AN APPRECIATIVE INQUIRY CASE STUDY OF TECHNOLOGY-ORIENTED PEDAGOGICAL PRACTICES WITH A HIGH PERFORMING KANSAS HIGH SCHOOL

A Dissertation by

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Wichita State University
In partial fulfillment of
the requirements for the degree of
Doctor of Education

December 2009

AN APPRECIATIVE INQUIRY CASE STUDY OF TECHNOLOGY-ORIENTED PEDAGOGICAL PRACTICES WITH A HIGH PERFORMING KANSAS HIGH SCHOOL

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DEDICATION

To Peggy, the love of my life, for her unconditional support and unwavering encouragement; Mom and Dad, my biggest influences towards a college education, and Tiffany for that awe-inspiring moment of academic rigor during her Pepperdine Law School graduation that convinced me to pursue my doctorate

In memory of my patriarch grandfather, Corbet Dallas Hudspeth, whose role model and scriptural advice has always been a guiding light to my educational journey: “Study to show thyself approved unto God, a workman that needeth not to be ashamed” II Timothy 2:15a

ACKNOWLEDGEMENTS

I give my sincerest thanks to Dr. Jean Patterson, the chairman of my committee, for her dedication and commitment to excellence in educational leadership and promoting social justice. I am forever indebted to her for the profound personal change of confronting my own whiteness as a result of our journey of self-discovery through the Douglass Oral History project. I am grateful for her unwavering focus, prompt feedback, and encouragement to advise me with my dissertation through completion. She has truly helped me accomplish my personal and professional goals, by extending the possibilities and constructing my dreams to reality.

I also wish to thank the faculty in the Educational Leadership department for the experience of a life time. I truly appreciate your life-long learning commitment, for the content learned, for the research expertise from the experiential field study experiences, and for the friendships formed. Dr. Mara Alagic and Dr. Glyn Rimmington bring gentle but deep cognitive global views and experiences that make me realize how talented they are and what a wonderful world we live in. I want to recognize Dr. Randy Turk for his significant contributions to the cohort 15 discussions on leadership. I am truly appreciative of Dr. Calabrese for introducing me to Appreciative Inquiry and serving as my mentor. Because of his influence I have made AI the way I approach leadership and people for positive change in schools and my life. Each member from the department has touched my life and helped me become a better person and educational leader. I have a renewed sense of purpose that goes beyond the dissertation as the final outcome of the program due to the commitment and wisdom from the Educational Leadership team at Wichita State University. I thank them for their gift of compassion and commitment to teaching.

I am also grateful to my dissertation committee—Dr. Jean Patterson, Dr. Glyn Rimmington, Dr. Jo Bennett, Dr. Fuchang Liu, and Dr. Rae Niles for their insight, wisdom, and guidance.

I thank those from Hays, USD 489 as well, for their support over the past three years and the time to pursue my doctoral degree from Wichita State University. I thank Fred Kaufman, USD 489 Superintendent; Dr. Will Roth, USD 489 Assistant Superintendent; and the USD 489 Board of Education members for their support and encouragement. In addition, I thank the members of the Hays High School Learning Team for working with me as I conducted my research and to positively influence student achievement through technology-oriented pedagogy.

It is with great pleasure that I also acknowledge the members of Cohort 15 which consist of Mike Berblinger, Scott Friesen, Diane Nickelson and John Wyrick. They have helped me realize the power of collaboration and the importance of being a member of a team to reach your goals in life. John Wyrick has particularly helped me understand the strength that comes from frequent encouragement. I appreciate John's availability for dialogue; I respect his opinions and value his friendship.

Lastly, I am indebted to all of my family for their support and understanding while I interrupted our lives to pursue my educational goals. My wife Peggy, and my three children, Kim, Tiffany and Mikey are everything to me. My heart is filled with gratitude as I thank each one for accepting, understanding, and loving me throughout this educational journey.

ABSTRACT

The purpose of this study was to conduct an AI qualitative case study that describes how one high performing Kansas high school employs technology-oriented pedagogical practices to positively influence student achievement**.** Data collection methods included: semi-structured paired participant interviews, participant whole group discussions, focus groups and participant created documents that were shared in a web file and a participant created presentation. Data were analyzed using several techniques: content analysis, open coding, axial coding, and pattern matching with the use of a content analysis matrix. The four findings that emerged from my study that were: (1) The HHSLT believes freedom to take academic risk with visionary leadership is essential for their technology-oriented pedagogy to positively influence student achievement; (2) The HHSLT believes a culture of contextual support is essential for their technology-oriented pedagogy to positively influence student achievement; (3) The HHSLT believes student-centered learning is essential for their technology-oriented pedagogy to positively influence student achievement; (4) The HHSLT valued the AI process and found it meaningful to reconstruct and envision their technology-oriented pedagogical practices that positively influence student achievement for a shared and preferred organizational future.

The findings from this study suggest that further research with AI in educational settings may have important implications to inspire educators to think in new ways about teaching with technology-oriented pedagogy to positively influence student learning. The use of Organizational Learning and the Technology Adoption Continuum as a theoretical perspective with AI as a positive action research methodology approach can contribute to best practices in technology-oriented pedagogy when teaching and learning is student centered.

TABLE OF CONTENTS

Chapter Page
CHAPTER 1 1

BACKGROUND TO THE PROPOSED STUDY 2

Idea and Product Technologies 2
The Evolution of Technology in Education 3
The Contemporary Role of Technology in Education 6
RESEARCH PROBLEM 8

PURPOSE OF THE STUDY/OBJECTIVES 10

RESEARCH QUESTIONS 10

SIGNIFICANCE OF THE STUDY 11

OVERVIEW OF METHODOLOGY 12

CHAPTER 2 13

LITERATURE REVIEW 13

ORGANIZATIONAL LEARNING 13

CONTINUUM OF TECHNOLOGY ADOPTION 16

SYNTHESIS OF THE EMPIRICAL RESEARCH 18

Constructivist Teaching and Educational Technology 19
Technology-oriented Pedagogy 22
Barriers to Technology-oriented Pedagogy: 27
The Role of Technology in Building Capacity for Student Achievement 29
Benefits of Technology Integration 31
SUMMARY 34

CHAPTER 3 36

RESEARCH DESIGN AND METHODOLOGY 36

RESEARCH PERSPECTIVE: APPRECIATIVE INQUIRY 36

RESEARCH CONTEXT 40

Hays High School 42
RESEARCHER POSITION AND ROLE 44

Professional Experience 44
Personal Theory 45
My Role as Researcher 47
PARTICIPANTS 48

DATA COLLECTION STRATEGIES 49

TABLE OF CONTENTS (continued)

Chapter Page

Day One – Reconstruction Stage 49
Day Two – Envision Stage 51
Document Review 52
Our Metaphor 52
DATA ANALYSIS 52

RESEARCH QUALITY 53

SUMMARY 54

CHAPTER 4 55

FINDINGS 55

HHSLT MEMBERS 55

HHSLT DAY ONE – RECONSTRUCTION STAGE 58

Action Research Review and AI Orientation, 8:00 a.m. - 8:40 a.m. 59
Technology Timeline, 8:40 a.m. – 9:10 a.m. 61
Semi-Structured Participant Paired Interviews, 9:10 a.m. - 10:10 a.m. 66
Reconstructing High Point Experiences and Mapping the Positive Core, 10:10 a.m. - 10:50 a.m. 67
Reconstructing Values Interviews,10:50 a.m. - 12 p.m. 80
Continuity Search- Best Traits and Core Factors Map, 12:30 p.m. - 2:10 p.m. 86
LHRHCCM Reflection of HHSLT Day One, 2:10 p.m. - 3:00 p.m. 92
HHSLT DAY TWO – ENVISION STAGE 93

Novelty Journey - Bold New Possibilities, 9:30 a.m. – 11 a.m. 98
Opportunity/Concept Map, 11:00 a.m. – 12:00 p.m. 101
Envision Statements, 12:30 p.m. – 1:00 p.m. 108
Creative Presentations/Novelty Metaphors, 1:00 p.m. – 2:15 p.m. 109
LHRHCCM Reflection of HHSLT AI Day 2 Process, 2:15 p.m. – 3:00 p.m. 113
SUMMARY OF FINDINGS 114

CHAPTER SUMMARY 114

CHAPTER 5 116

CONCLUSIONS AND IMPLICATIONS 116

HHSLT AND THE CONTINUUM OF TECHNOLOGY ADOPTION 116

USD 489 and HHS Enter the Familiarization Stage 117
From Familiarization to Utilization 118
Moving to Integration 120
Reorientation Stage 122
Evolution Stage 125
UNDERSTANDING TECHNOLOGY ADOPTION AT HHS THROUGH ORGANIZATIONAL LEARNING 128

Double Loop Learning and Model II Governing Values at HHS 130

TABLE OF CONTENTS (continued)

Chapter Page

From Single Loop to Double Loop Learning, From Espoused to Theories-in-use 131
Model II Governing Values and Student Centered Learning 134
THE RELATIONSHIP BETWEEN THE CONTINUUM AND MODEL I AND II GOVERNING VALUES 137

HHSLT AND THE AI PROCESS 140

The Constructionist Principle 140
The Principle of Simultaneity 143
The Poetic Principle 145
The Anticipatory Principle 146
The Positive Principle 147
IMPLICATIONS FOR FUTURE RESEARCH AND PRACTICE 154

Change Requires Moving from Model I to Model II Governing Values 154
Benefits of the AI Process for Facilitating Change 156
SUMMARY 156

References 158

LIST OF REFERENCES 159

APPENDICES 170

APPENDIX A 171

LETTER OF PARTICIPANT INVITATION 171

CONSENT FORM 172

APPENDIX B 174

HHSLT DAY 1 AI RECONSTRUCTION AGENDA 174

PROTOCOL: DAY 1 OPENING ACTIVITY 178

DAY 1 OVERVIEW AND AI INTRODUCTION – PROTOCOL 180

INTERVIEW 1: RECONSTRUCTION HIGH POINT EXPERIENCES 181

PROTOCOL: POSITIVE CORE WHOLE GROUP 1 183

INTERVIEW 2: RECONSTRUCTING VALUES 184

PROTOCOL: INTERVIEW 2 185

PROTOCOL: WHOLE GROUP 2 186

INTERVIEW 3: RECONSTRUCTING BEST TRAITS AND CORE FACTORS 187

PROTOCOL: INTERVIEW 3 188

TABLE OF CONTENTS (continued)

Chapter Page

Protocol: Whole Group 3 189

Reflection: LHRHCCM of HHSLT AI Process 191

Protocol: LHRHCCM Reflection of HHSLT AI Day 1 Process 192

APPENDIX C 193

HHSLT Day 2 AI Envision Agenda 193

Protocol: Review of Day 1 and Introduce Day 2 195

Day 2 Intro and Power Point 196

Worksheet 1: Envisioning Bold New Possibilities 197

Protocol: Envisioning Bold New Possibilities 198

Worksheet 2: Envisioning the Future 199

Protocol: Envisioning Bold New Possibilities and Future Opportunity/Concept Map 200

Worksheet 3: Crafting Envision Statements Guidelines 202

Protocol: Crafting Envision Statements 203

Worksheet 4: Creative Envisioning Presentation 204

Protocol: Presentation of Envision Statement 205

Worksheet 5: Creation of Metaphor 206

Protocol: Creation of Metaphor 207

Reflection: LHRHCCM of HHSLT AI Day 2 Process 208

Protocol: LHRHCCM Reflection of HHSLT AI Day 2 Process 209

CHAPTER 1

The No Child Left Behind (NCLB) Act of 2001, advances in technology, and the needs of today's students are revolutionizing the educational enterprise in the U.S.(Glazer, Hannafin, & Song, 2005). The scope, timeframe, and goals of NCLB ("No Child Left Behind Act of 2001," 2002) are breathtaking, and emphasize that educators employ best practices that utilize technology appropriately to help students achieve (Cowan, Ennis-Cole, & Hudson, 2003). New testing, reporting, and accountability requirements with NCLB are accelerating changes in expectations, accountability, and the entire learning-teaching environment. If the U.S. is to succeed at meeting students' needs in this time of rapidly increasing global competition, innovation in constructivist pedagogy and technology is needed (Becker, 2000). There are teachers, however, who do use educational technology to alter the overall learning experience. Teachers who tailor technology and pedagogical practices to the needs of individuals and sub-groups of students are able to get past marginal results in student achievement. They do so through the use of data management systems that facilitate collection of live test results, demographics, and other analytical data that allows them to more effectively manage, design, and integrate instructional programs (Windschitl & Sahl, 2002).

Many of the technology-oriented pedagogical practices that positively influence the student achievement needed to meet NCLB's high expectations can be found in a small, emerging number of "pioneer" schools with ubiquitous technology (Becker, 2001). This study attempted to capture the positive core of one high performing high school that has created a learning environment infused with computer and information technology, so other educators can learn from their experiences.

Background to the Proposed Study

In this section I review the U.S. education's evolution and contemporary role of integrating technology-oriented pedagogy by focusing on two types of technology in education, "product and idea technologies" (Hooper & Rieber, 1995). The efficacy of constructivist pedagogy as idea technology, and hardware and software as product technology to transform teaching and learning for student achievement is yet to be realized (Apple Computer Inc., 2008; Means, Roschelle, Penuel, Sabelli, & Haertel, 2003). Idea and product technologies provide a broad framework for situating the role and status of technology in education.

Idea and Product Technologies

Idea technologies are the student centered pedagogical strategies such as cooperative learning, problem-based projects or the use of simulations for constructing learning. Product technologies are the hardware and software that assist the learning process (Hooper & Rieber, 1995). Hooper and Rieber (1995) define product technologies as hardware most often associated with educational technology. Machine-oriented product technologies range from audio-visual equipment, both conventional (i.e. film strips, audiocassette players/recorders, movies) and modern (i.e. CD-ROM, videocassette players/recorders, laserdiscs, computers). Conventional software product technologies include print-based materials and modern technologies are computer software (Hooper & Rieber, 1995).

Idea technologies involving teachers are made possible by product technologies and are depicted in pedagogical practices or through some product technology (Hooper & Rieber, 1995). Hooper and Rieber cite Henry Ford's assembly line concept as a classic idea technology made possible by the product technology of the physical factories and conveyor belts. The distinction is important to note between idea and product technology because it represents how conventional

attempts to use educational technology focused on just the teacher behavior use of software and hardware rather than idea technology that constructs pedagogy around student centered learning (Reiser, 1987). In other words, hardware and software technologies without accompanying student centered pedagogy are less useful to educators. For example, during the past two decades, many schools have purchased computers (product technology) without considering how they will best be used to enhance the teaching and learning process (idea technologies) (Cuban, Kirkpatrick, & Peck, 2001; TCER, 2008). Educator's adoption of product and idea technology to positively influence student achievement is evolving.

The Evolution of Technology in Education

In the 1990's the public, school stakeholders, and education policymakers assumed that wiring America's schools and distributing hardware with software, would lead to their abundant pedagogical use by teachers and automatically improve teaching and learning (Cuban, 2001). However, this was not the case. In the beginning, technology use in education mirrored what the teacher was doing prior to the introduction of technology. The teacher was still the "sage on the stage" and the faucet of knowledge from the sage poured into the student's learning bucket (Reiber, 1992). Early learning with technology also consisted of students passively receiving information and just extending past practice of dominate teacher behavior for student learning (Means, et al., 2003). To use Hooper and Rieber's framework, early adoption of new product technology often occurred without the benefit of new idea technology. Integration of idea and product technology in education is an evolutionary process that teachers adopt in stages and is influenced by many factors. Understanding these adoption patterns can provide insights into contemporary roles of technology in education (Hooper & Rieber, 1995).

Teachers cite many reasons why technology integration is slow or limited such as lack of access or broadband, unreliable connectivity and servers, obsolete software and hardware, and inadequate wiring. The historical high school context with traditional time schedules and dominant teacher-centered practices trumped the slow revolution of teacher technology adoption. Teachers also reported problems with timely or adequate technical support (Cuban, 2001). Results of the Cuban (2001) study suggest the slow revolution of high school technology integration will only sustain existing practices and that the prevailing assumptions guiding policy in schools for new technologies are deeply flawed and in need of reassessment. Schoolwork many times focuses on shallow processing such as organizing and remembering content, but seldom constructs external connections between existing and new information (Rieber & Welliver, 1989). Teachers make the same mistake with their own technology-oriented pedagogical practices by integrating a product technology that is teacher behavior dominated and content to be learned by the student is limited to a predetermined rationing. In the absence of student centered pedagogy that facilitates students as they construct their own new knowledge, learning with technology that is teacher behavior dominated becomes a shallow pedagogical process. A teacher's skillful combination of product and idea technologies generates external connections between existing and new information for student centered education (Dede, 1987; Reiber, 1992).

Pedagogical change is hampered when continuous or proficient staff development of teachers' technology use is lacking (Cuban, 2001). Effective professional development of teachers' technology-oriented pedagogy integrates technology connected to the outside world with new data and integrates meaningful learning with existing information (Rieber, 1992). Accordingly, effective professional development on using technology to positively influence

learning is grounded in the literature on effective pedagogy in general (Savenye, Wilhelmina, Davidson, & Smith, 1991). It is important that professional development help teachers learn to use educational technologies to engage and motivate students (Rieber, 1992).

Many students and teachers are left to adopt technology at home because of the lack of time and training on software and hardware at school (Means, et al., 1993; Miller & Olson, 1995). Too often schools miss the possibilities for enriching the learning experience with internet and computers because instead of transforming education, computers are held hostage behind locked firewalls or shunted to poorly maintained computer labs and carts (O'Dwyer, Russell, & Bebell, 2004). Furthermore, school improvement plans fail to integrate technology into the pedagogy of its aligned goals and activities for all students (Deschenes, Cuban, & Tyack, 2001; Miller & Olson, 1995).

School-wide use of educational technology-oriented pedagogy is still rare and isolated to pioneering schools or teachers with ubiquitous technology, despite 99.9% internet connectedness and a student-to-computer ratio of 3.8:1 in U.S. public schools (Ertmer, Ross, & Gopalakrishnan, 2000; Glennan & Melmed, 1996; NCES, 2006). Use of technology in instruction tends to be left to the individual teacher (Glazer, et al., 2005). There are even fewer schools that espouse to accept technology and then actually use it to change the mode and content of instruction (Olson, 2002). The adoption, design, and implementation of new technologies have a history of failing to improve teaching (Cuban, 1997). Although many of today's classrooms have been integrated with the product technology of hardware, software, and internet access, the practice and assessment of the idea technology is being changed or challenged only in small pockets (Cuban, 2001).

The Contemporary Role of Technology in Education

The contemporary role of technology fosters visions of educational technology that focus on student learning as opposed to traditional uses of product and idea technologies. Educators have much to learn from educational technology's past in order to grasp the future by addressing today's realities to reap tomorrow's possibilities (Earle, 2002). It is important for the U.S. to produce learners who are adequately prepared for the life and work of the 21st century. Properly integrated product and idea educational technology can be a major contributor to effective schools and high achieving students (Glennan & Melmed, 1996).

Researchers have identified three principles to consider for using idea and product technology in the classroom (Koschman, Myers, Feltovich, & Barrows, 1994). First, effective learners actively process lesson content. Advanced students need challenging tasks to remain motivated, while slower learners give more effort when the tasks are perceived as attainable (Salomon, 1984). The active learning implications are that idea technologies such as cooperative grouping and problem-based learning with, for example, product technology videos can generate knowledge between lesson content and prior knowledge. Traditional educational TV videos transmit knowledge to students but do not require them to be engaged whereas contemporary beliefs about instruction and learning engage students in deeper cognitive activity if the teacher combines the right blend of ideas and product technologies (Hooper & Rieber, 1995).

Second, presenting information from multiple perspectives increases the durability of instruction. That is, teachers' adjust practices to customize to individual needs, retrieve primary sources, ascertain a variety of perspectives, incorporate multimedia, and utilize interactive software and simulations, all while monitoring student achievement on state assessments (Windschitl & Sahl, 2002). Adoption of product and idea technologies together represents a

constructivist pedagogy where each student is allowed to actively construct his or her knowledge (Hooper & Rieber, 1995). Conventional instruction narrows learning to what is content specific, whereas contemporary curriculum concentrates on asking learners to develop networks of principles, facts, and procedures that are problem solving in nature (Ertmer, Gopalakrishnan, & Ross, 2001).

Third, effective instruction builds upon students' prior knowledge and experiences and is grounded in meaningful contexts. Teachers who use modern ideas and products focus on discovering the student's current knowledge and connecting the new learning to the real world. Conventional product and idea technologies conveyed the best structure of lesson content (Rieber, 1992).

U.S. educational history about technology integration as a reform agent for teachers to become facilitators of learning by helping students access, process, and communicate their understanding of information is sprinkled with bitter accusations, arrant disappointment, and little classroom change (Cuban, 1993; Elmore, 2003). Few of these endeavors or studies recognized the schools or classrooms where teachers labored or involved teachers in the design itself, allocated sufficient resources for professional capacity development for the changes desired, or provided sustained support to nurture such paradigm shifts to be a part of the teachers' daily routine (Cuban, et al., 2001).

