
1516 Lee Street
Bossier City, LA 71112
District 9

Sandra "Somm" Darby
1212 Gibson Circle
Bossier City, LA 71112
District 10

Barbara Rudd
2100 Roy
Bossier City, LA 71112
District 11

Kay Padgett Byrd
229 Rockbrook Drive
Bossier City, LA 71112
District 12

March 21, 2014

To Whom It May Concern:

As Superintendent of Bossier Parish Schools, I consent for Mr. Kyle Machen to contact the principal and teachers of Louisiana New Tech @ Plain Dealing seeking permission for their participation in a research study focused on the effectiveness of the NTHS model and its realization of the NTN goals.

Sincerely,

D. C. Machen, Jr.

D. C. Machen, Jr.
Superintendent
Bossier Parish SChools

[redacted]

Dear [redacted],

I am Kyle Machen, a principal at Benton Middle School in Bossier Parish and a doctoral candidate in Educational Leadership at Louisiana Tech University. The purpose of this letter is to request your support and your district's participation in my dissertation research study.

My study will examine the relationship between the New Tech High School (NTHS) models and desired outcomes of the New Tech Network (NTN) as indicated by state proficiency exams, End of Course (EOC) exams, a college and career readiness exam, the American College Test (ACT), and School Performance Scores (SPS). Your district's participation in this investigation will assist me in my attempt to determine what components of the NTHS model best facilitate the realization of the NTN goals.

I am hereby requesting your approval to ask teachers and administrators at [redacted] to complete a survey questionnaire addressing their perceptions of the effectiveness of the NTHS model. I know that your principal's and teacher's time is extremely valuable; however, their evaluation of the NTHS model and its realization of the NTN goals is important.

Please be assured that confidentiality will be maintained in the study. Your employees cannot and will not be individually identified with their survey responses. Their data will be studied in an aggregated form only and use of the data will be limited to this research. My major professor at Louisiana Tech, Dr. Lawrence Leonard, and I will be the only individuals with access to the survey data. Should you have any questions regarding this research, please feel free to contact me at 318-655-5567 or Dr. Leonard at 318-257-3712.

A response document is attached to this letter. Please respond by Wednesday, March 26th stating whether or not you would like your district to be represented in this study. Please respond through email using the attached document. If you have any questions concerning the research study, please contact me via email at kyle.machen@bossierschools.org or by phone at (318) 655-5567.

Thank you in advance for your consideration for taking part in this research.

Sincerely,

Kyle Machen

Superintendent Response

Please:

- Mark your response
- Email this response by Wednesday, March 26th to kyle.machen@bossierschools.org

_____ As Superintendent of [redacted], I consent for Mr. Kyle Machen to contact the principal and teachers of [redacted] seeking participation in a research study focused on the effectiveness of the NTHS model and its realization of the NTN goals.

_____ I do not consent to participation in this study.

Name: [redacted]

Date:

CADDO PARISH SCHOOL BOARD

POST OFFICE BOX 32000 • 1961 MIDWAY STREET • SHREVEPORT, LOUISIANA 71130-2000
AREA CODE 318 • Telephone 603-6300 • Fax 631-5241

Theodis Lamar Goree, Ph.D.
Superintendent

March 20, 2014

Dear Mr Machen:

I commend you on your efforts to pursue an advanced degree. Your request to conduct a survey with the principal and teachers at Booker T. Washington New Technology High School which focuses on the effectiveness of the New Tech High School (NTHS) model and its realization of the New Tech Network (NTN) goals, has been approved. Your project will be coordinated through the office of Erin Harp, Director-Accountability and Instructional Support, via e-mail at [redacted].

Research participation of Caddo employees is strictly on a voluntary basis. Approval of the research study does not mandate/require Caddo employees to participate.

Thank you and best of luck with your studies.

Sincerely,

Keith Burton
Chief Academic Officer

c: Dr. T. Lamar Goree, Superintendent
Gayle Flowers, Area Director of School Performance
Erin Harp, Director-Accountability and Instructional Support
Dr. Stacey Russell, Principal – Booker T. Washington New Technology High School

[redacted]

Dear [redacted],

I am Kyle Machen, a principal at Benton Middle School in Bossier Parish and a doctoral candidate in Educational Leadership at Louisiana Tech University. The purpose of this letter is to request your support and your district's participation in my dissertation research study.

My study will examine the relationship between the New Tech High School (NTHS) models and desired outcomes of the New Tech Network (NTN) as indicated by state proficiency exams, End of Course (EOC) exams, a college and career readiness exam, the American College Test (ACT), and School Performance Scores (SPS). Your district's participation in this investigation will assist me in my attempt to determine what components of the NTHS model best facilitate the realization of the NTN goals.

I am hereby requesting your approval to ask teachers and administrators at [redacted] to complete a survey questionnaire addressing their perceptions of the effectiveness of the NTHS model. I know that time is extremely valuable to both your principals and your teachers; however, their evaluation of the NTHS model and its realization of the NTN goals is important.

Please be assured that confidentiality will be maintained in the study. Your employees cannot and will not be individually identified with their survey responses. Their data will be studied in an aggregated form only and use of the data will be limited to this research. My major professor at Louisiana Tech, Dr. Lawrence Leonard, and I will be the only individuals with access to the survey data. Should you have any questions regarding this research, please feel free to contact me at 318-655-5567 or Dr. Leonard at 318-257-3712.

A response document is attached to this letter. Please respond by Wednesday, March 26th stating whether or not you would like your district to be represented in this study. Please respond through email using the attached document. If you have any questions concerning the research study, please contact me via email at kyle.machen@bossierschools.org or by phone at (318) 655-5567.

Thank you in advance for your consideration for taking part in this research.

Sincerely,

Kyle Machen

Superintendent Response

Please:

- Mark your response
- Email this response by Wednesday, March 26th to kyle.machen@bossierschools.org

_____ As Superintendent of [redacted], I consent for Mr. Kyle Machen to contact the principal and teachers of [redacted] seeking participation in a research study focused on the effectiveness of the NTHS model and its realization of the NTN goals.

_____ I do not consent to participation in this study.

Name: [redacted]

Date:

Lincoln Parish School Board
410 South Farmerville Street
Ruston, Louisiana 71270-4699
Fax: 318-255-3203
Phone: 318-255-1430
Website: www.lincolnschools.org

Danny L. Bell
Superintendent

Otha L. Anders
President

Superintendent Response

Please:

- Mark your response and sign below
- Email this response by Wednesday, March 26th to kyle.machen@bossierschools.org

✓ As Superintendent of Lincoln Parish Schools, I consent for Mr. Kyle Machen to contact the principal and teachers of New Tech @ Ruston seeking participation in a research study focused on the effectiveness of the NTHS model and its realization of the NTN goals.

___ I do not consent to participation in this study.

Name: Danny Bell

Danny Bell
Superintendent of Lincoln Parish Schools

Date: 3/21/14

APPENDIX D

PRINCIPAL LETTERS

Dear [redacted],

I am Kyle Machen, a principal at Benton Middle School in Bossier Parish and a doctoral candidate in Educational Leadership at Louisiana Tech University. The purpose of this letter is to request your participation in my dissertation research study.
My study will examine the relationship between the New Tech High School (NTHS) models and desired outcomes of the New Tech Network (NTN) as indicated by state proficiency exams, End of Course (EOC) exams, a college and career readiness exam, the American College Test (ACT), and School Performance Scores (SPS). Your school's participation in this investigation will assist me in my attempt to determine what components of the NTHS model best facilitate the realization of the NTN goals.

I am hereby requesting your participation, as well as the teachers at [redacted], by completing a survey questionnaire addressing your perceptions of the effectiveness of the NTHS model. I know that time is extremely valuable to both you and teachers; however, your evaluation of the NTHS model and its realization of the NTN goals is important.

Please be assured that confidentiality will be maintained in the study. Neither you nor the teachers will be individually identified with your survey responses. Your data will be studied in an aggregated form only and use of the data will be limited to this research. My major professor at Louisiana Tech, Dr. Lawrence Leonard, and I will be the only individuals to access to the survey data. Should you have any questions regarding this research, please feel free to contact me at 318-655-5567 or Dr. Leonard at 318-257-3712.