For the future, reformers can succumb to pessimism or view past failures as a challenge. Many factors influence meaningful technology use and achieving it is a slow process (Ertmer, et al., 2000). A positive change and fresh approach where researchers and educators view pedagogical practices, beliefs, and use of technology with student-centeredness (Ludema, Whitney, Mohr, & Griffin, 2003) can benefit educators and students. Transformed educators who

move from teacher-centered instruction to student-centered instruction by integrating idea and product technologies are the future for educational technology (Hooper & Rieber, 1995).

Research Problem

There is a belief by teachers and a promise from research that acknowledges the value of integrating technology-oriented pedagogical practices for students (Beichner, 1993; Fulton, 1993) to maximize its potential for improved student achievement (Ertmer, et al., 2001) for achieving the goals of NCLB ("No Child Left Behind Act of 2001," 2002). Educators are being bombarded with educational technology and it is important to understand how technology use plays in concert with the instructor's pedagogical practice (Ertmer, et al., 2000; Moursund & Bielefeldt, 1999) and the requirements of achieving the AYP student performance goals of NCLB ("No Child Left Behind Act of 2001," 2002).

There is limited research knowledge on teachers successfully integrating technology and pedagogical practices to positively influence student achievement on state assessments (Means, et al., 2003). The calls for the current practice of integrating technology into instruction are ahead of the scant research and little is known about its efficacy to positively influence student achievement on large-scale state assessments (Ertmer, et al., 2001; Means & Olson, 1995; Newman & Wehlage, 1995; Ringstaff & Kelley, 2002).

Integrating technology-oriented pedagogical practices have been limited to a few small pioneering schools or individual teachers (Carlson, 2007; Cuban, 2001; Glennan & Melmed, 1996; Mehra & Mital, 2007; Niles, 2006). Several conditions may contribute to this dilemma, including the historical context of a top-down written, taught, and tested standards-based curriculum aligned with state standards (Swanson & Stevenson, 2002), lack of or inconsistent time and professional development for authentic instructional and technology integration, and

students with disproportionate academic achievement (Dailey, Zantal-Wiener, Roach, & Reform, 2000). Other variables that limit schools and teachers from integrating technology-oriented pedagogical practices include the varying values teachers place on the classroom use of technology (Becker, Dexter, & Anderson, 1999), the lack of access or unavailability of technology in schools (Wenglinsky, 1998), an organization's lack of flexibility to analyze student data and adjust all teachers in effective directions in the school improvement process (Hadley & Sheingold, 1993; Meade, 2007) and insufficient administrative support for technology-oriented pedagogical practices (Ertmer, et al., 2000; Patterson & Marshall, 2001).

There are provocative exceptions among schools, however, those who have positive core experiences and designs that identify them as very successful at integrating ubiquitous technology while also attaining high student achievement on standardized assessments (Glennan & Melmed, 1996). This study will investigate why this provocative and exceptional situation exists in one high achieving Kansas high school.

School districts, under the legislation of NCLB ("No Child Left Behind Act of 2001," 2002), must maintain adequate yearly progress (AYP). Regardless of socioeconomic status and race, all achievement gaps must be identified and closed at all grade levels in reading and math by the year 2014. In the state of Kansas, schools also strive to meet Standards of Excellence (SOE), which is awarded to schools for achieving exemplary percentages of students in the appropriate testing achievement categories and completing all of the required subgroup percentages for their school population (Kansas State Department of Education, 2008).

Educational technology development has thrived but its application and integration in U.S. schools in general, and Kansas' schools in particular, have not realized its promise (Cuban, 1997; Means, et al., 2003; Mehra & Mital, 2007). According to the *Technology Counts* report

card from Editorial Projects in Education Research Center (EPERC), the national overall grade, which included factors such as access to, use of, and capacity to use technology, was a C+ for all states. EPERC rated Kansas' capacity to use technology as a "C" (EPERC, 2006, 2008).

Findings from this study might impact technology-oriented pedagogical practice for instruction, curriculum alignment, staff development, planning, policy and procedures based on a district's need to maintain adequate yearly progress for NCLB ("No Child Left Behind Act of 2001," 2002).

Purpose of the Study/Objectives

The purpose of this research was to conduct an Appreciative Inquiry (AI) qualitative case study that described how one high performing Kansas high school employed technology-oriented pedagogical practices to positively influence student achievement**.** The AI focused on a learning team comprised of 7 teachers in a Kansas high performing high school who have positively influenced student achievement on the state assessments with technology-oriented pedagogical practices in one of the five specific state assessment content areas of reading, writing, math, social studies, science and technology. The study focused on one primary objective:

1. To describe, identify, and understand the positive core beliefs, attitudes, experiences and actions of high school lead teachers who use technology-oriented pedagogical practices to positively influence student achievement.

Research Questions

The following overarching question guided my study: How can technology and instruction be used to positively influence student achievement? Out of this overarching question, the following research questions were addressed:

1. How do lead teachers in a high performing high school describe their technology-oriented pedagogical practices that positively influence student achievement?

2. How do lead teachers in a high performing high school envision sustaining and extending their technology-oriented pedagogical practices that positively influence student achievement?

Significance of the Study

This study has the potential to make a significant and original contribution to practitioners and researchers (Calabrese, 2006b). Few published studies have sought to describe how teachers' use of technology–oriented, pedagogical practices positively influences student achievement (Means, et al., 2003; Mehra & Mital, 2007).

This study will provide research to other teachers and school districts to positively influence student achievement on state assessments with their technology-oriented, pedagogical practice integration decisions. Findings from this study may impact a district's technology initiative planning, policy and procedures (Schein, 1992) based on the need to maintain AYP for NCLB ("No Child Left Behind Act of 2001," 2002).

The AI approach provided the high school's learning team an opportunity to share their stories that reflected a positive core of experiences, actions, attitudes and beliefs for working with students to provide student centered strategies, skills and early interventions for testing.

This single-case study benefitted the participating high school (Schein, 1987) because the teachers participated in a shared experience where they reconstructed a positive core of experiences and then envisioned how teachers in the future can continue to positively influence student achievement with technology-oriented pedagogical practices.

Overview of Methodology

The basic design of my study was a qualitative single-case study grounded in a social constructionist epistemology, and conducted through an AI research methodology. A qualitative single-case study design was used to describe successful technology-oriented pedagogical practices in a Kansas high performing high school. Teachers integrating technology into their instruction were study participants.

As a theoretical research perspective AI is based on the assumption that all organizations have strengths known as its "positive core" and something that works well (Cooperrider & Srivastva, 1987a). This assumption originates a starting point for positive change (Ludema, Cooperrider, & Barrett, 2001). By using the AI theoretical research perspective to reconstruct what gives "life" to an organization when it is most effective, constructive and alive, members linked the energy of this positive core directly to any change agenda (Schein, 1995).

An AI theoretical research perspective allowed the organization's stakeholders to share their stories and dialogue about their past and present achievements, strengths, values, potentials, traditions, ultimate goals, and visions of the deepest organizational spirit for its members (Cooperrider, 2003). Moving at the speed of innovation and imagination, AI interventions ideally created a desire to move toward a shared dream with energy and excitement (Cooperrider & Whitney, 2005). AI methodology consisted of establishing a deliberately positive mode from the commencement of the study, concentrating on teacher perceptions of successful student achievement through interventions and allowing the teachers to review statements that described where the organization wanted to be, and share what is working based on the successes of its past (Stavros, Cooperrider, & Kelley, 2003). Focusing on the possible is how AI theoretical perspectives are framed (Cooperrider & Barrett, 2002).

CHAPTER 2

Literature Review

Chapter 2 is a review of the relevant literature related to my study. It is comprised of the theoretical framework which first examines organizational learning (Argyris & Schon, 1978) as the macro or overarching framework. Organizational learning is then connected to Hooper and Rieber's (1995) continuum of instructional technology adoption model. The literature review concludes with a synthesis of the empirical research where I discuss five themes associated with instructional pedagogy and technology: constructivist teaching and educational technology, technology-oriented pedagogy, barriers to technology-oriented pedagogy, and the benefits of technology integration.

Organizational Learning

Argyris and Schon (1978) used action science (Lewin, 1947; Schein, 1995) to explain how organizational learning governs members' actions, inhibits learning, and unintentionally creates defensive routines within the organization. Learning at the individual or various organizational levels occurs whenever errors are realized and corrections adopted. Argyris claims there are two ways to correct for errors. The first, which is single-loop learning, is to simply change the behavior, but not the underlying values or beliefs. The second is double-loop learning, which changes or adopts a new design that eliminates the present errors by addressing the values and beliefs of the organization or individual. Values and beliefs are ultimately choices individuals or organizations make and are not objective but normative thus producing generalizations whose validity must be tested. If individuals and organizations only adopt single-loop learning instead of pressing into double-loop learning and adopting new values that eliminate errors, the correction will not persevere or will ultimately fail (Argyris, 1992, 1999).

Argyris believes that individuals are key to enabling organizational learning and change because it is the thinking and acting of individuals that produce learning in an organization.

According to Argyris (1995), “theories of action” inform organizational members of the strategies they should use to achieve their intended purposes. Theories of action are human designs that are governed by intentions and a set of governing values that provide a framework for the action strategies humans construct. The key to understanding human action is through their theories of action.

There are two types of theories of action, espoused and theory-in-use (Argyris & Schon, 1978). Espoused theory is where individuals publicly adopt beliefs, attitudes, and values but may not internalize them. Theories-in-use are the behaviors and actions members actually use in daily practice. Argyris and Schon (1978) found that an individual’s espoused theory was customarily different than their theory-in-use and they were unaware of the inconsistency between the two. These systematic and fundamental mismatches with individual theories of action arise when effective learning is crucial and humans develop designs to keep them unaware of such mismatches. While espoused theories vary widely, there were almost no variances with the theories-in-use to design and implement individual behavior. The implications are that theories-in-use are few in number, which means understanding and facilitating organizational learning is possible and produces actionable knowledge which individuals may choose for their strategic designs and definitions (Argyris, 1995).

Organizational learning for theories-in-use is categorized by Argyris (1999) into two models: Model I and Model II. Model I has four governing values: attain your intended purpose, maximize winning and minimize losing, suppress your negative feelings, and behave as though your actions are rational. Model I behaviors craft action strategies that involve advocating your

position, evaluating the thoughts and actions of others, and attributing causes for whatever you are trying to understand. Model I inhibits organizational learning by generating defensive and self-reinforcing routines that encourage individuals to bypass and cover-up, which result in organizational bypass and cover-up, which reinforces this theory-in-use. The consequences of Model I theories-in-use strategies are likely to impede effective organizational learning at crucial times by inhibiting double-loop learning and overprotecting the organization and individual. Because organizational defensive routines are both organizational and individual, it is not possible to change organizational routines without changing individual routines and vice versa. To change organizations and their individuals into double-loop learners, interventions must trigger defensive routines and expose Model I blindness while introducing Model II theories-in-use. Model II theories are often espoused theories at the outset for members, but their actions are consistent with Model I governing values. Therefore, Model II espoused theories must be transformed into theories-in-use by establishing new beliefs and values. Most individuals and organizations are limited to acting on their own to make the transformation from Model I to Model II.

Individuals and organizations who employ Model II theories-in-use identify and question underlying governing values through double-loop learning (Argyris & Schon, 1978). Model II governing values are valid information, informed choice, and vigilant monitoring of the implementation of the choice in order to detect and correct error. Both, Model I and Model II behaviors include advocating, evaluating, and attributing but Model II action strategies openly exemplify how members achieved their evaluations and how they crafted them to invite inquiry and testing by others. The consequences of Model II are that anti-learning defensive routines are

minimized and double-loop learning that persists is facilitated because members engage threat and embarrassment instead of bypassing and covering-up.

In order to reach Model II goals of participants' internal commitment to the research and to the eventual intervention, the design of the research-intervention activities should produce directly observable data from members, about their reasoning and actions (Argyris, 1995). Data in such case studies may be created through the action science research instrument known as the left and right hand column case method (LHRHCCM), which allows theories-in-use to be inferred and organizational defensive routines to be confronted (Argyris, 1995). Double-loop learning that reveals tacitly held information, values and shared beliefs of organizations generates sustained change for the organization's individuals. Double-loop learning, in which governing values are identified and questioned, allows members to generate new knowledge through a recursive relearning process that is non-linear (Argyris, 1992, 1999). Teachers' adoption of idea and product technologies in education operates in a similar manner.

Continuum of Technology Adoption

Hooper and Rieber (1995) refer to teacher-centered approaches to instruction as having a behavioral focus, whereas the alignment of technology integration with constructivist pedagogy is considered a cognitive view of learning. Behavioral focus is teacher performance oriented and a cognitive view of learning is the active construction of knowledge by each individual. Moving from a behavioral focus to instruction to a cognitive view of learning is similar to an organization moving from single loop to double loop learning. To capture this movement, Hooper and Reiber identified a continuum of technology integration and utilization that consist of familiarization, utilization, integration, reorientation, and evolution (Hooper & Rieber, 1995). Each of these stages will be described in the following paragraph.

The *familiarization* stage occurs when a teacher participates in a technology in-service and becomes acquainted with a technology, but does not pursue the knowledge in the classroom after the in-service. Teachers at this end of the continuum are still engaged in behaviorally focused, teacher-centered instruction. Teachers in the *utilization* stage apply technology learned from the in-service into their classroom, but make no long-term commitment to the use or growth with the technology. In the *integration* stage, a teacher totally gives up traditional classroom endeavors such as the textbook and related worksheets or the marker board and overhead projector to the technology adoption. In this stage if the technology were suddenly unavailable or removed the teacher could not proceed with the planned instruction. Integration is the end of technology adoption for most teachers, but can be the launch of a constructivist classroom environment if educators' adoption pattern progresses to the reorientation and evolution stages. In the *reorientation* stage, the classroom focus is on the student's learning, as opposed to the teacher's instruction. The teacher accepts the role of nurturing a learning environment that assists and serves students as they construct and form their own knowledge. Teachers reorient themselves to the learner becoming the subject rather than the object of education and they construct the journey together. The *evolution* stage of adoption occurs when instructors remain open and flexible to new understandings, which is parallel to how double loop learning works with people and organizations. Instructors who are evolutionary constantly change to meet the potential and challenge of applying educational technology to learner centered purposes (Hooper & Rieber, 1995). Teachers in the evolution stage are the ultimate constructionist educators who continue to evolve and adapt to meet the challenge and potential provided by new understandings of how people learn.

Hooper and Reiber (1995) posit that a teacher's transformation from a behavioral view of instruction to a cognitive view requires them to go through all five stages of technology adoption to maximize idea and product technologies. The contemporary view of educational technology focuses on the construction of knowledge with the active learner because teachers have transformed themselves by entering the reorientation stage and construct new learning for themselves and their students by continuing in the evolution stage.

According to Dexter, Anderson, and Becker (1999), teacher development and the school change process are based on a teacher's beliefs and thus teachers become agents and the main catalyst for change. The use of educational technology in a constructivist manner is a teacher's individual decision that needs a larger supportive school context that allows him or her to construct knowledge about educational technology to reach the evolution stage in the pedagogical adoption continuum.

Organizational learning that generates Model II theories-in-use requires that people use double-loop learning in ways that persist instead of merely espousing it. To understand how teachers can generate individual and organizational change to foster constructivist pedagogy with educational technologies, it is important to explore a continuum model of technology adoption to model how possible it is and to reveal the actionable knowledge teachers can use to craft conversations that communicate the meanings they intend.

Synthesis of the Empirical Research

In my synthesis of the empirical research I examined studies of teaching and learning with technology to positively influence student achievement. The review is organized around five themes: constructivist teaching and educational technology, technology-oriented pedagogy,

barriers to technology-oriented pedagogy, the role of technology in building capacity for student achievement and the benefits of technology integration for teaching and learning.

Constructivist Teaching and Educational Technology

Constructivist teachers and leaders embrace visions depending on the perceived needs of their students and the perceived requirements of their jobs. What students should know and do, rather than what could be done; given the present technology capacity is what guides the belief systems of constructivist teachers' educational technology practices (Ertmer, et al., 2000). Student-centered learning is constructed together with the student and the teacher. Constructivist teachers place students in self-directive roles, teachers act as facilitators, and both are supported by technology learning tools (Becker, et al., 1999). Teachers recognize that educational technology allows them to potentially motivate and achieve more active ways for students to construct their learning. Educational technology provides constructivist teachers ways to orchestrate an activity that allows the students different ways to express or act on what they know and can do (Means, et al., 2003). Constructivist teaching practices focus on learning, not on technology. According to Dexter, Anderson, and Becker (1999) the technology becomes the supportive tool in which students may construct knowledge through pedagogical strategies such as project work, action research, reflective practice, negotiation of meaning, and role play. Attaining AYP for NCLB ("No Child Left Behind Act of 2001," 2002) is the school's requirement to be accountable to the public to confirm it is doing its job. Constructivist teachers understand these imposed requirements for student learning but recognize that the purpose of technology is ultimately to empower students so they can attain independent learning skills, not just achieve content goals and national standards (Apple Computer Inc., 2008; Becker, 2000).

Teachers who have constructivist philosophies are durable (Glazer, et al., 2005). In other words, because constructivist teachers maintain a strong commitment to student-centered learning, researchers argue they are not as easily frustrated by common implementation barriers that come with technology-oriented pedagogical practices and historical contexts of high schools. Constructivist teachers approach these barriers with a vision for technology use because they have framed technology as part of the learning process and are therefore willing to work through obstacles and grow together through their experiences. Obstacles can come in the form of the lack of equipment, training, or time (Ertmer, et al., 2001). While constructivist teachers are durable and resilient, their success and visions for technology use cannot be accomplished without systemic and sustained support from the schools, context, and administrative leadership (Hadley & Sheingold, 1993; Patterson & Marshall, 2001; TCER, 2008).

Constructivist teaching with educational technology reform that is student-centered requires a coordinated shift in culture and historical context such as new standards, new systems thinking, new structures, and new ways to allocate resources (Apple Computer Inc., 2008; Fulton, 1998; ISTE, 2008; TCER, 2008). In support of this idea, students in non-traditional, technology-rich, integrated programs have outperformed students in traditional programs (McKinnon, Nolan, & Sinclair, 2000). Technology can act as the catalyst to change some teachers' educational visions; others see technology equipping them as just another tool that allows them to teach the way they have always taught. Likewise, technology allows constructivist teachers to pursue avenues of active learning and thus enables them to employ a philosophy they have believed in for years. Although teachers may use technology to teach to their espoused theory or theory-in-use, technology advocates have aligned themselves with constructivist pedagogy (Fulton, 1998).

In studies to determine the catalyst for teachers and systems to move toward the constructivist end of the technology adoption continuum, teachers across the board said the computer was not an automatic factor (Becker, 2001; Cuban, 2001; Fullan, 2001). In a 10-year, longitudinal research conducted in Apple Classrooms of Tomorrow (ACOT), researchers found that teachers identified the hardware and software as just the first step of the constructivist orientation to instruction (Apple Computer Inc., 1995).

In a study sponsored by the U.S. Department of Education to determine the manner in which technology fosters constructivist teaching (Means, et al., 1993) researchers examined eight schools, five of which were deemed technology-rich. The study found that constructivist pedagogical practices made student work authentic and important; motivated students and increased self esteem; encouraged teachers to be advisor or coaches in the student centered process; and increased collaboration between the student and teacher while constructing learning. The study acknowledged that such pioneering schools were comparatively rare (Means, et al., 1993).

In another study, history teachers integrated constructivist teaching with educational technology practices in a school where students created a digital documentary (Manfra & Hammond, 2007). Researchers found that teachers' pedagogical beliefs dominated their curriculum, rather than the technology or content knowledge. Constructivist pedagogical beliefs in a supportive climate and if given enough time will blend with the use of technology and manifest itself, because teacher's pedagogical beliefs are more important than their technology or content knowledge behaviors (Becker, 1999). Still widely used, Logic Oriented Graphic Oriented (LOGO) programming language developed in the early 1970's at Massachusetts Institute of Technology (MIT) is the original example of "learner centered" tools that focus on the

constructivist principle “learning to learn” (Molnar, 1997, June). LOGO created microworlds where students used authentic project-based learning (Rieber, 1992).

Technology-oriented Pedagogy

Teachers’ technology-oriented pedagogy consists of a holistic classroom practice that begins with the assumption that constructivist teaching is a critical component of technology-oriented pedagogy. Technology-oriented pedagogy encompasses constructivist teaching and involves three main areas: student assessment, classroom organization and activities, and curricular and social characteristics (Ertmer, et al., 2000). Research on these three areas is reported in the following paragraphs.