Please review SurveyMonkey's privacy policies prior to completion of the survey. If you wish to participate in this survey, please access:
https://www.surveymonkey.com/s/V3XVXCM

Thank you in advance for taking part in this research.

Sincerely,

Kyle Machen

Dear [redacted],

I am Kyle Machen, a principal at Benton Middle School in Bossier Parish and a doctoral candidate in Educational Leadership at Louisiana Tech University. The purpose of this letter is to request your participation in my dissertation research study.
My study will examine the relationship between the New Tech High School (NTHS) models and desired outcomes of the New Tech Network (NTN) as indicated by state proficiency exams, End of Course (EOC) exams, a college and career readiness exam, the American College Test (ACT), and School Performance Scores (SPS). Your school's participation in this investigation will assist me in my attempt to determine what components of the NTHS model best facilitate the realization of the NTN goals.

I am hereby requesting your participation, as well as the teachers at [redacted], by completing a survey questionnaire addressing your perceptions of the effectiveness of the NTHS model. I know that time is extremely valuable to both you and teachers; however, your evaluation of the NTHS model and its realization of the NTN goals is important.

Please be assured that confidentiality will be maintained in the study. Neither you nor the teachers will be individually identified with your survey responses. Your data will be studied in an aggregated form only and use of the data will be limited to this research. My major professor at Louisiana Tech, Dr. Lawrence Leonard, and I will be the only individuals to access to the survey data. Should you have any questions regarding this research, please feel free to contact me at 318-655-5567 or Dr. Leonard at 318-257-3712.

Please review SurveyMonkey's privacy policies prior to completion of the survey. If you wish to participate in this survey, please access:
https://www.surveymonkey.com/s/V3XVXCM

Thank you in advance for taking part in this research.

Sincerely,

Kyle Machen

Dear [redacted],

I am Kyle Machen, a principal at Benton Middle School in Bossier Parish and a doctoral candidate in Educational Leadership at Louisiana Tech University. The purpose of this letter is to request your participation in my dissertation research study.

My study will examine the relationship between the New Tech High School (NTHS) models and desired outcomes of the New Tech Network (NTN) as indicated by state proficiency exams, End of Course (EOC) exams, a college and career readiness exam, the American College Test (ACT), and School Performance Scores (SPS). Your school's participation in this investigation will assist me in my attempt to determine what components of the NTHS model best facilitate the realization of the NTN goals.

I am hereby requesting your participation, as well as the teachers at [redacted], by completing a survey questionnaire addressing your perceptions of the effectiveness of the NTHS model. I know that time is extremely valuable to both you and teachers; however, your evaluation of the NTHS model and its realization of the NTN goals is important.

Please be assured that confidentiality will be maintained in the study. Neither you nor the teachers will be individually identified with your survey responses. Your data will be studied in an aggregated form only and use of the data will be limited to this research. My major professor at Louisiana Tech, Dr. Lawrence Leonard, and I will be the only individuals to access to the survey data. Should you have any questions regarding this research, please feel free to contact me at 318-655-5567 or Dr. Leonard at 318-257-3712.

Please review SurveyMonkey's privacy policies prior to completion of the survey. If you wish to participate in this survey, please access:
https://www.surveymonkey.com/s/V3XVXCM

Thank you in advance for taking part in this research.

Sincerely,

Kyle Machen

APPENDIX E

TEACHER LETTER

Dear Teacher,

I am Kyle Machen, a principal at Benton Middle School in Bossier Parish and a doctoral candidate in Educational Leadership at Louisiana Tech University. The purpose of this letter is to request your participation in my dissertation research study.

My study will examine the relationship between the New Tech High School (NTHS) models and desired outcomes of the New Tech Network (NTN) as indicated by state proficiency exams, End of Course (EOC) exams, a college and career readiness exam, the American College Test (ACT), and School Performance Scores (SPS). Your school's participation in this investigation will assist me in my attempt to determine what components of the NTHS model best facilitate the realization of the NTN goals.

I am hereby requesting your participation by completing a survey questionnaire addressing your perceptions of the effectiveness of the NTHS model. I know that your time is extremely valuable; however, your evaluation of the NTHS model and its realization of the NTN goals is important.

Please be assured that confidentiality will be maintained in the study. Neither you nor the teachers will be individually identified with your survey responses. Your data will be studied in an aggregated form only and use of the data will be limited to this research. My major professor at Louisiana Tech, Dr. Lawrence Leonard, and I will be the only individuals to access to the survey data. Should you have any questions regarding this research, please feel free to contact me at 318-655-5567 or Dr. Leonard at 318-257-3712.

Please review SurveyMonkey's privacy policies prior to completion of the survey. If you wish to participate in this survey, please access:
https://www.surveymonkey.com/s/V3XVXCM

Thank you in advance for taking part in this research.

Sincerely,

Kyle Machen

APPENDIX F

ONLINE SURVEY

New Tech Principal and Teacher Survey

Dear Teacher or Principal

The purpose of this study, "The Relationship Between Configurations of the New Tech High School Model and Student Achievement", is to examine the relationship between various New Tech High School (NTHS) models in north Louisiana and desired student and school achievement outcomes. Outcomes will be indicated by state proficiency exams, that is: End of Course (EOC) exams, college and career readiness exams, American College Test (ACT), and overall school accountability scores, known in Louisiana as School Performance Scores (SPS).

I attest by my choice below that I have read and understood the description of the study, and its purposes and methods. I understand that my participation in this research is strictly voluntary and my participation or refusal to participate in this study will not affect my relationship with Louisiana Tech University or my grades in any way. Further, I understand that I may withdraw at any time or refuse to answer any questions without penalty. Upon completion of the study, I understand that the results will be freely available to me upon request. I understand that the results of my survey will be confidential, accessible only to the principal investigators, myself, or a legally appointed representative. I have not been requested to waive nor do I waive any of my rights related to participating in this study.

I understand that my choice below (i.e, Yes or No) signifies my voluntary consent or refusal to participate in this study.

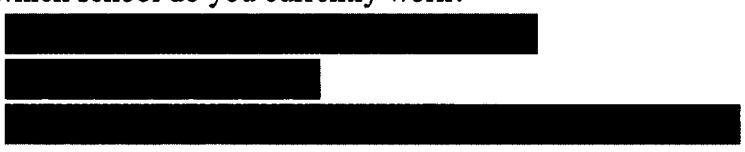
___ Yes, I agree to participate in this study.

___ No, I do not wish to participate in this study.

General Information and New Tech Assignment

12. Do you wish to participate?
    - ☐ Yes
    - ☐ No

13. In which school do you currently work?



14. Which of the three New Tech High School model configurations describes the school in which you currently work?
    - ☐ Small learning community (SLC)- small school program in a shared facility for whole school cooperation
    - ☐ Whole school conversion (WSC)- the entire school has adopted the New Tech model
    - ☐ Autonomous school (AS)- a school located on a separate site from existing schools and admitting students from throughout the district

15. How do you classify your position at your current school, that is, the activity at which you spend most of your time during the school year?
    - ☐ Regular teacher
    - ☐ Itinerant teacher
    - ☐ Administrator (e.g., principal, assistant principal, director)
    - ☐ Library media specialist or librarian
    - ☐ Other professional staff (e.g., counselor, curriculum coach, coordinator, social worker)

16. How many years have you worked as a full time teacher?
    - ☐ _____

17. How many years have you worked as a full time teacher in the New Tech Network?
    - ☐ _____

18. Have you attended or participated in any in-services, conferences, or training specific to preparing you to provide instructional services in a New Tech School?
    - ☐ Yes
    - ☐ No

19. If yes, the duration of in-service, conference, or training hours was:
    - ☐ 0 -1 hour
    - ☐ 2-4 hours
    - ☐ 5-8 hours
    - ☐ 9-15 hours
    - ☐ > 16 hours

The New Tech High School Model: Instructional Approaches/Learning Outcomes

20. Of the defined New Tech Network learning outcomes, which learning outcome(s) do you feel is/are a priority/priorities at your school? PLEASE CHECK ALL THAT APPLY
    - ☐ Content standards
    - ☐ Collaboration
    - ☐ Critical thinking
    - ☐ Oral communication
    - ☐ Written communication
    - ☐ Career preparation
    - ☐ Citizenship and ethics
    - ☐ Technology literacy