The first area of technology-oriented pedagogy is using technology for assessment and using assessment results to inform instructional decision-making. Such use of technology is the shared responsibility of the teacher and student. Technology-oriented pedagogy enhances the instructor’s ability to assess students’ understanding, to analyze the educational system, and to analyze their own pedagogy (Means, et al., 2003).

Technology-oriented pedagogy involves using tools that improve instruction and learning by enhancing the teacher’s ability to use standardized test performance data to assess students’ knowledge and understanding. Through the use of state and local software, teachers can engage in data-driven decision-making and organizational reflection through the manipulation and exploration of individual and sub-group data, as required by NCLB legislation (TCER, 2008). School personnel gain insights into the strengths and weaknesses of the organization as compared to standardized test performance data. It is hoped that such insights might lead to closing student achievement gaps. Student data analysis can be used to galvanize schools’ staff for action. It should be noted that due to their recency and how such student data analysis

systems are implemented, there are many concerns with possible data misinterpretation (Confrey & Makar, 2005).

States are finding that the effective use of technology-oriented pedagogy for student achievement on state assessments is leading to significant gains in language arts, math, and reading skills (Muir, Knezek, & Christensen, 2004). The findings in the nation's longest-running state-wide educational program for the implementation of technology, the West Virginia Basic Skills/Computer Education (BS/CE) program, showed that 48% of the teachers saw technology as the key reform for higher student achievement in math, language arts, and reading (Mann, Shakeshaft, Becker, & Kottkamp, 1999). Technology Counts '98, in a joint project by Education Week and the Milken Exchange, released a report that linked computers to higher scores in problem-solving and critical thinking but only if used with constructivist pedagogy (EPERC, 1998). The report listed several other factors about technology-oriented instruction that were significant: (a) computers were more effective inside the classroom, rather than in a centralized lab; (b) technology was viewed not as the end in itself, just as a means of learning (c) and effective technology integration required timely and comprehensive teacher training.

The Maine Learning Technology Initiative (MLTI) was America's first statewide implementation of ubiquitous computing (Muir, et al., 2004). The study purposed nine Exploration sites to pilot the software, hardware, and professional development within the context of Maine's middle schools before initiating in the state's other middle schools. Results from the MLTI's first year, 2002/2003, showed that student engagement and attendance were up and behavior referrals were down but showed little data on student achievement. The study compared and contrasted standardized state assessment scores in math and science. The Exploration schools collectively were not unusual except in the science Effect size, which was

significant. The technology-oriented pedagogical training and technology in the MLTI were viewed as opportunities for learner-control, real-world connections, motivating data-driven assessment linked to content standards that assessed student learning in a variety of ways but not limited to the state achievement test (North Central Regional Educational Laboratory, 2001).

Classroom assessment tools assess individual students and assume teachers have curriculum and instructional resources and want to build assessments to match them (Means, et al., 2003). Technology-based assessment systems offer improved efficiencies of faster student feedback, reduction in teacher record-keeping, and reduced time and errors in administration of assessments. In effect, when teachers use assessments as the basis of their technology-oriented pedagogy to determine learner levels with mini-standardized achievement test as a formative assessment, this is consistent with the mastery learning approach (Pellegrino, Chudowsky, & Glaser, 2001).

Constructivist assessment techniques are varied and include using web-based publishing, presentations, self-reflective journals, rubrics, oral quizzes, group debriefings, peer evaluations, and oral quizzes (Becker, 2001). While still assigning some grades, most constructivist teachers base grades on multiple alternative assessment measures (Fullan, 2000). These classroom instructional assessment tools utilize an extensive use of feedback loops that are central to organizational monitoring systems and individual self-regulation processes (Brandes & Wilensky, 1990).

The second area of technology-oriented pedagogy is classroom organization and activities. Effective technology-oriented classrooms tend to be organized and managed in a pliable fashion, with groups and activities that allowed students easy movement (Ertmer, et al., 2000). In these classrooms, a large portion of student work occurs in cooperative learning groups

and involves the completion of project-based assignments. In a qualitative study by Woodbridge (2003), researchers looked at constructivist teachers' technology-oriented pedagogical practices several years after their initial technology integration. Researchers also explored teachers' beliefs and practices of various strategies to integrate educational technology in the classroom. The results of the study revealed that technology integration varied according to perceptions towards technology innovations and individual teacher beliefs. Constructivist teaching strategies were found in 50% of the classrooms observed. Pierson's model of technology integration (Pierson, 1999), which defined technology integration as teachers utilizing content and technological and pedagogical expertise effectively for the benefit of students' learning, was used in the study and Woodbridge added a fourth component, student construction of knowledge. Classroom observations for the study used Good Models of Teaching with Technology (GMOTT), developed by the educational technology group at Brown University's Northeast and Islands Regional Educational Laboratory and the U.S. Department of Education. In summary, this study (Woodbridge, 2003) found that teachers who used constructivist teaching strategies such as authentic, cooperative, constructive, active, and intentional/reflective learning strategies were able to effectively integrate technology across grade levels and course content that resulted in positive student achievement.

Research in a journal article by Cowan, Ennis-Cole, Hudson (2003), indicated schools that successfully integrated technology had similar themes as the literature on effective schools (Cowan, et al., 2003; Levine, 1989). Effective schools demonstrate pedagogical practices that reflect high standards, durability with contextual and historical obstacles, shared responsibility, and coherent program implementation (Cowan, et al., 2003).

According to one study designed for increasing the learning levels of students through technology (Lemke & Coughlin, 1998), researchers identified a framework of seven dimensions that describe the conditions for educational technology to be maximized. While further research studies are needed, emerging trends indicate that under the right conditions technology deepens, enriches, and accelerates student's basic skills; increases student engagement and motivation; bridges academics with the real world; empowers students for their job marketability; strengthens teaching; assists schools with making a paradigm shift; and connects schools to the global society. This study also helped educators assess their own progress toward their professional goals for learning with technology (Lemke & Coughlin, 1998).

The third area of technology-oriented pedagogy is curricular and social characteristics. Social characteristics include classrooms that tend to be organized and managed in flexible fashions to allow students to move easily among different groups and activities. Student work that is project-based assignments or has a cooperative learning approach to cognitive learning becomes a constructive, socially interactive, collaborative contextualized process that is student centered. Teachers frequently use thematic instruction and interdisciplinary approaches. The curriculum is student-centered and focused on benchmarks that positively influence student achievement on state assessments. Students are allowed to self evaluate progress, make choices about learning methods, and set their own goals (Ertmer, et al., 2000).

Administrators can support teachers' technology-oriented pedagogical practices by providing ongoing technical support as well as multiple opportunities for staff development and a strong commitment to technology integration for student achievement (Dexter, Seashore, & Anderson, 2003; TCER, 2008). Different schools influence technology-oriented pedagogical practices in different degrees when it comes to whether it is the staff or administration's vision

for learning. Given enough time, teachers will adopt a constructivist approach and use a variety of approaches to technology-oriented pedagogical practices with software and hardware (Apple Computer Inc., 2008; Becker, 2001).

Barriers to Technology-oriented Pedagogy:

Even though research supports the benefits of technology-oriented pedagogy, barriers exist to its implementation and those barriers are explored in the following studies. In a study by Dexter, Anderson, and Becker, (1999) teachers did not cite the purchase of computers in education as a catalyst to produce change in their pedagogical beliefs or instructional practices. Instead, they referred to many barriers within the high school's culture or context that mitigates sustained technology integration and pedagogical adoption. Teachers who adopt technology-oriented pedagogy in a constructivist manner need an environment of support from multiple catalysts to overcome these barriers to construct such knowledge (Dexter, et al., 1999; TCER, 2008).

Over the last decade, only two out of 10 high school teachers reported being serious users of computers and four of the 10 reported using computers at least once per month. When the computer was used in the classroom, teachers incorporated them to sustain their conventional practices, rather than alter to a constructionist pedagogical practice based on student learning and achievement (Means & Olson, 1995). Two explanations were offered in the findings for these challenges to the predominant assumptions that guide present technological policy making (Cuban, et al., 2001). First, an ad hoc, slow, and incremental revolution was the driving force behind policy makers who wanted to speed up computer availability to every student and increase on-demand technical support for teachers. In this view, policymakers accelerated computer availability to shift teacher's beliefs about teaching and learning with no real plan to

implement the practice. Consequently technology adoption happened in districts where excitement existed about technological progress, but it has otherwise been happening slowly and in small increments, therefore, computer adoption is idiosyncratic. The researchers speculated that the accumulation of ad hoc incremental changes as suggested by the slow revolution will meet the same frustrations associated with other instructional reform efforts and/or only marginally reshape the deeply entrenched structures of the self-contained classroom.

Second, deeply embedded factors such as the traditional history and context of educational technology as a reform agent will postpone widespread use of technology and pedagogy. This alludes to the overall fundamental changes called for in how schools are organized, how time is allotted, and how teachers are prepared. Without such major changes, teaching, schooling, and learning will experience only minor changes and paradoxically, they predicted that new technologies will be used to sustain old pedagogical practices (Cuban, et al., 2001; TCER, 2008).

In a study that looked at teachers' views of computers as catalyst for changes in their practice (Becker, et al., 1999), researchers examined the use of computers by teachers and their perceptions of how technology changed their pedagogical practices. This qualitative empirical study used data from 47 teachers in 20, K-12 schools across three states. Teachers participated in three semi-structured interviews and allowed three classroom observations. The study found that teachers cited technology as helping them change but the real catalyst for change included the context of the school culture, personal reflection, and content courses they had taken in a formal learning experience such as college course work.

In other contexts, where teachers have high levels of support and unlimited access to technology but only employ technology to sustain the existing teacher-centered style of

instruction, students achieved low-level skills that resulted from drill and practice exercises (Harrington, 1993). Teachers in this context, on a continuum of pedagogical styles from instruction to construction, employed educational technology to impart procedural skills and facts that complemented their existing instructional style instead of moving toward constructivist teaching. Qualitative researchers Cuban, Kirkpatrick and Peck (2001) found in a study of two high schools in California's Silicon Valley that exposure and access to hardware and software seldom led to widespread teacher and student use. The researchers interviewed teachers and students to learn the reasons for the discrepancies between policy makers' beliefs in high access of technology to drive reform in teaching and learning and actual practice that resulted in student achievement. Most teachers were not frequent technology users and only a few were occasional users. It is apparent that much work has yet to be accomplished to overcome these barriers. Nonetheless, technology can play a role in building capacity for student achievement.

The Role of Technology in Building Capacity for Student Achievement

Building capacity for student achievement is a multi-level aspect of school improvement and mirrors identical themes present in effective schools (Cowan, et al., 2003). Student achievement with technology has been built into the state accreditation process in response to federal, state, and local polices. The NCLB ("No Child Left Behind Act of 2001," 2002; TCER, 2008) standards call for students to be proficient with technology by the 8th grade. Organizations that have built such capacity acknowledge the role of technology-oriented pedagogy across every subsystem from classroom, to schoolhouse to central office (Cowan, et al., 2003).

In Meade's (2007) qualitative study of a successful Virginia school system, the efforts to develop and sustain its capacity to improve student achievement were documented. In response to increased accountability for student achievement with the state's learning assessments, the

researcher presented several themes as to how this system built and sustained such capacity: (a) aligning curriculum with state standards, (b) sustaining professional development, (c) fostering social relationships in the organization, (d) integrating technology-oriented instruction, (e) building on the strengths of the organization and, (f) sharing leadership with students and staff. These themes permeated the entire district and were acknowledged by students and staff as the cornerstones for the districts' sustained success in student achievement on the Virginia Standards of learning assessments (Meade, 2007). It is significant to highlight that technology-oriented instruction was identified as a critical component of the district's success.

Understanding how technology and instruction was used to improve how and what children learned was the focus of researchers Robert Kozma and Raymond McGee (2003) from the Center for Technology in Learning at SRI International, an independent research organization in Menlo, CA. The study acknowledged the challenge and need for further explorations of the effective use of technology to enhance how and what children learn. They developed four guidelines for making effective technology-oriented decisions in the future:

1. Approach cognitive learning for students as a constructive, socially interactive, collaborative contextualized process.
2. Use curricular reform to expose more students to complex subject matter in tandem with technology.
3. Focus technology-oriented pedagogy on how to use technology to coordinate and improve interventions such a curriculum, assessments, staff development, and other school improvement areas.
4. Nurture a capacity for organizational change in schools to effectively use technology for positive student achievement and effective pedagogy.

Student-centered guidelines that nurture the entire school context for technology-oriented pedagogy have the potential to bring about sustained technology adoption. Constructive use of technology to enhance how and what children learn builds capacity for student achievement, and is one of many benefits of technology integration.

Benefits of Technology Integration

Technology integration benefits both students and teachers in ways that extend beyond student achievement on standardized assessments and meeting NCLB requirements. The frequency and skill of technology-oriented pedagogical practices used by teachers are linked to not only the teachers but to their students' intrinsic incentives (Apple Computer Inc., 2008; Becker, 2000). According to one qualitative study that examined the classroom practices and pedagogical beliefs of seventeen exemplary technology-using teachers, teachers reported their primary reason for using technology was because they saw students' engagement, motivation, and outcome achievement increase when they were active learners (Ertmer, et al., 2000). The study went on to say the correct use of technology-oriented pedagogy benefits all students in many ways. Teachers noted the effectiveness of technology to enable students with learning disabilities, attention deficit disorders, and low self-esteem. Students who created their own multimedia presentation or technology-oriented projects were engaged in their learning (Dailey, et al., 2000). According to Haberman (1991), exemplary pedagogical practices for diverse students involved them in their own education. Using the issues they perceived as vital and applying the student-centered beliefs with their ideals such as justice, equity, and fairness to their world gave meaningfulness to their learning. Students were more engaged as learners with the use of cooperative groups and when they were identifying major concepts rather isolated facts. Students became better social learners when technology was incorporated with active project-

based learning on issues such as religion, race, gender and ethnicity. The study went on to confirm learning environments that openly questioned accepted assumptions and allowed physical movement in class produced active participants. Masterful technology-oriented pedagogy helps students make more meaningful and authentic connections across and within subject areas (Spaid, 2001).

Teachers are externally motivated by the perceived requirements of their jobs of meeting the AYP standards for NCLB (ISTE, 2008; No Child Left Behind Act of 2001," 2002). Evidence from a study by Swanson and Stevenson (2002) found that standards-based policy effects on instruction created greater receptivity for teachers to reform their instructional practices through involvement in relevant professional development exercises (Swanson & Stevenson, 2002). Thomas Guskey (2003), argues that teachers are more motivated to do a better job with data-driven decisions if the data consist of the information they collect themselves, thus making it directly relevant to instruction in their classroom. When teachers are provided with professional development and information on how to select and analyze electronic learning resources that align with national and state content standards, they will integrate technology for students to achieve on the state assessments (Beuthel & Cradler, 2000; TCER, 2008).

Teachers' use of classroom response technology such as "clickers" or web-based software on laptop computers that supports question-response-aggregation-display cycles permits individual students and structures for group collaboration to be self-paced and they can now handle open-ended question formats (Means, et al., 2003). Such classroom response technology allows direct wireless communication between the teacher and the student. This flexibility allows teachers unlimited options in grouping students with real-time communication with the instructor and other students. Teachers are able to author curriculum in a rapid and flexible fashion with a

range of different types of data. With the classroom response systems becoming more economically affordable for districts, their availability has become a reality for most districts. Such open-ended learning technology that automates presentation of content or informs students with diagnostic data, confirms the need for instructors with deep content knowledge and constructivist pedagogy with educational technology. Skilled instructors who understand how to use classroom response systems from the bottom-up or with a student-centered approach can maximize the transmission of curriculum or policy and transform learning. Crouch and Mazur (2001) believe that classroom response systems with peer instruction prompts students to go deeper with their thinking for arguing their positions if combined with the skill of an instructor who can construct the appropriate lesson design based on what students know and how to get to the heart of the conceptual matter of what students need to know.

Teachers might be encouraged and motivated by collaborative apprenticeships that include strategic approaches among teachers. These apprenticeships can also serve as the intrinsic motivation and stabilizing forces that teachers need to help each other with technology integration (Glazer, 2003). In a study that used collaborative apprenticeship (Glazer, et al., 2005), peer coaching, and study groups, teachers at different levels of expertise sustained and initiated technology integration efforts. Learning in a teaching community is a social process that involves on-site, just-in-time, and ongoing support. Shared responsibility and community-wide participation sustains and supports mutual engagement (Seels, Campbell, & Talsma, 2003). Another study found that teachers might need incentives such as in-service and recertification, which go beyond the intrinsic rewards of improved instruction because of the energy and time required. Such collaborative apprenticeships helped teachers to overcome daily obstacles such as lack of authentic learning experience, lack of time, and lack of on-site support, thus promoting an

approach to the construction of learning and building of relationships as a natural component and expectation of the teaching community (Glazer, 2004). The study further stated that teacher investment and involvement are essential but the success, sustainability, and durability of a collaborative apprenticeship also requires leadership and administrative support. Collaborative apprenticeships for the effective integration of technology has several implications: (a) it supports teacher empowerment, (b) it builds communities of practice at school among teachers, (c) and it formulates strong leadership for technology integration (Glazer, 2003).

Summary

Limited information associated with constructivist teaching and educational technology, technology-oriented pedagogy and the benefits of technology integration was available. The integration of technology, instruction through school improvement plans to maximize student achievement on state assessments will continue to be a challenge for educators faced with the accountability of attaining AYP and/or SOE with NCLB (Means, et al., 2003). As the wave of ubiquitous computing in classrooms spreads through the U.S.A. the use of technology by students is inevitable (Roschelle, Pea, Hoadley, Gordin, & Means, 2000). If teachers are to change their organization's integration of technology and instruction for successful student achievement at all grade levels and sub groups by the year 2014, it will require a fresh, energizing and positive approach that builds on the organization's strengths (Meade, 2007).

Because technology-oriented pedagogy and constructivist teaching are viewed as incommensurable with standardized assessments, the stories of successful teachers who have adopted technology-oriented pedagogical practices that positively influence student achievement are important to be reconstructed with all educational stakeholders (Cooperrider & Whitney, 2004). According to Glenn and Knapp (1996), teachers reconstructing their stories of student

successes and achievement can be leveraged to help other teachers initiate the technology integration process and serve as powerful change agents (Knap & Glenn, 1996). There are pioneering schools and districts emerging with technology-oriented pedagogical practices that can be identified and recognized for their outstanding performances (Glennan & Melmed, 1996).

CHAPTER 3

Research Design and Methodology

Chapter 3 outlines the research design and methodology used to conduct the study. The chapter details the research perspective of AI, research context, researcher position and role, participants, data collection strategies, data analysis, and research quality.

Research Perspective: Appreciative Inquiry

I utilized a qualitative single-case study research design and an AI approach to describe the peak experiences of the Hays High School Learning Team's (HHSLT) technology-oriented pedagogical practices that have positively influenced student achievement. I used a social constructionist epistemology that supports a design that offers the ability to be flexible and responsive throughout the research process (Patton, 2002). The application of a qualitative single-case study design allowed the focus of the study to be narrowed to participants identified as most influential to the success of student achievement in the research context (Yin, 2003).

Communities and whole organizational systems have used AI as a post-modern change model to learn about and transform their systems and processes (Whitney & Trosten-Bloom, 2003). David Cooperrider and his colleagues at Case Western Reserve University created AI in the mid 1980's (Ludema, et al., 2003). At the Cleveland clinic, a very prestigious medical center, David Cooperrider studied physician leadership. Physicians shared success stories or when they didn't meet expectations with him and his colleagues. Dr. William Kiser gave permission for him to focus his time and efforts on what he called a life-centric analysis of what gives life to the organization when it's at its best. This purposefully affirmative choice of viewing the world was a propagation of the Lewinian premise of action research. Lewin viewed the world from a hopeful and pragmatic constructionist epistemology, that is, he believed the world is constructed

by human action rather than just being as it is (Lewin, 1947a). Cooperrider wanted to take a fresh approach with action research by looking at the positive core of the organization from its stakeholders to redesign the Cleveland Clinic for a more effective and sustainable future. Action research by its nature, would position Cooperrider and his associates in a position within the Cleveland Clinic to help the doctors move toward the creative images that were made and imagined by those who work within the organization (Cooperrider, Whitney, & Stavros, 2003; Schein, 1987). Cooperrider and his doctoral advisor, Suresh Srivastva, presented to the Board of Governors of the Cleveland Clinic and the term appreciative inquiry was labeled in an analytic footnote in the report (Watkins & Mohr, 2007).

Since that time, AI has developed from an academic theory-building effort to a practical and powerful intervention framework and process for organizations and communities. Today, AI is fast developing into a widely used theoretical framework, research perspective, and methodology employed internationally for organizational development (Cooperrider & Whitney, 2004). Organizations such as NASA (Kay & Bova, 2005), U.S. Navy, John Deere International, GTE, AVON, Roadway Express, Lovelace Scandia Health Systems, ProCare, Hunter Douglas Window Fashions Division (New & Rich-New, 2003), Wichita State University (Calabrese, 2006a), U.S. EPA/ORD (U.S. Environmental Protection Agency, 2003), US Department of the Interior's Rocky Mountain National Park (Ferrand, 2005), Community Emergency Response Teams (CERT) (Drabczyk, 2005), and the Canadian (McKenna, 2005) and Dutch (Massalink, Iren, & Braak, 2005) governments have used AI successfully as a cooperative co-evolutionary theoretical framework, research perspective and methodology in organizational development (Cooperrider, et al., 2003).

The AI model represents an important shift in attitude and language that reverses the limitations of traditional problem solving methodologies, expectations, and practices yet is deceptively simple (Finegold, Holland, & Lingham, 2002). The overall impact on the organizational development field by AI has been significant and served as a leading change process (Coghlan, Preskill, & Catsambas, 2003). Organizational groups using AI and operating at high levels of interdependence and mutuality, are able to build authentic social capital because it generates organizational values and norms that encourages openness in a supportive environment, even of opposing views (Argyris, 1992) .

As a theoretical prospective, AI begins with the discovery of the highest achievements, core values, and aspirations embedded in all human systems. It is also a methodology that begins in dialogue between individuals, expands to groups, and builds to embrace and declare community wide intentions and actions. This perspective and methodology allows its partners to eliminate the stimulation of defensive routines that commonly occur when action researchers intervene in an organization (Cooperrider & Srivastva, 1987a). Further, a defensive posture acts as a brake on the learning and thinking that can move the system forward (Argyris & Schon, 1996; Barrett, 1995). In contrast to traditional research, AI has sought to address the question of how organizations and individuals can engage in dialogue that is focused on the goal of seeking a common positive vision of a collectively desired future (Ludema, et al., 2001).

The premise of constructing reality through conversations and social interactions leads to the five principles of AI (Cooperrider, et al., 2003):

1. *Constructionist Principle:* There is an interlocking of the organization's destiny and human knowledge. The way we know has a direct effect on what we do.

2. *Principle of Simultaneity:* Inquiry and intervention are one in the same. Reality is an evolving social construction that can be simultaneously influenced by the nature of inquiry itself. The way we inquire is critically important and sets the stage for what people discover, learn, and the way they construct their present and future.
3. *Poetic Principle:* Reality is a human construction. An organization's members are free to view any part of it with any lens they choose; members are coauthoring an organization's story continually.
4. *Anticipatory Principle:* The image an organization has of itself guides its current behavior. Positive images will result in positive actions. People and organizations are heliotropic – they grow toward the light of positive anticipatory image (Fry, 2000).
5. *Positive Principle:* The more positive the questions that we ask, the more engaged and excited the participants are and the more successful and longer lasting the change efforts are.

These five principles are the basis that form eight assumptions (Hammond, 1998) for AI's methods and processes: (a) In every organization or group there is something that works; (b) What we focus on becomes our reality; (c) The moment we live in is our reality and there are multiple realities; (d) The act of asking questions influences the group or organization; (e) People have more comfort and confidence in the future by carrying parts of the known past with them to their future; (f) What is best about the past is what should be carried forward into the future; (g) Valuing differences is important; and (h) We create our reality with the language we use. The practice of AI is evolving with its core principles assumptions, processes and is strongly influenced by the theory of social constructionism (Gergen, 1985, 1994). These core principles

will be used to guide the study of technology-oriented pedagogy in a high achieving comprehensive high school.

Research Context

Hays High School (HHS) in Hays Unified School District (USD) 489 was my research site. Hays Public School District is located in Ellis County in central northwest Kansas. Hays USD 489 serves approximately 2,996 students and consists of a high school, two middle schools, six elementary schools, and an alternative school (United School District 489, 2008). The Hays Public School system also hosts an extensive special education cooperative program for seven other districts that are in and border Ellis County. Hays USD 489 central offices and schools are all located in Hays, which is the county seat. Through the 1990's Hays' population grew by about 13% but has declined 2% during the first 5 years of this decade (IDcide, 2008). Declining enrollment resulted in the closure of four elementary schools; two in the surrounding farming communities of Shoenchen and Munjor, and two in the city of Hays. The district employs an open enrollment policy for the five elementary and two middle schools, while all district students attend HHS (United School District 489, 2008).

Hays USD 489 is comprised of 640 faculty and staff (Kansas State Department of Education, 2007). There are 348 certified employees serving 2,996 students in the 9 attendance centers. Approximately 32% of the students are considered economically disadvantaged and those numbers are increasing (Kansas State Department of Education, 2008). USD 489 serves as the special education cooperative provider with four of the area school districts. Approximately 19% of USD 489 students are identified with special needs as compared with the state average of 13%. The district implemented a one-to-one laptop computer initiative at HHS in 2004 and expanded the initiative to middle schools in 2007.

Founded in 1867, Ellis County is located midway between Kansas City, Kansas and Denver, Colorado in western Kansas. A population of 27,000 people live on 900 square miles of wide-open prairie and golden wheat fields (Ellis County KS, 2008). Ellis County communities' Volga German heritage is celebrated with an Oktoberfest on an annual basis to pay tribute to the pioneering Volga Germans from Russia. The Oktoberfest highlights a parade, German food, music, entertainment, and polka dancing (City of Hays KS, 2008).

Hays is the largest city in northwest Kansas and is located approximately 135 miles northwest of Wichita, Kansas. The town is considered the hub of northwest Kansas because of its location and proximity to Interstate 70. Hays serves western Kansas with the professional services of Fort Hays State University, Sternberg Museum, and Hays Medical Center (Ellis County KS, 2008). The town of Hays comprises 6 square miles and has a population of 19,632 with a median age of 29.7. Crime levels in Hays tend to be lower than the average Kansas level (IDcide, 2008).

Proven excellence in student achievement at the state and national levels defines the Hays Public School District. USD 489 students benefit from three philosophical pillars that frame the districts' beliefs and values about what is best for learning and teaching: (a) attracting and retaining the best staff, (b) small class sizes and (c) time to teach. USD 489 students consistently score above national norms on achievement and college placement tests. Test scores for the 2007-08 school year show that in all grade levels and in all subject areas students groups in Hays Public Schools are outdistancing their peers on a national level. Hays students' achievement clearly benefit from these three pillars of beliefs and values.

The Hays community financially supports its public schools, and students reap the benefits of this support in many ways. All schools are air-conditioned. A major expansion

program for new classrooms, improved facilities, and curricular enhancements has recently been completed. Each school has a strong parent organization and a site council that provides leadership and support in all student-centered areas. Community support broadens student experiences in a variety of curricular and co-curricular areas with all-day, every day kindergarten and comprehensive alternative and summer school programs. Children in Hays Public Schools expand their learning day with after-school childcare offered at all elementary schools in a comfortable and safe environment. All schools are accredited by the State of Kansas and the North Central Association (NCA). A culture of community support fosters the educational process.

Although the district is performing well on state assessments as of the time of this study and has met AYP benchmarks for all groups, the superintendent has identified a number of issues that he sees confronting the district in the future. He is preparing for a study session with the Board in order to be proactive in addressing those issues. He also wants to build on the positive trends in the district that will further enhance and maintain their high student achievement (Kansas State Department of Education, 2008; United School District 489, 2008): (a) Maintain small class sizes, (b) Attract and retain highly qualified teachers, (c) Continue to give teachers time to teach, and (d), Consider proposing a bond issue in the future because of identified district facility needs from each buildings site councils.

Hays High School

HHS has a total of 126 staff and faculty members with 74 being certified and 52 non-certified. HHS houses 781 students that are composed of 422 males and 359 females. Nine percent or 72 students represent all minorities. Minority groups represented at HHS consist of 2% or 16 who identify themselves as African American, 5% or 37 Hispanics, .5% or 4 American

Indian/Alaska Natives, 1% or 8 Asian/Pacific Islanders and .8% or 7 Multi-Ethnic. HHS has 16% or 125 special education students with disabilities population as compared to the state average of 13%. Students with socioeconomic status qualifying for free and reduced lunch are 26%. HHS has consistently met the Standard of Excellence in state assessments in math, reading, science and social studies (Kansas State Department of Education, 2007, 2008) and consistently out distance their peers by scoring above national norms on achievement and college placement test (SchoolMatters, 2008). Hays High has held NCA accreditation since 1918 (United School District 489, 2008).

HHS accreditation and student achievement are accomplished through *academy* strategies developed in the school's improvement plan. HHS is on an A/B, 90-minute, yearlong block schedule. Academies are grade specific classes that meet the first thirty minutes of seminar, which is designated as the second period every other day from August until the end of April. Underclassmen are provided with early interventions for appropriate testing and study skills while the seniors explore college and career opportunities. Student-centered academies for freshman, sophomores and juniors are custom designed into three ability levels of high, medium, and low while utilizing the Opportunity to Learn (OTL) window for AYP purposes. The Results Based Staff Development (RBSD) plan for faculty is also implemented through academies with research based strategies and technology-oriented pedagogy. Successful lead teachers from each subject area design the student-centered lessons that are aligned to state standards and all HHS teachers then deliver the lessons to academy students (489 Unified School District, 2008-2009). HHS lead teachers have successful knowledge and experiences of how to integrate instruction with technology that generates relationships and socially constructs their students' learning in positive directions.

For this study, the HHSLT consisted of 7 teachers in these subject areas: reading, English, writing, math, science, social studies, and technology. The principal/researcher identified the lead teachers, based on their knowledge of standards-based curriculum, expertise of integrating technology-oriented pedagogical practices, and a successful student achievement record on state assessments. To meet their responsibilities, the HHSLT was given time to meet and a sub was provided for their classes while they participated in the first two stages of the AI process.

Researcher Position and Role

My professional experience, epistemology and personal theory influence my position and my role as a researcher. Each of these is described in the following sections.

Professional Experience

My professional experiences as a teacher and administrator have spanned over the last twenty-nine years. In that timeframe, I have been a teacher/coach for ten years and an administrator for nineteen years. I have taught in one urban and three rural schools. I have taught in schools as large as 1500 students and as small as 50 students. I have coached college, high school, middle school, and elementary ages with various sports. I have taught elementary physical education, and middle and high school English/speech communication. As an administrator, I have served as a high school principal for nineteen years in three different rural schools.

My technology educational experiences as a high school principal consist of establishing and updating technology-oriented policy and procedures, two 1:1 laptop computer initiatives, various computer labs, technology infrastructures and peripherals, and hardware and software. I have also been responsible for ensuring that teachers receive appropriate staff development to

integrate technology into their pedagogical practices to positively influence student achievement on the state assessments.

As a high school principal, my professional knowledge about integrating technology with instruction to positively influence student achievement comes from my most rewarding experience, which is implementing the wireless 1:1 laptop computer initiative in a web-based culture at HHS, USD 489, Hays, Kansas, since 2002 to present. I have been directly involved in developing district and school policy and procedures for the laptop computer initiative. I have been on the cutting edge of technology with the Board of Education and central office for the district's business side of finances, politics, philosophy, and policies. I have scrimmaged with the district on technology needs analysis, infrastructure, curriculum, hardware/software, partnerships, staff development, and support systems used to deliver and sustain the laptop computer initiative on a daily basis to the buildings. As principal, I have orchestrated the school improvement plan that integrates technology oriented pedagogical practices during the academy that aligns with a written, taught, and tested curriculum and accomplishes our RBSD plan. I believe these efforts have positively influenced all students' achievement on the state assessments. HHS is a rural 5A school and has not only met the AYP requirements every year but has consistently achieved the SOE in Reading, Math, Writing, Science and Social Studies (Kansas State Department of Education, 2008).

Personal Theory

My theory assumes that there are teachers in every organization that have successful knowledge and experiences of how to integrate instruction with technology that generates relationships and socially constructs their students' learning in positive directions. I also believe

that teachers embrace visions depending on the perceived requirements of their jobs and the perceived needs of their students (Ertmer, et al., 2000).

Too many districts' vision of integrating a technology initiatives is limited to accomplishing the physical task of purchasing the hardware in order to administer the state assessments (Cuban, 1997). Integrating just the district instructional systemic standard of teacher staff development for technology-oriented pedagogical practices to positively influence student achievement on the state assessments are absent in most technology rich districts (Cuban, et al., 2001).

HHS, a high achieving Kansas high school has integrated technology with instruction through its school improvement plan and I believe it has positively influenced student achievement on state assessments. HHS is in a high achieving school district that consistently meets AYP and SOE (Kansas State Department of Education, 2007). I believe that the peak experiences of successful teachers can be reconstructed by engaging in retrospective sense making (Weick, Sutcliffe, & Obstfeld, 2005) and shared with other educators to co-construct their technology-oriented pedagogy with educational technology for high student achievement (Darling-Hammond, Ancess, & Ort, 2002). That is why I chose to use the AI research method to examine HHS's successful teacher's positive core experiences by reconstructing their peak experiences with technology-oriented pedagogy and by sharing their hopes and dreams of how to positively influence successful student achievement to other educators and students for teaching and learning. I am able to conduct this study with the teachers as their principal because we initially established and have maintained a track record of trust since 2004. I established and maintained this trust by negotiating with the teacher's union an agreement to not base our supervision evaluations on the pedagogical use of technology. This was negotiated intentionally

by the administration in our district to break down historical contextual barriers that prevent ubiquitous technology adoptions and creates organizational by-pass and cover-up with technology-oriented pedagogy.

My Role as Researcher

My role as researcher was to conduct the research and protect each of the participants confidentiality and privacy rights and secure permission from the Institutional Review Board (IRB) to protect the human rights of all participants (Creswell, 2003a). All HHSLT teachers were volunteers that complete an informed consent form. The HHSLT informed consent forms are in Appendix A. Participants were assured that their participation was entirely voluntary and that they could elect not to participate or withdraw from the study at any time without penalty.

I realized, as an administrator in HHS and USD 489, whose role as supervisor of the study participants the potential for bias and undue influence existed throughout the study. I made every effort not to influence the participants or allow personal bias to influence the data analysis and interpretation of the findings. No respondents have been personally identified and all data have been treated confidentially. Teachers were given the option to use technology with unidentifiable word documents instead of hand written documents. Because of data analysis coding, only the researchers were able to identify any respondent. To minimize the risk or lessen the HHSLT's feelings of vulnerability, teachers were reassured of privacy, confidentiality and their participation was not reflected in any way on USD 489 evaluation/supervision processes or procedures. Teachers were reassured that the AI process focuses only on their positive core and highlights their best practice experiences. It was also my role as the researcher to establish and maintain good rapport, communicate in an honest and respectful manner and model good listening skills to each research participant.

To minimize bias or any feelings of discomfort, I followed predetermined protocols and extensive protocols for each whole and focus group, semi-structured participant paired interview, individual reflections using LHRHCCM and created document reviews as reflected in Appendices B and C. Initially agreeing to the evaluation steps to reduces bias is a researcher necessity for ensuring the fairness of all reports (The Joint Committee on Standards for Educational Evaluation, 1994). It was my role as the researcher to establish and maintain good rapport, and model good listening skills to the participants (Merriam, 1998). My role as a researcher was to communicate in an honest and respectful manner to research participants and provide feedback of the results and the intended use of the results which includes any intention to publish (LeCompte & Schensul, 1999).

Participants

Participants in this qualitative single-case study were 7 HHS lead teachers on the HHSLT who voluntarily choose to participate in the first two stages of an AI process called the 4D-Cycle. The AI HHSLT consisted of 7 HHS lead teachers who teach reading, English, writing, math, science, social studies, and technology. One English teacher had a dual role with the district as the Instructional Technology Coordinator (ITC). The principal, who was also the researcher, identified the learning team teachers based on knowledge of standards-based curriculum, expertise of integrating technology with instruction, and a successful student achievement record on state assessments. The principal contacted the HHSLT participants individually, explained the study, and asked them if they were willing to participate. To meet their responsibilities, the HHSLT were given extra time during the duty day for the staff development. The district provided substitute teachers for their classes to accomplish this study. Teachers from the HHSLT were empowered and supported by the administration to adjust the

instruction, assessment, personnel, and sub-groups of HHS based on assessment data, feedback, and other research.

Data Collection Strategies

The following research strategies were used in the first two stages of the AI 4-D cycle for the collection of data: focus groups, semi-structured participant paired interviews, whole group activities, left hand right hand column case method (LHRHCCM) and review of the created documents. Each of the first two 4-D cycle stages, which I called *Reconstruction* and *Envision*, involved a day of AI events for a total of two days with the HHSLT. I chose to rename the first stage of Discovery to Reconstruction because as a constructionist I believe that it sounded too close to an objectivist view to discover something that already exist verses reconstructing the technology-oriented pedagogy that was constructed by teachers. I chose Envision instead of the traditional terminology of Dream for the second stage of the AI process because it is my opinion that constructionist have to envision the blue print of the future before constructing it. The Reconstruction and Envision days of data collection included the following activities:

Day One – Reconstruction Stage

The HHSLT began with a warm welcome, introductions, a whole group team-building activity, establishing the ground rules and roles, an introduction to AI – paradigm shift, an overview of the 2-day process, and prep for paired interviews. Whole group discussions involved everyone in the HHSLT and me, in conversations of the agenda topics for orientation, sharing semi-structured participant paired interviews, synthesizing the focus group's contextual views, creating individual and group reflections, reviewing documents and member checking for continuity and novelty. Whole group discussions allowed the learning team to check the creditability, transferability, dependability, and confirmability of our action research study

(Lincoln & Guba, 1985). With a semi-structured format, participants reconstructed the positive core of technology-oriented pedagogical practices that positively influence student achievement through paired interviews.

Semi-structured participant paired interviews involved 2-3 of the HHSLT participants interviewing each other and each person shared the story of their partner to the whole group (Sahin, 2005). Semi-structured participant paired interviews sought the peak experience descriptions of technology-oriented pedagogical practice that positively influence student achievement (Becker, et al., 1999). Protocols and questions were still a part of this process but I was not present, the conversations were a dyad, strictly between the two participants. I was not present to record the responses and interview questions in paired-interviews; they recorded and submitted each other's responses. Participants were encouraged to share any other related comments, stories or information that would add richness to the descriptions of technology-oriented pedagogy that positively influences student achievement.

Day One protocol included reconstructing the HHSLT's best technology-oriented pedagogical practice and highlighted stories of *"Who we are at our best."* There was member checking after each of the three semi-structured participant paired interviews as a whole group process of mapping out the HHSLT's positive core, and creating a continuity search timeline (Cooperrider, et al., 2003). Positive core mapping and continuity search by the HHSLT was accomplished by identifying the core values and then preserving what the organization did best to integrate instruction with technology that generates relationships and socially constructs their students' learning in positive directions. Individual members of the HHSLT completed

individual reflections from the AI Day One process using the LHRHCCM. Directions and protocols for Day One data collection activities can be found in Appendix B.

Day Two – Envision Stage

The researcher began the day by sharing meaningful quotes from each participant from the Day One – Reconstruction Stage and an overview of Day Two. HHSLT members shared highlight experiences of technology-oriented pedagogical practices that positively influence student achievement gathered from the Day One – Reconstruction Stage.

Day Two key activities for the envision stage included the sharing of creative visions, enlivening the visions, and acting or imaging the future envisioning (Cooperrider, et al., 2003). Sharing of creative visions was a series of activities intended to create a common future image to guide to whole organization that was conducted in a focus group and whole group setting. Participants, 2-3 times throughout the day, broke up into various focus groups that were introduced to AI dreaming by asking them to envision their organization's potential for positive influence and impact. Focus groups were team members grouped together in various numbers and combinations to gauge their views and perspectives of the organization in the context of the other learning team members. Approximately 2-3 focus group activities were conducted which increased the confidence in the patterns that arose. Focus groups technique recognizes that consumer decisions are made in a social context with others (Patton, 2002). Future envisioning involved an orchestrated combination of focus groups and whole group work to capture the dream of the HHSLT with technology-oriented pedagogy that positively influences student achievement in a envision statement for HHS. The day concluded with partners in a focus group creating, drawing and sharing with the whole group a metaphor that represented their HHSLT

educational technology vision. Directions and protocols for Day Two data collection activities can be found in Appendix C.

Document Review

Several AI documents will be produced from the data-gathering focus group activities in which the 7 HHS participants were guided to create summary sheets and graphic recordings (Cooperrider, et al., 2003). The HHSLT participants took notes during their paired interviews and those notes were collected, transcribed, and analyzed. I posted HHSLT produced documents in the room and on an exclusive secured HHSLT web shared document file so all stakeholders could read the summarized data and so I could ask the HHSLT for confirmation of the summarized data (Creswell, 2003a).

Our Metaphor

I asked the HHSLT as focus group partners, to create a metaphor representing the HHSLT educational technology future vision. Once they agreed on a metaphor to share with the group (remembering to use rich detail and to explain the significance of it to their group), they had the option to use their laptop computers or the large paper and coloring materials to create a picture of their metaphor (Cooperrider, et al., 2003).