21. The New Tech High School in which you work embeds the afore-mentioned learning outcomes in the following instructional approaches:

    d. Project-based learning (PBL) - a student-centered instructional approach that emphasizes technology use, standards-based projects, and cultivation of community partnerships.
        - ☐ Strongly agree
        - ☐ Agree
        - ☐ Somewhat agree
        - ☐ Disagree
        - ☐ Somewhat disagree

    e. Professional learning communities (PLC) - a culture of "trust, respect, and responsibility" whereby students and teachers are empowered to make meaningful contributions to school policy and learning.
        - ☐ Strongly agree
        - ☐ Agree
        - ☐ Somewhat agree
        - ☐ Disagree
        - ☐ Somewhat disagree

f. Integrated technology (IT) – full-scale technology integration into classrooms through one-to-one computing ratios, Internet access, and the use of a learning management system that transforms students into self-directed learners and teacher into learning facilitators.
   - ☐ Strongly agree
   - ☐ Agree
   - ☐ Somewhat agree
   - ☐ Disagree
   - ☐ Somewhat disagree

New Tech Network: School Success Rubric (SSR)

22. Overall, the school at which I am currently employed is successfully accomplishing the desired school success outcomes by embedding and encouraging the following skill sets and attributes in the daily classroom teacher-student interactions:

    b. Students demonstrate a mastery of core knowledge across all discipline areas (as defined by state and national standards).
       - ☐ Strongly agree
       - ☐ Agree
       - ☐ Somewhat agree
       - ☐ Disagree
       - ☐ Somewhat disagree

    k. Students can effectively communicate complex ideas in well organized and engaging oral presentations to a variety of audiences and for many purposes.
       - ☐ Strongly agree
       - ☐ Agree
       - ☐ Somewhat agree
       - ☐ Disagree
       - ☐ Somewhat disagree

l. Students can effectively collaborate with others on complex tasks and can adopt different roles including leadership based on group needs.
   - ☐ Strongly agree
   - ☐ Agree
   - ☐ Somewhat agree
   - ☐ Disagree
   - ☐ Somewhat disagree

m. Students are very confident in many settings and demonstrate the attributes of highly effective people including resilience, patience, adaptability, and persistence.
   - ☐ Strongly agree
   - ☐ Agree
   - ☐ Somewhat agree
   - ☐ Disagree
   - ☐ Somewhat disagree

n. Students accept the responsibility of their actions, and although they recognize external circumstances, focus on their own choices and behaviors instead.
   - ☐ Strongly agree
   - ☐ Agree
   - ☐ Somewhat agree
   - ☐ Disagree
   - ☐ Somewhat disagree

o. Students have positive relationships with adults and peers in the school community and feel a sense of belonging.
   - ☐ Strongly agree
   - ☐ Agree
   - ☐ Somewhat agree
   - ☐ Disagree
   - ☐ Somewhat disagree

p. Students feel empowered to contribute positively to the community and take on leadership roles. They feel trusted and trust others to be respectful and responsible.
   - ☐ Strongly agree
   - ☐ Agree
   - ☐ Somewhat agree
   - ☐ Disagree
   - ☐ Somewhat disagree

q. Students have the capacity to successfully complete authentic, complex, and rigorous tasks that require active exploration, higher-order thinking, and application of what they have learned.
   - ☐ Strongly agree
   - ☐ Agree
   - ☐ Somewhat agree
   - ☐ Disagree
   - ☐ Somewhat disagree

r. Students expect to attend college; have thoroughly researched postsecondary options, financial aid, and career paths; and have applied to several organizations that meet their learning and career objectives.
   - ☐ Strongly agree
   - ☐ Agree
   - ☐ Somewhat agree
   - ☐ Disagree
   - ☐ Somewhat disagree

s. Students meet course requirements needed for 4-year college eligibility and therefore have a variety of options for post-secondary learning.
   - ☐ Strongly agree
   - ☐ Agree
   - ☐ Somewhat agree
   - ☐ Disagree
   - ☐ Somewhat disagree