Data Analysis

Data were analyzed using several techniques (Creswell, 2003a): pattern matching; content analysis; an open coding process where the researcher identified general categories to group the data, and axial coding. The use of pattern matching with the use of content analysis matrix allowed me to match patterns with the propositions that were used to guide the study (Yin, 2003). As result, patterns were identified that were linked to the AI theoretical perspective. Furthermore, using this pattern matching technique, gave support for alternative propositions.

I recorded and transcribed all activities on the HHSLT AI Day One and Day Two. Data analysis began with familiarizing and synthesizing the data to get an appreciation of how the research questions related to the information as a whole. I was looking for emerging themes or patterns as I made sense of the data through content analysis (Patton, 2002). I grouped the data into several identified topics or categories and openly code the data by reading it line by line (Emerson, Fretz, & Shaw, 1995). I then verified the alignment of research questions and answers to the identified topics or categories (Merriam, 1998). Where relationships existed between topics or categories I used axial coding to link them (Strauss & Corbin, 1998). Sharing the HHSLT participants' story as I came to interpret and understand the data was the final step of data analysis. The HHSLT participants' narrative text that emerged from the data was used to support the findings and themes. According to Creswell (2003b), this sense making of the data accomplished the data analysis goals of credibility of the findings and accuracy validation.

Research Quality

For the purposes of this study with the HHSLT, I determined the quality of our data gathering process by insuring the credibility, transferability, dependability, and confirmability of our action research study (Lincoln & Guba, 1985). By member checking with the HHSLT throughout the two-day process, I determined the credibility of our data, as the HHSLT presented the data from their paired interviews, to confirm what was said, and what may have been meant by what was said (Argyris, 1999). This member checking confirmed that the data collected was neutral in bias, valid, accurate and relevant (Patton, 2002). I also placed summarized data on exclusive shared web documents file and ask the HHSLT for confirmation of the summarized data. Moreover, I triangulated our data through the various data gathering methods: semi-structured participant paired interviews, whole group dialogue, small group produced documents

and presentations and individual reflections on the LHRHCCM (Argyris, 1995; Creswell, 2003a).

Summary

A qualitative case study design was used to describe and identify, through an AI research method, the technology-oriented pedagogical practices that positively influence student achievement. The 5-7 identified volunteer teachers participated in this study. Data collection methods included whole group discussions; semi-structured participant paired interviews, focus groups, individual reflections using the LHRHCCM, and created document reviews with each of the participants. Data was analyzed by sorting data into a series of matrices based on the study's theoretical perspectives. A constant comparative analysis was used to identify patterns, code data, and categorize findings.

CHAPTER 4

Findings

Chapter 4 is organized by a description of key AI activities that presents the detailed findings of the HHSLT Day one (Reconstruction) and Day Two (Envisioning) of the REDD process. After the description of each HHSLT member, I describe the key activities that report the findings and data analysis using the narrative texts that resulted from the data collection. Chapter 4 concludes with a summary of those findings.

HHSLT Members

The AI Learning Team consisted of 7 lead high school teachers who volunteered for the 2-day study. All HHSLT teachers have positively influenced student achievement throughout their careers with technology-oriented pedagogy. Each teacher participant is introduced in the following paragraphs.

Alice has taught at Hays High School for 15 years. She teaches high school English and specializes in reading. She now works in classrooms with teachers and kids from high school to elementary. She was recruited by the district administration in 2007 because of her technology-oriented pedagogy to serve as the district's Instructional Technology Coordinator (ITC). It was important to include Alice in the study with the HHSLT because she is an original member of the high school faculty that had a leadership role with the 1:1 laptop adoption and how to differentiate instruction. She still considers the high school her home base and now has the single most pedagogical influence with the district's technology adoption plans. She helps train teachers to use educational technology with students. Alice had prior district ITC obligations for the first morning, but then joined the team after lunch.

Lora has taught English at Hays High School for the past 10 years. She was nominated as the 2007 district Master Teacher. She traveled for a year as a Kansas State Department of Education representative and advised teachers and legislators across the state of Kansas on the use of educational technology. She also collaborates with special education teachers to teach students with learning disabilities. Lora described her best trait as being, "Accepting and kind toward others" and takes pride in, "Being tolerant of others and their beliefs, understanding and not too quick to judge." She values, "Being able to 'keep in touch' with the world and have a chance to influence the kids, community, parents and staff in a positive manner" and working where she has, "Administrative support in areas of technology and discipline."

Daryl teaches math and started his teaching career at Hays High School five years ago, which coincides with the year Hays USD 489 began the laptop initiative. He has only known the laptop initiative as a teacher. He is a technology leader in the math department with the use of an Interwrite board, a wireless interactive white board used with a computer and projector to convert free hand writing to a digital format, and other educational technology. Daryl described his best trait as being, "Trustworthy," and takes pride in, "Having great relationships with kids, being hard working, humorous, and a solid individual." He values, "Seeing students achieve when they are struggling and suddenly understand about their work" and working with, "His colleagues, pretty good kids, and a great friendly community."

Daniel has taught science at Hays High School for 16 years and currently teaches chemistry. He is known among his peers nationally for his use of educational technology and as someone who has pioneered software, hardware, and the integration of the Internet into science classrooms and labs. Daniel has also served two terms as President of the Kansas Teachers of Science Association (KTSA). Daniel described his best trait as being, "Accepting of others" and

takes pride in, “The ability to see the big picture, being a global thinker, being able to figure out just about anything and having a high emotional quotient (EQ).” He values, “The people who are around me every day, helping students; and the lack of micro-management” in Hays High School.

Cherrie has taught physics at Hays High School for 10 years. In 2007 she received an international grant for the integration of technology. She also collaborates internationally with other high schools on physics projects. Cherrie described her best trait as, “The ability to give and receive love” and takes pride in, “Her curiosity, musicianship, perfect pitch, almost perfect speller, and being extremely analytical.” She values, “The … chance to affect kid’s lives and the challenge to get kids to ask the types questions to give them meaningful answers” and her work place because it is a, “Well run school in terms of discipline and we are always supported by the administration.”

Mark has been a social studies teacher at Hays High School for 6 years. Through his use of the school’s laptops with on-line curriculum and student management systems, Mark is completely paperless in all of his classrooms. Mark is often asked to train district staff and to speak to visiting teachers seeking to understand the evolution of technology-oriented pedagogy in their own careers or schools. Mark describes his best trait as, “Having respect for my upbringing, being respectful of everybody” and takes pride in, “His understanding and being well-rounded from teaching in different school districts with students of varying backgrounds.” He values, “An education and where it can take you in life with the possible outcomes and a sense of accomplishment” and his work place “Technology and student behavior.”

Carrie is an 18-year veteran teacher at HHS. She currently teaches the high school web team which is the hub of the district’s web-based culture. The web team is comprised of students

from the two or three web technology classes Carrie teaches and coordinates to establish and maintain the district's web sites for each building and central office. The high school web team students are given administrative privileges and permissions with the district's technology to accomplish their district web site projects. She has experienced and played a leadership role in all of the technology stages of adoption the district has experienced during the last 20 years. Her web-team classes were ranked as one of the 12 best in the country through a technology magazine's web page contest. Carrie describes her best trait as, "Being hardworking, innovative, and enjoys kids." She values, "Connecting with the kids, accepting trials, and administration that allows us to do the things we do" and working where there's, "Freedom to teach what we believe and the safety of trusting in our community between kids and staff."

Except as noted, all the teachers participated in the study as an AI learning Team for approximately 12 hours over a two-day period. All activities took place in the Master Teacher Room at the Rockwell Administrative Center during normal school hours. This room was away from the high school campus and provided the wireless internet connectivity and technology needed. The district provided substitute teachers for the team of teachers to accomplish this study. An office secretary served as the group recorder and assisted the researcher with procedures and setting up for all of the AI activities except as noted when the teachers did their own recording, as in the paired interviews. Day One for the HHSLT members began with opening activities that included a warm welcome.

HHSLT Day One – Reconstruction Stage

I warmly greeted six of the seven HHSLT participants, three females and three males, Lora, Daryl, Daniel, Cherrie, Mark and Carrie, as they entered the Master Teacher room at the District Administrative Center, where they were invited to choose their own seats. Before we

began our whole group activity of action research review and AI orientation, I informed the six HHSLT members that Alice would join us after lunch.

Action Research Review and AI Orientation, 8:00 a.m. - 8:40 a.m.

The purpose of this activity was to fulfill my researcher obligations to the Wichita State University Institutional Review Board (IRB), orient the HHSLT to the stages and guiding principles of AI, and review the two days of activities involved with our action research. The following descriptions of the highlighted activities show the steps taken to accomplish said purposes and establish a safe and open climate for the study.

As a whole group activity I distributed, reviewed and collected HHSLT's signed consent forms. I informed the group they were to manage themselves with breaks and professional administrivia from their classes. In an effort to establish a safe and open climate, I addressed discomforts and risks that might be associated with the study. Although the participants did not ask any questions or comment about the discomforts or risks when given the immediate opportunity, in their reflections at the end of the day most members communicated how much they valued and felt comfortable with the process and were not intimidated that the facilitator was the building principal.

I then explained to the participants that for our session to succeed we must establish ground rules for activities to share our experiences, opinions, and ideas. Being able to relax and share because of the ground rules was appreciated by Mark, as he expressed in his reflection, "The ground rules and roles gave me the freedom to express, collaborate and to reflect with a feeling of relaxation. I felt the freedom to share without the fear of embarrassment or reprisal." I posted the HHSLT ground rules and roles on the wall. We reviewed them and the participants were asked to contribute to the list if they wanted. No one contributed verbally but Daniel later

reflected, “That the ground rules were simply expressed or stated. Everyone was respectful of others while being straightforward, and setting parameters was like normal things.” When we finished with the rules and roles, Carrie stated appreciatively, “I can’t imagine all the hoops that you have to jump through to do this.” While most shared excitement or reflected a relaxed attitude about the rules and roles, Cherrie communicated her anxiety in her written reflection,

> I understand the need for the ground rules, but we’re professionals and they seemed to be somewhat condescending. The risks of participating in the study were explained, but I’m not sure I’m completely comfortable with an administrator using his supervisees as research subjects. My challenge is to be honest without being confrontational.

Although Cherrie expressed initial reluctance and feelings of being patronized, as she engaged in the AI activities she relaxed and fully participated. Ground rules and roles and all documents and protocols used for the 2-day HHSLT activities can be found in Appendix B and C.

The introduction and orientation to AI included an overview of the 2-day process, in which it was explained the HHSLT would be involved in Reconstruction and Envision, the first two stages of the four-stage AI process. I explained how the AI process looks for the good instead of deficit-based problem solving methodology. Lora reflected, “This makes sense. I get it. I had never really thought about the processes, but seeing it on the wall puts it into perspective for me.” I explained that in the *Reconstruction Stage,* they would describe a high point teaching and learning experience and identify the best traits and values of their technology-oriented pedagogy. In the *Envisioning Stage,* they would imagine future possibilities and envision what their technology-oriented pedagogy in USD 489/HHS could be. I then informed them that their input in this study would be used to determine the district’s shared and preferred future in educational technology. Mark wrote in his reflection that from this introduction to AI, “I went

from my wonderment of the expectations for the day, to a quick understanding of what would be presented. This led me to believe that there would be many opportunities to share and borrow." I then listed that I was seeking to (a) learn from them by listening to their stories of when they really and truly experienced technology-oriented pedagogy that positively influenced student achievement, and (b) understand how they believed they could best sustain and extend their technology-oriented pedagogical practices that positively influence student achievement for a shared and preferred future in USD 489/HHS. We then transitioned to a whole group AI activity to reconstruct the HHSLT and USD 489 technology timeline from the last 20+ years. Each member wrote his or her educational technology history with a marker on a 20' poster paper timeline divided into five-year segments.

Technology Timeline, 8:40 a.m. – 9:10 a.m.

The purpose for reconstructing the HHSLT technology timeline was to provide a vivid picture of the HHSLT's and USD 489's historical capacity and strengths with educational technology adoption. Using the ground rules as our guide, each participant listed and shared the high point events of educational technology in the history of USD 489 and/or their career in the last 20+ years on a poster paper timeline. As the participants volunteered to share high point events, the whole group brainstormed responses to the question, *Why were these events a high point for you?* These ideas were summarized on the document and posted on the wall for the group to see as a visual and later posted on a common document site using Google docs. The overarching pattern that emerged from this activity was the use of educational technology grew from sporadic individual adoption to an organizational culture of student-centered learning with technology-oriented pedagogy focusing on student achievement. The following paragraphs

provide data to illustrate growth from individual teacher behavior to student-centered learning with the use of educational technology.

HHSLT and USD 489's individual and sporadic uses with pre-1990 educational technology were laborious and time consuming. Antiquated technology listed on the timeline included the use of mimeograph machines with spirit copies; endless paper copying, filing and rows of file cabinets in the room; and typewriters with correction tape or different forms of white out. Daniel identified the first statement on the timeline as his. He recalled how labor intensive and messy the use of spread sheets with grades, numbers, formulas, and listings used to be with the typewriter or hand written mimeograph sheets in the days before these functions were computerized,

> The reason it [the use of spreadsheets to record and calculate grades] was important for me was because usually I would use a "typer" [typewriter]; I mean a typing machine to do my worksheets. I couldn't do it on the computer and if I didn't have time to get to the copy machine at the school I was at and I had 150 worksheets for my kids. I used the purple stuff for the copies as well as for home usage and for school. I used it for both.

HHSLT's use of educational technology continued in the pre-1990 technology events with the use of a TRS 80 (a Radio Shack desktop computer that used a floppy disc) to produce a résumé and to create spreadsheets for calculating and recording grades. The use of the Radio Shack TRS 80 desktop computer was one of the first moves toward computerization of individual teacher management functions. One of the first limited attempts for student learning with technology was the installation of Channel One educational television in the high school. The convenience of individual education technology improved in the 1990's.

The 1990's were sprinkled with descriptions of how individual teachers used technology and identified sporadic educational technology events such as teachers' first computer usage for home and school purposes. Daniel reminisced about use of computers in his physics and chemistry classes when Internet access was text-only. An early version of the internet allowed him to communicate with science researchers in other states to collaborate on lab data collection such as temperature, motion, weight, and pH factors in experiments and projects. He recalled,

> In 1990 we wrote a grant for Apple 2E data collection. Well, that was the first time you could take and collect data and project it on a screen and put it into their software. You put it into their software, which was like a spreadsheet that analyzed data, and so really it was the first digital collection, everything else was analog prior to that where you use a thermometer or you use a pH meter. So that was a big step.

Within a span of a few short years some teachers were moving spreadsheet data entry from the typewriter to their computer and sharing information with other science teachers via the internet.

In the mid 1990s, teachers began transitioning to student learning with the establishment of computer labs and individual desktop computers. There were stories of dysfunctional computer labs and frustrating attempts to implement computers into instruction. Carrie remembered assembling a lab by scrounging technology from different district buildings and people. In 1993 she recalled, "Somewhere the school got enough new computers and the old 2Es were sitting around to make my first middle school lab of twelve computers." Teacher centered use of technology continued to develop with the high school when individual desktop computers were given to every teacher, but were used primarily for recording attendance and other teacher management functions. Individual desktops for all teachers brought about the need for technology training for all teachers.

For most HHSLT members, the integration of technology for instructional purposes began approximately in 1996 with technology training workshops for all teachers with computer labs, grades, lesson planning, and webpage authoring. The process of technology adoption for a more student centered focus for individual teachers and the organization was slow, sporadic, and misguided at times, as Mark recalled,

> 1995 was the first year that I had my own computer in my room. And if I remember correctly, mostly what we really used it for was attendance. I don't think we really put grades in on it yet. And we did have a limited access anyway for us. There was really nothing else that we could use it for the students other than for our benefit. But I remember it was mostly used for attendance and it might have been a little bit before 1995 or 1996.

The integration of technology for student learning had many trials and errors. Integration of technology had its real beginning for the school district with the training of all teachers in district sponsored staff development workshops. That training led to district discussions on how to maximize technology-oriented pedagogy to positively influence student achievement.

For HHSLT members, student learning became the main focus in USD 489 with a decision in 2000 to lease rather than purchase technology. The lease had many benefits but also represented a district philosophy to shift the use technology from teacher-centered to student-centered technology-oriented pedagogy, believing that it would positively influence student achievement. Through the 2004 lease, the district was able to acquire the latest software and hardware to benefit student learning. Other student-centered benefits included a 1:1 laptop initiative for all high school students with wireless availability 24 hours a day, 7 days a week. The district decided to drop the traditional computer-lab model at the high school and transition

to a customer service model of technology support with an extended day, six days a week support with personnel, on-line, and phone support for students, staff, and the community.

Seeing the trials and errors of the district technology timeline unfold and synthesizing the district's transition from teacher-centered to a more student-centered focus with the technology, Carrie stated, "That separates software issues, support issues… everything, doesn't it?" Carrie was referring to all the prior technology experiences and issues from the district history that led up to the board of education's decision to lease technology on a three to four year cycle. Carrie continued by saying, "We almost needed that [experience] to convince us how to do it in a lease. … Everything under one lease, software, hardware, support…you can just see how it builds up to it." Lora reflected on how far she personally had evolved with technology adoption in her own career, one that started in a different district, when she wrote,

> Actually, I was thinking how far I have come from those first days of teaching (in my first year) at Russell High School where my journalism students worked on Apple 2E computers, using our first digital camera and our first foray into desktop publishing (which wasn't even called that at that time!) I also realized that time goes so quickly—it seems like only yesterday we were getting our Mac Books when actually it's been five years ago. Wow!

In 2007, the district invested three million dollars with its third technology lease. In this most recent lease, the district made the decision not only to continue with the 1:1 laptop initiative at the high school, but also to start a 1:1 laptop to student initiative at both middle schools. The five elementary schools initiated a 1:2 laptop to student ratio, and their laptops were placed on carts to mobilize the district's use of computers between schools when needed for testing and instruction. The high school continued its philosophy of personal computing 24/7 but the middle

and elementary schools did not allow their laptops to go home with the students unless they received special permission or made arrangements with teachers.

Ultimately, the timeline provided a vivid picture of the organization's and the HHSLT's historical capacity and strengths with educational technology adoption. After the HHLST was led through the educational technology high point event timeline, participants were asked to divide themselves into two groups of three for semi-structured participant paired interview activity.

Semi-Structured Participant Paired Interviews, 9:10 a.m. - 10:10 a.m.

The purposes of this activity were to introduce the HHSLT to semi-structured participant paired interviews and provide them with directions for conducting the interview. A review of the interview guide and questions was given to the whole group before the interviews. They interviewed one another and were asked to reconstruct positive core personal peak experiences in teaching with technology-oriented pedagogy that positively influenced student achievement. Lora described her interview like this, "Each person expressed his/her high point experience through an interview. Using the ABC process, one person interviewed, one person was the interviewee, and a final person was the recorder." Specific directions were given to share in-depth details of their stories with each other and how each participant should observe, record, and interview each other while looking for notable quotes in the process. Carrie summed up the semi-structured paired interview process when she wrote in her reflection,

> Instructions for recording, interviewing and listening were discussed. We grouped in threes and read the discussion questions. Interviews were definitely not soliloquies, we had interaction and discussions when we were supposed to be listening but we did stay on topic and realized that we had many of the same concerns and ideas.

Recorders posted interview responses on an HHSLT Google shared document site. HHSLT members were reminded to prepare to richly share the story of their observed and recorded interviews with the whole group. Findings from the paired interviews are reported in the following section.

Reconstructing High Point Experiences and Mapping the Positive Core, 10:10 a.m. - 10:50 a.m.

The purpose of this activity was to have the HHSLT participants reflect and reconstruct a peak experience or high point at HHS with technology-oriented pedagogy from the paired interviews they just conducted. Each participant was asked to show how the high point experiences positively influenced student achievement. Three themes about student achievement from the HHSLT's reconstructed high point experiences manifested themselves as: 1) student-centered learning; 2) contextual support for student-centered learning; 3) and the leadership vision and freedom for teachers to take educational risks. As will be seen, these three themes surfaced repeatedly in various forms throughout the two days. Each of these themes is described and supported with quotes from the data in the following paragraphs that reconstruct the positive core.

Daryl reported Mark's high point experience of student-centered learning for maximum student achievement through the use of technology-oriented pedagogy occurred when his students reached the Standard of Excellence (SOE) on the Kansas state assessments. The SOE was accomplished with many students through using the web-based software Quia on the laptops and using other technology to prepare them for the state assessments in social studies. Quia is an on-line subscription that allows users with individual accounts to create games and quizzes, to maximize and customize their student learning. Quia also allows teachers to collaborate and network by sharing the most effective activities or lessons with each other that have positively

influenced student achievement. This student-centered collaboration among different teachers allows them to efficiently develop and share libraries of successful lessons focused on standards. Mark used the Quia games, which were a collection of standard-based lessons representing the diverse strengths and resources of teacher collaboration to encourage competition among his students, as he worked like a coach preparing his team for a big game. Mark was able to get immediate feedback to and from his students through the use of Quia because it grades short answer questions immediately. Most of the time, when Mark uses Quia with activities aligned to state standards, the students get immediate feedback and know the results of their performance before he can walk to their desk. This immediate feedback allows him and students to analyze and adjust, to make enhancements (for students who master the concept and need to move to another advanced level) or correctives (for students who have not met the district expectation of competency with the objective and need more work on the same objective in a possibly new and different approach) with a turn-around speed that was not possible without the use of such technology-oriented pedagogy. He then creates mastery learning routines of correctives and enhancements to channel all student achievement to mastery of the curriculum. Daryl shared Mark's technology-oriented pedagogy story and how it positively influenced student achievement. Daryl highlighted Mark's efficient use of Quia to maximize individualized student-centered learning in the following quote,

> Mark's story starts in '06-'07 and it was kind of the first year where he got the culmination, it was kind of the culmination of having the computer, the laptop, and the projector in class. And he used that to achieve his most high that he's had as a teacher when the social studies made the Standard of Excellence in state assessment. And he used the computer and projector with power points and with videos, video equipment in his

> classroom sessions throughout the year during lesson planning and all that. He put it all into his classroom and then also two weeks prior to the assessments using that technology to prepare his kids for the multiple-choice type of test that the assessment is. He did a lot with that and with Quia and all of that stuff to get those kids ready and then they received a standard of excellence, which was his most high. And one of his big things was he was getting out of coaching at that time and he still had that competitive drive, you know, to try to be the best and teach kids to be the best that they could; and he couldn't do that coaching anymore. And he used teaching and trying to get those kids ready for that test as his competitive drive. And you know when the kids got the standard of excellence that year he was like, "alright, I did my job!" and he was just elated with his kids receiving that standard of excellence.

Because of his ability to customize individual student-centered learning for maximum student achievement with state assessments, Mark is now used as a Quia trainer of teachers in the school district and for visiting schools. Other HHSLT members further demonstrated student-centered learning that positively influenced student achievement in their paired interviews.

Mark shared Daniel's high point experience which highlighted student-centered learning with technology-oriented pedagogy. His story illustrates how making learning personal to each student expands creativity and allows students to be involved with hands-on learning rather than teacher centered behavior such as lecturing. Daniel first used the Computerized Performance System (CPS) with a global warming lesson around the year 2000. The CPS "clickers" are hand held devices used to formatively assess each student's knowledge. The ability to quickly check for understanding was exciting for Daniel, but was not sufficient for a summative assessment of the lab or a creative hands-on exploration experiment. Daniel expanded his technology-oriented

pedagogy from this formative activity with clickers to using other technology to produce summative data on individual student learning. Mark gave this detailed account of Daniel's interview in which he describes Daniel's instruction involving the use of electronic probes with a hands-on global warming lab in his science class to complete the summative assessment and exploration experiment,

> One specific example that he used was in the classroom setting that he eventually moved to the field experience, when he was giving a simple global warming demonstration. In portraying how things actually are with the students, he put things together, took them outside and showed them how carbon emissions actually do contribute to global warming and it's not just overall a myth that people make up. And seeing how the students could take the information that they were using in a very simple process and he explained how he did it with bottles and stuff like that, and it went right over my head but it sounded extremely simple but interesting. In fact because the kids, again, they could plot their data there, not just sit there and watch you do it. They had the hands-on, involved in the graphing of it and such as that and the excitement that came with the discovery by the kids that the little pieces and things that they were putting together showed this overall big picture. You hear that global warming is happening and you might read bits and pieces of how it happens but then when you put those things together and then graph it. Then the temperature in the bottle apparently went up, so the data proved it. So it seems like that was an exciting time for them. The student data usage is probably the thing that he felt like he valued the most. It positively influenced not only him but the students and their achievement because again they could see it and they applied it. It wasn't like the teacher was in front of them telling them what this data would do and what this data was

> all about. They actually saw it. They put it down. They graphed it. They charted it, so there was a lot of practical use. He felt elation, excitement and those things were pretty cool after that. It was like, he-we did something that the students really related to and it wasn't just something that I had to tell them, "hey, that was cool wasn't it?" I think the students recognized that. I think that is probably pretty much Daniel in a nutshell.

Even though the AI activity emphasized the positive high point experience Daniel could not help but share with Mark his frustrations about standardized testing when he said, "A pig doesn't get fat by weighing it." This quote represented his frustration with the absorption of technology resources and time with the amount of assessments students are required to take through state and federal mandates. Mark sharing Daniel's deficit quote of a common frustration with mandated assessments at the end of his high point experience reminded the HHSLT of other low points that they all deal with professionally in their respective fields of study. As much as Daniel wanted to remain on a positive trajectory with the AI activity, he could not ignore his reality and that is educators have to do the things they have to do to get to the student-centered learning they want to do. Keeping those kind of student-centered learning experiences flourishing becomes the challenge for educators and the organization.

The HHSLT felt student-centered learning could not flourish without contextual support in the organization. They defined contextual support as a comprehensive, coherent blanket of district support for technology-oriented pedagogy such as financial, technical, training, and time for collaboration. How the district provides contextual support for student-centered learning was best illustrated by Carrie's high point story. Contextual support for high achieving student-centered learning from the district accelerated for her with the web-team students being provided with the best software and individual laptops available through the district's technology lease

funding. Other contextual support included the extended tech service, 24/7 administrative security permissions to work inside the school's server, wireless capabilities, and summer access to software and hardware for training purposes. With this kind of accessibility and contextual support, students were able to put many more hours of work into their projects, consequently their skills and the website improved sharply. This resulted in the website becoming the hub for the school's web-based culture with not just the district, but for the entire community. Cherrie told Carrie's story this way,

> Her epiphany occurred in 2005-2006 when she realized that when the website became more than just a show and tell place. It became an actual tool for students and teachers and parents. So the setting, of course, was with the web team of Hays High. She and the web team and all faculty members were involved. Before 2005 and 2006, the website had grown from being a static web site to a more dynamic snapshot of everything that's happening at Hays High. But during 2005-2006, the website then became a central place where students and parents and teachers could go to access their email, to look at or record student grades, to use research tools from the library, to get course information as well as what was previously up there… information about events at Hays High. And what made it exciting for Carrie was that they were able to be a reliable resource for students, teachers, and parents in a one-stop shopping experience for everything related to Hays High.

When daily hits on the high school website increased from less than a hundred a day to tens of thousands per day, Carrie's pedagogical epiphany was the realization the high school web site was being used by students, parents, and the community in meaningful, real world learning ways. This environment of ongoing, contextual support for student-centered learning, under Carrie's

committed technology-oriented pedagogy, produced a national award winning high school web site. Trust and respect grew out of this newfound authority between students and the staff, as they engaged in project-based learning that consistently produced students they characterized as hard working over achievers. The Hays High website routinely has a responsive and fresh approach to the school's culture and activities, creatively telling the district's story to the world through technology's latest tools.

The theme of leadership vision and freedom for teachers to take educational risks for student achievement through educational technology was again illustrated in Carrie's high point story. Carrie encourages students not to be afraid of trying new things, to think for themselves, and to have the courage and confidence to just click "next" and not wait for permission to explore. Her confidence in students' creativity allows them to find a better way "next time." Carrie tells of how she models this behavior by pushing kids out of their learning comfort zones and how to experiment and navigate uncharted waters,

> When I get five or six journals and I find something that I can use and I get excited about trying this with one of my classes. I realize that it's better than what I already do. Reading about them, trying them--sometimes they work, sometimes not; I have more opportunity to try new and different things in my area, unlike other areas.

Her students' confidence to take educational risk was also increased through continuous exposure with the web and laptops, as they were encouraged to learn from their mistakes and to perform better "next time." She saw students' educational risk-taking enhanced their confidence in their abilities and thus their skills with technology grew and that success in turn increased their work ethic.

The theme of leadership vision and freedom for teachers to take educational risk also emerged from the HHSLT discussion about student empowerment that allowed authority to be challenged and provided the motivation for students to learn. To illustrate, Lora's students set up accounts in Quia, which is a web based software subscription furnished for teachers at HHS. Quia has games and activities for students to interact with to help individualize instruction. Most teachers enjoy using Quia because it has the ability to grade short answer quizzes and worksheets immediately. Permitting students to have individual accounts is not only "student centered" but allows them to get instant feedback for correction or enhancement of instruction. Students then grow more independent with their learning and rely less on teacher-driven instruction, which empowers them to take responsibility for their own learning. Carrie's description of Lora's high point story illustrates not only how students grew more independent from one year to the next with technology but also how motivated they were with the use of Quia and other technology software that allowed for student centered instruction,

> It made it exciting because the kids knew what they were doing and she felt the students had more confidence, competence, and knowledge of their peers. It wasn't a whole new world and they were not afraid to click next, to push the buttons and say, "yes, I know I'm setting up an account;" "yes, this is my password." She felt that it was going to make her testing and teaching in the classroom more empowering for her because she felt it would empower the kids to do a lot of things on their own and to go find information they needed there and to give the instant feedback that Quia gives or the teacher feedback that she got. It was less teacher-driven instruction and more student-seeking instruction. And afterwards she felt successful because she knew that each year would be easier and that she would continue to use this tool and others like it for many years to come.

These high point experiences demonstrate a time when each HHSLT felt most alive, most engaged, and extremely proud of the important work they accomplished to positively influence student achievement. The recorder summarized each HHSLT member's high point experiences on the easel so that as a group they could begin to see patterns from their own technology-oriented pedagogy that positively influences student achievement. The following are the positive core patterns that were mapped or identified by the HHSLT after reconstructing their high point experiences.

The HHLST synthesized their high point experiences and mapped or identified the following patterns involved with each theme: 1) benefits of having a student-centered learning philosophy; 2) emotions involved with contextual support for student-centered learning; 3) and the time and collaboration involved with providing the leadership vision and freedom for teachers to take educational risk.

The benefits of the HHSLT having a student-centered learning philosophy were simply listed after members studied the list of high point experiences as having these patterns, increased student accountability and increased student expectations and responsibility. Lora spoke to how students were now more motivated to be more responsible for their daily work and quizzes through her technology-oriented pedagogy by giving this example, "I use Quia all the time for reviews and quizzes and stuff. I have kids come up and say, could you put a review for this on Quia?" Lora explained that student accountability was up because students know that every time they logged on to the assignment, correctives or enhancements, and the games to review for quizzes that a log of student activity was created. The accountability log showed how often and how long each student spent on the class concepts. She could talk with each student about whether she or he had put in the required time on task or not. Students and the teacher both

received immediate feedback from the task and could analyze their performance from this information. She had this to say about the student accountability log, “I really use this and I love now that we can track that and that’s a new thing you hadn’t thought about in Quia. You can see who got on there and how long they worked and those kids are using it.” As teachers and students grew in this capacity more space was needed on Quia to expand technology-oriented pedagogy. Lora noted how important it was to her that the district provided the support to increase the amount of space, saying, “And they’re giving us a ton more space now. I mean just a ton more space.” Increased student accountability and increased student expectations and responsibility had a direct relationship with how much space was available for students and teachers to provide activities, practice, and games to store and record all activity for the class.

The issue of space and dealing with adversity involved with technology-oriented pedagogy prompted Mark to give the following example of how the pattern of emotions involved for teachers intersects with contextual support for student-centered learning. Sometimes the district’s attempts to provide support fall short when adoptions of new software happen before teachers are ready for the change or when the technology does not work as expected. Mark spoke to the emotions of fear and frustration involved for himself and others with the district’s adoption of two different monitoring software called Vision and School View. This software allows teachers to monitor students on their laptops during class and allows for monitoring of individual learning anytime and anywhere. Mark works with teachers and coordinates training in the district among teachers to fully utilize School View software. He has a pulse of what is involved with teachers as they collaboratively try to master School View to monitor and focus student learning with their technology-oriented pedagogy. In this quote, Mark expresses some teachers’ fears

about using technology with students because teachers did not have any contextual support to monitor students' laptops,

> I'm going to be talking on Monday during the in-service about School View and the technology evolution of monitoring your students. I mean everybody has their own way that you started out when you first started teaching, how you made sure your kids weren't cheating, how you stayed up and around the classroom, how you watched to see cheating techniques and were able to monitor and watch your kids. And then as we evolved into the use of technology and we first got the Vision program, it was like, "oh man now I can really use the computer because I won't be worried about them doing something on the computer that I can't see them doing. I can monitor them. I can watch everything," and then when it worked it was fantastic, but then when you had your little down times on certain kids and it wouldn't work that was frustrating. It was like, "how come we can't get something that works?"

Contextual support for monitoring students on technology has evolved over time but the newer adoptions have not worked as smoothly as expected, which has caused some frustration for teachers. Additionally, just when teachers start to feel comfortable with a software program, a new program is adopted. It can be frustrating for teachers to keep up with the learning required in an environment where technology is rapidly changing and the challenge to give students freedom to take educational risk is desired. Mark spoke to teachers' frustration by saying,

> And then when you just got Vision figured out, because it came with a whole lot of stuff but it did basically what you wanted, and then we got the School View software and it has just been, to me, it's almost been a nightmare since we got it. I mean it doesn't, to me, do any good when you've got 25 kids in there and 5 kids don't show up on it. So now

> you got to figure out a different way to monitor and watch kids but it does have its good features and such as that, just like everybody has good ways of doing things. But the evolution from monitoring students to the point that we have right now can encourage teachers to use the technology more if they know, "well that way I can monitor what they're doing on the computer. I don't have to be standing over them to see their screen and I don't have to be on this side of the room because I can't see it over there." Whereas before when we weren't using the computer… I can see them if they're pulling a paper out of their desk or I can see them if they're looking over a kid's shoulder such as that. That's a little apprehension for some teachers who don't want to use it as much because they say "I can't monitor what the kids are doing because of the programs that we have don't accurately work the way we want them to." The evolution of that, to me, is a really big deal in how teachers use technology that might be afraid to really use it or expand on the technology use because of it.

Contextual support for student learning allows teachers to grow faster with their technology-oriented pedagogy but such adoptions are not without emotions such as fear and frustration. The HHSLT believed that teachers and students grow best from technology-oriented pedagogical experiences that are hands-on, project-based learning versus lecturing. Project based learning requires independence and freedom for students and such monitoring software provides the teacher and organization with contextual support for the student-centered creative freedom with accountability.

Student-centered learning takes time and collaboration spent using technology for teaching to be able to re-orient and evolve with the different technology adoptions that most positively influences student achievement. The HHSLT teachers spend a lot of time developing

their technology-oriented pedagogy so they can facilitate student learning in newer and more efficient ways. Becoming familiar with and utilizing technology takes time before it can be integrated with curriculum and activities and shift from teacher–centered behavior to students using the technology. These teachers often wonder if using technology with students is worth it because not only is it a time absorbing process but having to shepherd a classroom full of students growing with the technology can be a tremendous learning curve that absorbs precious class time.

Working through time and collaboration issues was identified for HHSLT teachers along with the freedom for them and students to take educational risks. Teacher adoption of technology takes painstaking efforts to find the time and ability to collaborate with students and other teachers. All of the HHSLT members demonstrated traits of being dedicated and resilient with their technology-oriented pedagogy pursuits. Cherrie demonstrated her dedication to time and collaboration when she took an educational risk by applying for a Toyota Grant to teach a project-based unit on the use of seat belts. Hays High School had gone through a series of teen deaths from vehicular accidents and Cherrie was looking for a way to make a permanent impact on the community. She had obtained a grant from Toyota to support teaching with technology and decided the summative activity for the Toyota grant project would be to have students create public service announcement videos and play them on the school's cable television station. This pedagogical decision was time intensive and involved the highest forms of learning and retention but she felt it was absolutely necessary. Carrie summarized Cherrie's process of analyzing her technology-oriented pedagogical decisions of prioritizing the use of video to teach the ultimate outcome of the importance of wearing seatbelts this way,

> Cherrie said that her students realized that a lab she did to reinforce the reason to use seatbelts resulted in students remembering to buckle up. It is what every teacher wishes for, that what we teach makes a difference in their lives.

It has been two years since that unit educated our community through public service announcements and our high school has not had any seat belt related deaths to date.

Once interview highlights were reconstructed and shared with the whole group, participants were guided to member check for accuracy and confirm the positive core highlights from their notes that were summarized on the easel pad. After hearing the interviews from the group, Cherrie reflected on one of the main themes by saying, “I was impressed with the dedication of my colleagues’ to student-centered learning.” HHSLT members then collaboratively identified and mapped these common themes and patterns that supported their descriptions of high point technology-oriented pedagogy experiences that positively influenced student achievement. After the mapping and document review of the positive core in an appreciative manner was completed, our recorder summarized, posted and shared a web-document of the positive core themes and patterns. Just before lunch the HHSLT was guided to conduct semi-structured participant paired interviews with someone different than they had worked with previously to reconstruct their values.

Reconstructing Values Interviews,10:50 a.m. - 12 p.m.

The purpose of this AI activity was to exchange stories about what HHSLT members value most about themselves and others in USD 489/HHS. I reviewed the paired interview protocol and the reconstructing values interview guide, and then organized them into three teams of two. HHSLT members were reminded that they would richly share the stories that their partners value about themselves, others, and USD 489/HHS with the whole group. Carrie and

Daryl decided to interview each other, which was special for her, as she later shared, “This activity allowed me to reflect with one of my former students.” She further reflected on the process, “People often say it is difficult to talk about our good points – but this was a nice opportunity to talk about what we value – both in ourselves and in our colleagues and our building and our district.” As a whole group, participants shared from their notes on the reconstructing values interview guide. Each participant was given time to appreciatively share about his/her partner.

The HHLST identified the following themes from their shared values for themselves and their students: relationships, support, freedom to take educational risks, and a good work ethic. After seeing the values document posted and considering the range it covered Lora said, “This, too, is challenging. I guess I had never really considered these questions as they relate to me as an educator. It’s challenging and a bit intimidating putting yourself out there for all to see.” In their semi-structured paired interview Cherrie and Daniel talked about the importance of relationships in describing the values of being respectful, understanding, and working in an environment where it is acceptable to take educational risks. Cherrie shared some of Daniel’s values about the importance of relationships and the freedom to take educational risk,

> His most important value is that he is accepting of others. … He has applied emotional quotient (EQ). He is very empathetic. Let’s see. What does he value the most about his work? The people who are around him everyday are very nice people. He doesn’t go home with tensions from work relationships and such. He also enjoys helping the students. What he most values about 489/Hays High School is the lack of micro-management.

Dave interviewed Cherrie and the importance of relationship was also evident, as he highlighted the values of relationships and support when he said this about her:

> I interviewed Cherrie, and what she values most about herself is her ability to give and receive love. And her special talents, gifts and attributes were curiosity, musicianship – now I didn't know that about her musician thing - normally her kids are musically inclined and she is almost a perfect speller. Let's see what does Cherrie value most about her work? It is students, parents, staff, teachers, administrators, and the…chance to affect kids' lives. She loves the opportunity when kids ask all types of questions to help them find meaningful answers. And what does she value most about 489? That is, it's a well-run school in terms of discipline and the support that the administration gives us along those lines. If we ever have to get into an issue we are always backed-up.

Daryl was once Carrie's student at HHS and has many times credited her for influencing his life through her teaching qualities such as relationships and a strong work ethic. In his member checking for accuracy and validity of Carrie's values, Daryl expressed his appreciation for the characteristics he valued about her,

> I interviewed Carrie who I had as a teacher many years ago. She has the qualities that I believe most teachers have - kind, caring, hardworking, overachieving, and innovative. It takes a kind heart and a patient soul to teach. I believe that these are great qualities for teachers, because I think we need to teach kids to overachieve. The best teachers always set high goals for their kids.

Participants were asked to listen for the common factors that describe the characteristics or qualities of what they value about themselves, others, and USD 489/HHS. HHSLT member checking was accomplished by participants reviewing and confirming the accuracy and validity

of the information while the recorder listed summarized comments from each participant on an easel pad and then shared it on a Google doc's web-document entitled HHSLT Reconstructed Values.

HHSLT participants then collaboratively discussed common themes they heard or saw from the Reconstructed Values document that supported patterns of common values about them. Once again, the HHSLT collectively agreed and identified relationships, support, freedom to take educational risk, and a strong work ethic as the common patterns or themes from their shared values. The relationships theme included characteristics such as accountability and responsibility with technology among students and staff that is trustworthy, respectful, and understanding. Support themes had specific characteristics of reliance on tech support and administrators while not being micro-managed. The strong work ethic theme had teachers expanding their creativity while expecting students to be hard-working, over achievers who have the confidence to just click "NEXT."

Having good relationships geared toward student centered learning was very productive and efficient in courses that prepared for state assessments for Mark, who contributed to the relationship theme discussion by summarizing some of the characteristics involved with good student and teacher relationships, "The respectful theme kind of crossed over when we talked about relying on students with mutual respect, collaboration, and understanding both led to efficiency for state assessment preparation." This quote illuminates the relationship pattern of respect that results in productivity between students and teachers. For Mark, technology-oriented pedagogy with student projects fosters collaboration between him and students as co-learners, dedicated to helping each other construct knowledge that positively influences student

achievement. This is preferable to the shallow learning that often accompanies worksheets and lectures.

Daniel constructively synthesized how having freedom to take educational risk gives space for collaborative creativity between learners to solve problems and figure out the best way to do things, which in turn increases efficiency,

> And are we not all really like that when we say efficiency? You know we're all probably like this, I've said this about myself for the longest time and I know everybody's feeling the same way, is that you know, if you want me to do something and you want to tell me how to do it fine, I'll do that. But if you don't tell me how to do it I'll figure out some way to get it done and then I'll expand on that as well. Maybe I'll figure out an easier way to get it done than maybe the way that you suggested. And I know that we're all that same way so when you say the lack of micro-management, that's what it is. Here's what you're supposed to do, now go and take care of it. So when you tell us how to do it, we'll do it that way, we may not like it exactly that way, but if not we'll figure out a way to get it done.

HHSLT teachers and their students feel empowered to take educational risk with various approaches to teaching and learning and accomplish the individual and organizational goals knowing they have support from the administration.

Carrie works with web team students that spend 30-60 hours a week on district web site projects. This exorbitant amount of time is physically possible because of her students' strong work ethic, students who are empowered with laptops, software, and administrative passwords to complete projects off campus. In another conversation, Carrie discussed the value of teachers'

expanding their creativity with overachieving and hard working students, who have advantages over those without access to the same technology-rich learning environment,

> Expanding our creativity obviously to me would go right along with the overachieving, hard-working thing. We could be satisfied with just the way we've been shown to do it or we can play with it and figure out an easier way for ourselves to do it. And you know, student confidence can be really not just ourselves but overachieving and hardworking as well, because they're overachieving through things that other students don't even have the ability to do, obviously, because they don't have the technology and things that we have. So our kids are going to be looked at as overachievers, maybe even hard workers or harder working when they get to college or somewhere else because they've had the advantage of using technology that we've given them in high school that other students haven't had.

HHSLT teachers were surprised at how aligned and consistent their values were with each other and believe this common bond has helped them solidify their roles as technology leaders at HHS. Mark expressed his pleasant surprise with the commonality among the thread of values, "I sat and listened to other teachers, then found myself agreeing with their statements, finding that they put into words what my mind wanted to say." When reflecting on their common values, Daniel wrote, "When selected as 'lead' teachers, the group became a homogenous subset. The underlying characteristic that brought us to the profession to me was apparent. Hence, we saw commonalities in character strengths." The document review was completed when the recorder posted the easel pad document on the wall and shared the web document entitled HHSLT Reconstructed Values Themes from the discussion. After lunch, the HHSLT returned to reconstruct their Best Traits and Core Factors for themselves and the organization.

Continuity Search- Best Traits and Core Factors Map, 12:30 p.m. - 2:10 p.m.

The purpose of this AI activity was for HHSLT members to exchange reconstructed stories about their partner's best traits in technology-oriented pedagogy that moves them and the organization toward a generative future and to identify their core factors that give life to the individual and organization's educational technology. I distributed the day's third interview guide entitled *Reconstructing Best Traits and Core Factors* and reviewed the process with the HHSLT members. Best traits and positive core factors move individuals and organizations into a positive, generative future. The HHSLT identified the following life-giving capacities that move them in this round of semi-structured, one-to-one paired interviews with each other. Each person was reminded they were to richly share the story of their partner's values to the whole group after the interview. It was evident that these interviews prompted Lora to reflect more deeply and see what she had in common with the other participants when she stated, "I had not thought about what makes me 'tick' in the pedagogical sense. This really was an eye-opener in the sense that we participants are life-long learners." The HHSLT listed each of their individual best traits and summarized the entire listing. Again, the HHSLT identified the same themes and organized them into three categories: a) Student-centered learning, b) Collaboration support, c) Freedom to experiment and take risk pedagogically. While the HHSLT showed their philosophical consistency of listing constructivist student learning, the collaboration support and freedom to experiment and take risks pedagogically were again listed as a priority with the HHSLT's best traits. Alice had student centered learning as one of her most important best traits and stated,

> I would add that learning is best when it targets students' abilities, interests, and is important to them. This is true of adult learners too. We learn what is important to us. By targeting students' interests, and by learning about their instructional levels, we can better

> prepare lessons that meet these needs students have. In turn, students often see success in the classroom. Success in the classroom generates interest, confidence, and independence. It also cuts down on poor behavior.

Alice and Lora both identified their best traits as collaborating with other teachers and bouncing ideas from one person to another with the support of the technology team. Lora expressed gratitude that her best trait is contextually supported,

> You know what else I appreciate? I appreciate the positive environment that I work in, you can say, "hey I've got this great idea" and your peers will say, "Yeah let's do it." I've worked in places that some people would say, "That will never work."

Collaborating with other teachers requires an environment with positive and supportive people to model collaboration for students and to encourage people feeling free to take educational risks. Cherrie agreed with Daniel, as they were giving best traits to the recorder, that one of USD 489's best organizational traits was freedom to take risks,

> You could put safety; it could be a lot of things…physical safety, but safety that you don't worry that what you teach that you're going to…I think that you can teach, yeah…not micro-managed. No one gets nitpicky about what we teach in the classroom.

Daniel, reflected on a time when individual teachers were encouraged to explore and had the freedom to take risk with many topics outside the present tested curriculum, referring to the days prior to NCLB,

> Wasn't that the way it used to be? You hire the best people you could find and you let them do their job. But it's not quite that way with the testing and such anymore. You were expected way back when, when they got out of high school they had the information that they needed to work in whatever field…

Carrie jumped into the conversation, motivated by the topic of freedom to take educational risk and lack of micro-management, by saying, “We know we are accountable with testing and it’s nice to know we’re not going to be pushed and shoved.” It was then pointed out collectively, by the HHSLT, that freedom to take educational risk takes trust, accountability, and responsibility on everybody’s part.

Best traits of individuals and organizations are supported by core factors. The HHSLT then listed all of their individual and organizational core factors that are essential in giving life to the educational technology of USD 489 and HHS, without which educational technology would cease to exist. The HHSLT then summarized the entire core factors listing into three categories: a) Constructivist pedagogical philosophy, b) A culture of contextual support such as financial, technical, training, and time for collaboration, and c) Freedom to take pedagogical risk with visionary leadership in the organization.

Daniel said this about his core factor of freedom to take pedagogical risk, “The most important thing the district has contributed to my life was the freedom to go beyond what we have already done and the freedom to explore.” He paused and then added this about one of his best traits, “Staying current validates why I can go and read *Science News* for two hours.” After reconstructing their partner’s best traits and core factors that give life to the individual and organization’s educational technology, the whole group shared those stories with each other. Lora identified many of the core factors such as collaboration, freedom to take risk and contextual support, summarized by other HHSLT members when she said,

> I’m at my best when collaborating with another teacher and bouncing ideas from one person to another with the support of the technology team. Again, I see many of the same traits in my colleagues, collaboration with colleagues, Computer Care Unit (CCU) and

> tech support, freedom and creativity to explore, and making learning more student-centered are all important factors to us.

All HHSLT participants observed the ground rules and roles while taking the opportunity to share what he or she appreciated about his/her partner. During member checking, the recorder listed the summarized comments from each participant and shared the web document entitled *HHSLT Best Traits and Core Factors*. Participants were asked to listen for common factors that describe the Best Traits and Core Factors of themselves and USD 489/HHS. As Mark listened and reviewed the list, he told the group, "I know your pain and pleasure. We shared many of the same ideals." After listening to the core values of the HHSLT and later reflecting, Alice wrote,

> The focus of the whole group discussion revealed that technology helped our teachers maintain or improve lessons that are student centered. We focused on how support—tech support and training, BOE support, and community support—as well as collaboration helps technology to be a tool used in good pedagogy.

I then had the participants review the items and notes listed for accuracy and confirm the document review as a form of member checking in the continuity search of HHSLT best traits and core factors for technology-oriented pedagogy that positively influences student achievement.

The HHSLT discussed and identified the themes/patterns they heard or synthesized from the information posted on the easel pad. Alice summarized the teacher's best traits and core factors by stating, "We were good teachers before technology came around. Technology merely enhanced what we were doing." The researcher filed the *HHSLT Best Traits and Core Factor Themes* document on a common shared web Google document file. The images of a shared

future represented by the teacher's best traits and core values were created by noting similarities and differences in the two lists.

Each member of the Hays High School Learning Team was given 14 sticky dots they used to create a scatter gram. They placed each of their sticky dots next to the core factors/best traits that he/she felt were essential or the most important to them as a whole. Carrie captured the essence of the activity and its outcome in her reflection, "Each individual was given 14 stickers to place (or vote) for the most important points of the day such as values, factors, strategies, and reasons for success as previously noted, most of us placed stickers on the same values." The HHSLT votes on the combined list of best traits and core factors resulted in three areas of priority in the following order: a) Working with people who have a vision and are student centered; b) Contextual support from techies, administrators, Board of Education and the community; c) Time to collaborate with students and teachers. HHSLT participants then discussed these themes in the placement of the numbers of dots that ranked from first to last in voting. As the group was reflecting on the results of their votes and the rank order of their items on the scatter gram, it was pointed out the laptops did not receive one vote as a core factor for the teachers. This was an HHSLT realization, affirming that philosophically teachers have always focused on what students know and need to learn or be able to do but the pedagogy has changed because of the tools available. Teaching has changed because pedagogy now involves different technologies such as web based course management systems, internet software and hardware that link world-wide resources, on-line data bases with unlimited search capabilities, and real time forms of communication that network global communities. Lora's comments reflected that observation,

> I think, you know, whenever we've had groups come in to visit and they say, "well how has laptops changed your teaching?" And I'm like, "we teach the same stuff. We just do it in a different manner. We use it as a tool to get the kids from here to here." and I said, "I'm still teaching *To Kill a Mockingbird* but I do it differently."

Lora collaborates and visits with many groups of teachers across the state and she openly invites inquiry of her pedagogy by others. Collaboration between teachers and students occurs with or without technology as Lora explains to other teachers in this quote, "And I think that's where it's kind of like … oh! I'm trying to think, we collaborated, I collaborated for years and years and just because we don't have computers, doesn't mean that I'm not collaborating anymore." Lora tells of such a process where her students were exposed in a technology rich environment of wireless 1:1 laptops and the students shifted from technology viewed as a toy to technology as a tool for their learning,

> So I mean, it's like Daniel said all this is going on it's just used differently now. As freshmen, the laptop is a novelty item and at first they're all in the hallway, you know, you trip over them because they're texting, you know, instant messaging and playing their games. But then by their junior year, you know, well even as sophomores, but as they get older this just becomes another tool. I mean, they may still use it for entertainment purposes but their attitude towards it as a tool changes and I always thought that was kind of cool to see because we wanted them to see this not as just a toy but as a tool for learning and working because in their work environment, they're going to have technology that they'll have to use as a tool. It will better prepare them for tomorrow's challenges.

Teachers are always looking and experimenting with ways to motivate students to learn. HHSLT members agreed that using technology to reach students is a powerful pedagogical technique. Lora is an expert at using technology to reach students and motivate them to learn in new and different ways. She had this to say about her teaching with technology.

> Technology helps us to focus on strategies rather than the content because, okay, I can recite *Romeo and Juliet* to you but I have to know the best strategy for teaching the type of kid that I have in my classroom, whether that kid is an honors kid or a kid who struggles. It helps me to find new ideas and new ways to reach them.

Lora knows how to focus on the student and center strategies on the individual student instead of using technology-oriented pedagogy just as a teacher behavior.

The purpose of the scatter gram activity was to give a visual representation of what best traits and core factors are most important to the HHSLT as a whole. This became their shared images of pedagogical best traits and core factors of a preferred future for themselves and the organization. The HHSLT then moved into an individual reflection as their last activity for Day One.

LHRHCCM Reflection of HHSLT Day One, 2:10 p.m. - 3:00 p.m.

The purpose of this final AI activity of the day was to reflect on the day's activities and give the HHSLT members an opportunity to privately express or distinguish any feeling or idea that for whatever reason they did not communicate during the day about each scenario. As the researcher, I concluded the day by reviewing Day One activities in the Reconstruction Stage and previewing the Day Two, Envision Stage activities for the next day. The final activity for the HHSLT Day One Reconstruction Stage was an individual reflection with rich details of the entire day.

I emailed each member the LHRHCCM word document to reflect on the day's activities of what they heard or espoused in the right hand column. The agenda was listed in the right hand column simply as a guide to remind them of the discussions of what was articulated. Once they finished constructing their perceived dialogue in the right-hand column, they read their constructed dialogue and in the left-hand column wrote down what they thought or what theories they really use but did not communicate aloud for whatever reason during our interviews and discussions. I gave these directions as an example,

> On the right hand side describe the event as you see, heard or understood it; write how your interview or meeting began; what you actually said; what others said; then write your response to their response; continue the scenario until you have described the itinerary event. On the left hand column write any feeling or idea that you had that you would or did not communicate for whatever reason about each of the scenarios.

I reminded them that their reflections were confidential and their identities would be protected and the information would not be used against them in anyway. The reflections captured during this activity were used throughout. The information in the reflections varied from those who did not reflect very deeply to those who really gave some rich insight that they did not share publicly with anyone until they used the left hand column for reflection. I was able to see if the espoused theories from the HHSLT members were the same as their governing values and beliefs in their left hand reflection. This completed the HHSLT day one activities and we would now begin the HHSLT day two, Envision Stage.

HHSLT Day Two – Envision Stage

The purpose of the HHSLT day two, Envision Stage, was to have the HHSLT envision what could be the possibilities for themselves and USD 489 with technology-oriented pedagogy

that positively influences student achievement. We began the day, as a whole group, by reflecting on Day One's learning. Reflections varied between the new and veteran teachers. Some felt the timeline was the most important thing because they had never known or seen the big picture or the district's adoption continuum. Others felt that hearing the highlight experience stories from their colleagues was the best part of Day One because they learned to appreciate them in new and different ways.

Daryl, the youngest teacher who has been pushed out of his comfort zone to teach in a new and different way than he has experienced in his educational journey, stated,

> I like the time line there, me being the young guy here, you know, when I started [the technology] was all there. You know, seeing how it progressed and seeing where the laptops started, where the desktops started. I thought that was kind of neat.

Veteran teacher Daniel followed up by saying, "I've been teaching for 25 years and well, when you look at the timeline and think about how much we've changed in that short amount of time it's amazing." Alice shared her thoughts on the timeline by saying,

> I guess reflecting for me thinking about it a little bit was you know, enlightening that we really have picked up the pedagogy and the vision of this thriving with technology. Technology was kind of on the backside of teaching. The technology is pushing the pedagogy and that uncomfortable feeling that we need to keep changing.

I shared notable quotes from each HHSLT member from Day One. One of the most notable came from Daniel who offered the infamous "A pig doesn't get fat by weighing it." Daniel's quote of constantly weighing the pig represents his frustration with the federal government and states that use NCLB to dominate the use of a school's technology to just test or assess students instead of using it for hands-on learning or formative assessments that produce correctives and

enhancements. His quote hit a chord with the HHSLT because they share his constructivist philosophy of using technology-oriented pedagogy for student centered learning not just organizational high stakes summative assessments.

Carrie identified the quote "Just click NEXT," which represents how her relationships with students help them find new ways to achieve by being more self-reliant. Lora believes her students receive many benefits by having a good work ethic, when she said, "My kids are not inhibited but empowered, confident, competent, and knowledgeable." Keeping in line with his positive use of technology to focus on being student-centered for maximum achievement, Mark said, "Technology gives me more time to plan, research, and eliminates the busy work that can dominate a teacher's day. The web-based software, Quia helped me to differentiate instruction in the classrooms." Mark, like rest of the HHSLT, uses technology-oriented pedagogy to eliminate the time soaking events that pull away from the teaching and learning that they have prioritized as important.

Using a power point presentation, I introduced Day Two with understanding of positive image-positive action. The idea of envisioning a positive image to result in a positive action was conveyed through the warm-up activity entitled "*I made a difference."* Everyone was asked to give an example of how they have made a difference in someone's life at some point, whether it was big or small. Although the stories were different, they also had much in common, as all expressed creating ways for people to be successful. Stories from Daniel and Mark are shared here to illustrate the range of stories that HHSLT teachers told. One story talks about an individual finding a way to make a difference with seemingly insignificant people across the world that most people could not reach and the other story talks about finding a way to make a difference with the seemingly insignificant student that lives under our feet that most people

cannot reach. Daniel told a story of how he used internet technology to make a difference by providing small loans to people in developing countries,

> Just in terms of difference though … I've been using KIVA - kiva.org and it's a micro-lender. And families in Cambodia needed $200 to buy produce to put in their store and they have applications and you can go in and you can sponsor micro-loan sand put it on your credit card, give them $75 or $50 bucks. Then you can visit with them by reading their blog so you know about what you funded, and then it gets real addictive to try and help as many families as you can. Then you get this whole list of people you are sending money to and you get a little story back as to how they're doing. It tells you where they're at. Now I'm buying cattle for guys in Azerbaijan; they're all going to get a cow. And it's kind of fun to do that and it's been very rewarding. Of course you have people that don't make it too. One guy wanted to buy a tractor and he defaulted. He was growing bananas. Most of them do ok and then when they pay the loan off the money goes right back into your account and it's an interest free loan.

Mark told his story of how he made a difference in a student's life. His story is significant because it illustrates that everyone has the ability to make a difference in someone's life but we have to recognize when we are the only one who can make that difference. Mark's pedagogy and relationship with this young man struck a chord that connected with him for student centered learning.

> Ok, I have a story. When I first came here to Kansas I taught American History for one year, and I probably shared this story with you even when I interviewed, but I'm big on trying to develop my activities around every single type of learning style. I'll try and have a listening activity. I'll try and have a reading activity. I'll try and have a group activity. I

try to incorporate every type of learning style so that if the kids are bad in one they'll get better at it and if they're bad in a lot of them, we're still going to hit the one that they're good at so they'll get the information the way they like to learn. Well in Plainville it was a junior kid and the American History I was teaching over there, which was in Plainville, I was the social studies department and you taught everything. And he was a great athlete and he was rarely ever eligible. His grades were atrocious but he was doing ok in my class. When we got him in school then he would take care of his business when he was in the classroom. If something went home with him he would rarely get it done or anything like that. I just remember that when we had parent teacher conferences I was sitting there visiting with him and his mom. Mom would say, "Now look your grades in Mr. Mark's class are this and you're failing all these others, how come? I asked the student, "I know that those classes aren't as tough as this class can possibly be, so how is it that you're doing well in here and you're not doing well in all the others?" And he said something like, "Well, he makes me learn, although I don't want to." And I think that was simply because the way I did things, whether or not he wanted to get it, he was still getting some of it anyway. So that's just one I like to always share about not only myself, obviously, but we make a difference in practically all our students. Somewhere down the road we probably make a difference in practically all of them.

This activity was full of inspirational stories like these two that helped the HHSLT members see themselves in a positive image so they could contribute to the positive action of envisioning bold new possibilities for the district on a novelty journey.

Novelty Journey - Bold New Possibilities, 9:30 a.m. – 11 a.m.

The purpose of this AI activity was to have the HHSLT envision bold new possibilities for educational technology in USD 489. Participants were asked to share with a partner that they had not worked with yet to envision these "Bold New Possibilities" like no one has dared conceive, for a more effective technology-oriented pedagogy that will positively influence student achievement in USD 489/HHS. HHSLT members were asked, "What three wishes do you have for creating the ideal technology-oriented pedagogy to positively influence student achievement at USD 489 and HHS?" Taking away limitations gets people thinking in ways they might not have thought possible before. HHSLT members were told their bold new ideas will be shared with the USD 489 Board of Education and technology committee in considerations for the next district lease.

The Bold New Possibilities from the HHSLT are unique because they are the only group in our district qualified to speak to the knowledge of technology pedagogy that can positively influence student achievement. The district has a team of techies, administrators, Board of Education members and patrons but the HHSLT members are the ones who know how to put theory of teaching and learning into practice. They have the pedagogical knowledge needed to make sound educational decisions for technology leases so that it is more than just about the price of the box. Some of those bold envisioned wishes sounded like this: Carrie wanted several classes such as TV, radio, newspaper, yearbook, and web team all converged into one experience when she envisioned,

> A convergence media center that will contain journalism, video media, and web media in one area of the building with a pod and a conference center for common planning and

> collaboration. I'd then like to have the ability to customize hardware and software for student needs accordingly.

Then Mark boldly envisioned, "Having 100% confidence that our existing technology will work 100% of the time." One of Daryl's wishes was for, "Technology-oriented pedagogy to be student self-paced and they can learn at their own pace. If they could do that, we would have more time for 'hands-on' projects;" "Funding for technology to create an equal environment for teachers and students," was the wish from Alice, and then she added, "Time for training. Time to study about different ways to use technology to teach kids, to use technology to get to know our students interests and abilities to be more effective." Cherrie kept battling her critical thoughts throughout this process and wrestled with a deficit-based reality as demonstrated by her confidential reflection journal entry,

> Even though we were told to dream, it was difficult not to keep funding issues from creeping in – "How will we pay for this?" and "The public will never go for that!" kept running through my mind throughout this exercise. Of course, those were issues for the 1:1 laptop initiative and the general feeling in Hays still seems to be that the initiative is a waste of money, that kids don't need to be on their laptops all day, and that the money would be better spent elsewhere. This is all anecdotal; I have no numbers to back up these claims. So as we dream big, we have to think ahead, how to show the taxpayers that investing in our kids through technology will pay off in the long run.

A radically different envisioning from Daniel started with his bold question, one that challenges the century-old school model dominated by NCLB and testing mandates that he feels hinders student centered learning with technology-oriented pedagogy and all its relationship advantages.

> Could we restructure the school day? This would allow more flexible collaboration, an open-school concept, flex time opportunities, and that would mean more technology to get the lessons out to our students. We need a way to let students know that they need people skills, right along with technical or academic skills, which is why students also need collaboration to prepare them for real-world professions. That means that we, as teachers, need more knowledge of jobs or possible jobs in our field, so we probably need to be able to get out and see those jobs so we can help the kid's dream of possibilities.

Teachers who push the envelope with creative ideas worry about the consequences of irrelevant and inappropriate internet information hijacking their lessons and breaking the rhythm or the entire project completely because of filter limitations or constraints. Cherrie envisioned technology oriented pedagogy by wishing for, "The big dream of an uncompromising filter. Students could access all information safely. All things could be used without fear of misuse, students know that the information they research is reliable and then be able to use that information with confidence."

The HHSLT's Bold New Possibilities have the potential to move the district technology-oriented pedagogy to new boundaries that are centered on positively influencing student achievement. These Bold New Possibilities represent the dreams HHSLT participants have for themselves and the organization's shared future. The recorder summarized as the HHSLT participants shared with the whole group their partner's bold new visions, which were written on an easel pad and posted on the wall for everyone to view. From these interviews we gathered new ideas for our next district technology lease and posted them as the goals to obtain in our concept map, which was the day's next novelty activity.

Opportunity/Concept Map, 11:00 a.m. – 12:00 p.m.

The purpose of this AI activity was to map the qualities of the envisioned future of USD 489/HHS technology-oriented pedagogy that positively influences student achievement as they had imagined. HHSLT interview pairs completed the "Envisioning the Future" task. They were asked to imagine that five years had passed and they were describing the positive influence of technology-oriented pedagogy on student achievement in USD 489 and HHS. They were to envision USD 489/HHS as the top district and high school in state achievement because the staff is functioning as you dreamed and students are achieving as you had imagined. When the HHSLT returned to share as a whole group from their paired interviews they constructed an opportunity or concept map of their future envisioning for change. Again, the HHSLT identified the same themes with the opportunity/concept map and confirmed continuity with earlier high point experiences themes and values themes by identifying the Bold New Possibilities themes as: 1) student-centered learning; 2) contextual support for student-centered learning; 3) and freedom for teachers to take educational risk with visionary leadership. The core factors for individuals and the organization to create these Bold New Possibilities were identified by the HHSLT as having the following patterns: 1) a student-centered philosophy with visionary leadership; 2) an organizational culture with contextual support; 3) and collaboration to take educational risk. The core factor patterns were again similar to the patterns of the positive core from high point experiences. The following is how HHSLT members described some of the routes they created on the futuristic concept map to reach their Bold New Possibilities themes.

The benefits of a student-centered learning philosophy with visionary leadership made this visioning exercise exciting for someone like Cherrie because the student was viewed as an independent learner. She stated, "Students have the ability to think for themselves rather than just

relying on some talking head telling them what to think." She was referring to project-based learning that allowed students to explore and apply their learning to real life like her seat belt unit. Daryl and Lora agreed with Cherrie's student centered focus. They had discussed an alignment of math and English with real world applications that would have obvious value to the students and the community, which would then motivate them to follow their interest. After enthusiastically discussing some of the possibilities, Daryl said he was thrilled about, "Student achievement and the endless possibility of what students can do." The HHSLT participants thought their student centered visionary leadership would maximize technology-oriented pedagogy to positively influence student achievement because, as Daniel and Alice shared, "Instruction will drive the technology and will be seamlessly integrated into the curriculum." This was evident by their roles with district technology planning and integration with instruction. They see the day when instructors determine software and hardware for students based on what the objectives of the unit require and the units are selected based on student needs.

Cherrie saw the technology network of wireless internet filters and servers playing a more helpful student achievement role because of, "Very selective filters, thus freeing up time in the classroom to teach how to evaluate information, instead of just learning facts and regurgitating them for state assessments." Cherrie longs for the day when cumbersome filters and server issues that limit her customized student research are improved to the point of being a non-issue. While Carrie saw the focus of her student centered teaching as being, "Bits and pieces learning" focused on the students' customized needs for success. Besides converging related courses, Carrie wants the next district laptop initiative to drill into the individualized student needs of the courses they are scheduled to take and customize their laptops and software to meet the specs of the teachers and courses involved in their learning for each semester. With these

envisioned ideas the HHSLT boldly refined student centered learning but also identified additional contextual support needed between the community and educators, as described in the following paragraphs.

HHSLT members saw contextual support from the community as a collaboration of resources between the schools and community as an essential economic efficiency that placed schools as the hub of future society. Alice and Daniel saw their envisioned future helped with, "A systemic change in society where a form of socialism is accepted and schools are viewed altruistically." They described a society where economic efficiency came from a more socialist approach of government support at the state and federal levels with local Boards of Education having the necessary freedom to customize regional issues. HHSLT members were aware of some of the economic restraints that prevent an ideal funding of education such as a bad economy, the general public not wanting more taxes, flaws in the tax system, unfunded mandates, and educational cuts that the presently dominate the legislative actions. Other members such as Mark, believes that what helps shape their envisioned future is finding solutions to these issues because education is valued as the main economic development in society, "The economy recovered and is back on track with educational finance and the community is now embracing it." Public education has many critics and red tape. Carrie saw a day when those issues are streamlined with a cooperative business model. Carrie added that with a collaborative spirit, "The business world would join the educational world." Such partnerships would represent a newfound contextual support for education.

Contextual support in the form of collaboration between teachers is focused on student centered learning, and future collaboration between schools and communities is focused on each other's needs. These support needs may come in the form of funding, time to teach, training or

creative scheduling that considers the needs of the community and education. Doing so builds relationships that make a difference in each other's lives. Some of the things Carrie and Mark believe will support this vision of an organizational culture with contextual support from the community are,

> Teachers have got to implement the program and the community has to support it with funding, volunteer time, training and time has to be created with alternative scheduling of the school year. For example, kids go to school for three weeks, on week four, they only go three days and teachers collaborate on those extra two days. So… when day care becomes a problem the school system creates alternative classes for children so they still come to school but they participate in other activities.

Cherrie envisions the same contextual support to be a two-way partnership where education is student centered on community-oriented contributions by saying, "Students make positive contributions to their communities." Cherrie believes this partnership will build relationships of support because there will be direct correlation with resources to solve dual purposes for education and the community. Daniel and Alice saw the day when the community would prioritize education to the point that failing to educate our young people was not an option, "The community recognizes that there is need for change in education in order to provide for the future of our youth and the country itself." It was their hope that this view of education would produce a systemic change in society where a form of socialism is accepted and schools are viewed altruistically.

Mark was attracted to taking educational risk by collaboration with his colleagues, as he stated, "It would be a realized dream, being able to get out of the rut and collaborating with others, learning programs that other teachers know." Working with teachers on the district

software of Vision and School View had given him a taste of the exciting new software possibilities and the variety of technology-oriented pedagogy he could experiment with.

Daryl, expounding on the theme of collaborating to take educational risk, envisioned an educational concept map of changing the structure of the school with integrated curriculum through collaboration of different departments. Daryl boldly envisioned, “Restructuring of the school system by blending of curricular areas, for example: math and physics; realign curriculum to fit the students' needs; collaboration between teachers and departments for the benefit of the students.” Restructuring of the school system to take educational risk by blending courses would make it easier to collaborate between individuals and departments in the district if not eliminate the old model all together. Collaboration between individuals of different academic disciplines would be student-centered and course boundaries would be eliminated. This blend of courses would account for the integration of information in the future that builds upon the new knowledge gained and the adjustments required to empower students to meet tomorrow’s challenges. Such a future takes leadership and risk taking described in the following paragraph.

The theme for visionary leadership and freedom to take educational risk comes into play for the school and community to come together because Daniel believes, “Change does not happen without a reason: there must be a need and a consensus for change. The community must revise its view and appreciation of the role the educator in order to provide support for change in current practices.” This need and consensus of change cannot happen without vision from the organization and its leadership. Visionary leadership allows organizations the freedom to take educational risk. Alice and Daniel agreed but saw the need for a way to make the vision happen, and identified, “Visionary leadership to make the steps of change a reality” as the essential first step of such a process. The community will have to buy into the idea of freedom to take

educational risk and be open to experimentation with bold new possibilities. Alice saw future windows of opportunity in paradigm shifts with such need and consensus for change by the community in saying, “That with people being open to change, we will have to experiment with time and bricks and mortar. Consensus will be built and teachers bought into the change and time will be provided to have more freedom in the schedule.” Student centered relationships, freedom to take educational risk and collaborating support, again ring out from the HHSLT’s quotes of an envisioned future.

As a whole group, the HHSLT discussed the concepts of the imagined future and co-constructed the opportunity/concept map by using a bubble map graphic organizer on poster paper. Carrie reflected, “This was a good activity because it allowed us to ‘rethink’ the many concepts that we talked about and internalize them. Once we could reword them, we could draw how they fit into the big picture.” HHSLT members collectively created an Opportunity/Concept Map by placing technology-oriented pedagogy that positively influences student achievement in the center bubble. The Bold New Ideas were the outer lying cluster bubbles with stems connecting them all back to the center bubble. The stems became the identified Envisioned Future concepts from the HHSLT’s imagined future that represented the positive action toward a generative future of the Bold New Possibilities. Each HHSLT participant took a couple of Bold New Possibilities and placed them in bubbles on the outer realms of the graphic organizer. Lora said, “This helped me to see how everything fit together much like a puzzle. This piece fits with this one, etc. to create the whole.” Each member then chose an Envisioned Future concept or a combination thereof to represent the positive action to achieve the Bold New Possibilities. Cherrie later reflected in the left side of her journal,

This was my favorite part – how do we get there from here? What needs to happen in order to make the dream a reality? Who are the stakeholders, and how do we get their support? Here is where the creative possibilities start to increase exponentially. In Fareed Zakaria's *The Post-American World*, it is noted that there's a U-shaped curve along the continuum from concept design (top) to manufacturing (bottom) to marketing (top again). This curve represents the strengths of our country, both of which are heavily creative. That same book recognizes that although US science/math test scores historically rank very low compared to other industrialized countries, we have the gift of teaching our kids how to think and analyze and problem-solve rather than just dispensing information to memorize. Unfortunately, with the implementation of NCLB, we're headed away from our strengths as we try to match the other countries in terms of test-taking skills.

The Envisioned Future action statements were written on the stems to the outer bubbles to complete the Opportunity/Concept Map. Just before lunch, the HHSLT then posted the concept map on butcher-block paper on the wall and each member reviewed their contribution and explained how their positive image produced positive action. Just as the last member finished their explanation, Daniel anxiously jumped ahead of our process when he requested how to move the concept map into the Design stage of the AI REDD cycle, when he said, "I really wanted to connect the outside bubbles together as I felt that people skills should be related to facilities because the physical environment has a big impact on collaboration, like sitting in circles to visit instead of rows." The recorder summarized the Bold New Possibilities, the Envisioning the Future concepts and transcribed the Opportunity/Concept Map and posted them on the wall and in a shared web file for document review and member checking throughout the Opportunity/Concept Mapping activity. From these activities we created a map connecting Bold

New Concepts to the future goal of technology-oriented pedagogy that positively influences student achievement using the core factor patterns as the connectors. This generated key words and phrases for the creation of an Envision statement which were used in the following the activity.

Envision Statements, 12:30 p.m. – 1:00 p.m.

The purpose of this AI activity was to create an envision statement for USD 489. Envision statements help organizations and individuals capture the vision or dream. After lunch, the HHSLT returned invigorated and inspired by the AI process to capture the dream by crafting Envision Statements, in two focus groups. The HHSLT was in a playful mood and named themselves the "Craftinators" (a team of three members) and the "Mensa Group" (a team of four members). The new combination of HHSLT participants was divided into focus groups with HHSLT members they had not worked with previously. Their task was to create a statement using the most important ideas from the HHSLT Opportunity/Concept map. HHSLT members then projected their Envision Statements using shared Google documents that allowed all members to edit live on each other's statements. Each focus group produced Envision Statements. Cherrie had this to say about the activity,

> I found this process, distilling ideas down to their essence and expressing them in terms understandable by the public to be intensely fulfilling. I've been practicing that process during the last few years outside the classroom, so I tried not to take over that process from the other group members.

The Craftinators created an Envision Statement reflecting the themes of collaboration, freedom to take educational risk, and student centered learning: "By 2014, what we most envision in terms of technology-oriented pedagogy that positively influences student

achievement is the entire community collaborating to foster innovation, vision, ingenuity, and excellence to produce self-reliant and accountable students." From the Mensa Group came an Envision statement that highlighted the collaboration and a culture of contextual support themes: "By 2014, what we most envision in terms of technology-oriented pedagogy that positively influences student achievement encompasses students, teachers, and community collaborating within a productive learning environment to create thriving, independent adults." The HHSLT focus groups throughout this entire activity demonstrated collaboration focused on getting the keywords to represent the themes of an envisioned future. This gave them ideas to describe what the future would look like in the creative presentations, which was the day's next activity.

Creative Presentations/Novelty Metaphors, 1:00 p.m. – 2:15 p.m.

The purpose of this AI activity was to transcend a positive image of the HHSLT Envision Statement to positive action through creative presentations and to capture the essence of the envision statement in a visual representation or metaphor. The HHSLT focus groups were instructed to choose a creative way to present their Envision Statement as if it were happening now. The Craftinators used the interview presentation and the Mensa Group re-enacted a TV news report. Lora had this to say about the creative presentations,

> Fun! This really appeals to my creative side!! It was fun to sort of 'let our hair down' yet while making some valid points. If we were actually able to do some the things from our dream list, this could be a possibility. Wouldn't that be neat?

Creative presentations allow the focus groups to identify the core factors that will sustain their envisioned future. The fun and excitement of the AI process during these creative presentations was demonstrated in this exchange between Daniel, acting as the Good Morning America

reporter interviewing Carrie, acting as a future HHS student experiencing the bold new possibility of convergence in the school media classes:

> Daniel: Welcome to Good Morning America. This is a great day for us. I'm on location here with Alice. We got on this little plane and came down into this city called Hays, Kansas. Now here in Hays, Kansas it has been recognized by USA Today as the best small community in America. And so now that we're on-site here in the location of Hays High we need to see what the students are saying about what's going on here in this best community of America. So I have a student, Carrie, with us here today and she's going to tell us a little bit.
>
> Carrie: Well, thanks for having us here. I just want to tell you about this really cool place we have where like all of our media classes meet. It's called like the team meet and together we create a daily newspaper and like video cast and website and like all these guys get together. And we put the news out, we put the info out. It doesn't just go to our school, it goes, also goes to our town. Like my grandpa can see it in another town and my friends are in this other class there where there are like three teachers and they have couches in the room and like pops and a refrigerator. And they come in and they work and like we can just sit and relax and we can get help from the kind of teacher we need and like we work on English and History and Science all at once so like we're reading this historical literature stuff and it's cool to have teachers who understand what it all means and I don't have to go to one teacher.

The core factors themes of student centered learning relationships, freedom to take educational risk, and contextual support of collaboration are all represented in Carrie's single response in the mock interview.

After the creative presentations were completed, as a whole group, the HHSLT discussed and identified themes or patterns. They identified student centered learning relationships, freedom to take educational risk and contextual support of collaboration as themes. All themes were reflected in the presentations from the HHSLT Opportunity/Concept map for the most effective technology-oriented pedagogy that will positively influence student achievement.

Positive images help foster positive actions within an organization. With this in mind, the focus groups were given a brief introduction to the metaphor, choosing a metaphor, and creating/drawing the metaphor from the protocol work sheet by Lora, the English teacher, as prearranged and agreed to with the researcher. The goal was to choose a visual representation (metaphor) that illustrates the essences of their Envision Statement from their focus groups. The essences of the Envision Statements were the themes or patterns of collaboration support, freedom to take risk with visionary leadership and student centered learning relationships. The Craftinators chose a space warp image metaphor entitled “Innovation Excellence.” The rings in the time warp were labeled with all of themes of technology-oriented pedagogy that positively influences student achievement. Mark had this to say about their image the Craftinators selected, “Truly through the use of our space warp image this demonstrates how each step of technology leads to the advancement and enhancement for the future.”

Both focus groups choose to download images from the internet that represented their Envision Statement key words or themes. They pasted their selected and edited images into the Envision Statement shared web document. The Mensa group selected a picture of a side profile of a girl’s face with the eye being a world globe and her future vision being several globes extended out from her face. Daniel had this to say of his Mensa positive image metaphor that represented his ideal worldview,

I was lucky and found an ideal picture for the worldview, as I think the vision of technology is the flattening of the world and collaboration. The access to the internet brings the entire world, good and bad, into our student's lives, minds, and values.

The focus groups then shared their metaphor and explained how it symbolizes their envision statement using the most important ideas from the HHSLT Opportunity/Concept map. Lora thoughtfully reflected on the group's work by saying, "I appreciate what the others found to encapsulate the ideas presented in the metaphor activity."

Collaboratively, the whole group created one Envision Statement for the HHSLT using the key words from their combined Envision Statements, "By 2014, what we most envision in terms of pedagogy-oriented technology that positively influences student achievement encompasses the entire community collaborating to foster vision, innovation, and excellence to produce accountable, engaged students who mature into thriving, independent adults." Daniel had this to say about the final product, "This process went great. For all the English teachers word-smithing was at a minimum, even though it was necessary, I think we ended up with a good statement."

The HHSLT discussed and identified the core factors and best traits identified earlier that were reflected through the presentations for the most effective technology-oriented pedagogy they believe will positively influence student achievement and refined the Envision Statement as necessary. We came to consensus in our follow-up meeting for the one Novelty Metaphor image that best represented the whole group Envision Statement. The HHSLT agreed to use the Mensa group metaphor with the girl's eyes "Envisioning" the ideal future worldview. That image will be used with the school's motto of "Envision" for the next school year.

LHRHCCM Reflection of HHSLT AI Day 2 Process, 2:15 p.m. – 3:00 p.m.

The purpose of this AI activity was to reflect on the day's activities and give the HHSLT members an opportunity to privately express any feeling or idea they for whatever reason did not communicate during the day about each scenario. As the researcher, I concluded the day by reviewing Day Two activities and documents in the Envision Stage and completed the two day AI Process. The final activity for the HHSLT Day Two, Envision Stage was an individual reflection with rich details of the entire day. Alice wrote,

> Overall, this experience is one I wish all teachers could experience. It was an opportunity to meet with other teachers from different disciplines to find commonality and to share thoughts and perceptions about the teaching profession and the impact technology has had on it. I am grateful for the opportunity to participate in this study.

I emailed each member the LHRHCCM word document to reflect on the day's activities of what they heard or espoused in the right hand column. Cherrie, who had some original anxieties of the potential risk of the researcher being her supervising principal involved, wrote,

> This two-day process was an enlightening experience in that the dedication, intelligence, and creativity of my colleagues spurred me to think more deeply about the role of technology in learning. All of my colleagues recognize that the technology is the means, not the end, and are very concerned about staying current with the hardware and software. At various times, we each expressed the need for more time to collaborate with our colleagues horizontally, within departments and vertically across the district. I've taught at other schools in the Midwest. When I first started working for USD 489, I was impressed with the high-caliber intelligence of the teachers at Hays High School. Through the ensuing years, some of the shine has worn off as we've weathered

> departmental squabbles and interference from the state board of education. These two days reminded me how fortunate I am to work at Hays High School with this group of outstanding professionals. Yes, it was good to work on technology. It was even better to have the chance to commune with other teachers on an intellectual level!

I reminded the HHSLT again, that their reflections were confidential and their identities would be protected and the information would not be used against them in anyway.

Summary of Findings

Three of the four findings from this study reveal how the HHSLT describe technology-oriented pedagogy that positively influences student achievement and one has to do with the AI process. The data analysis from my study revealed four relevant findings:

Finding 1: The HHSLT believes freedom to take academic risk with visionary leadership is essential for their technology-oriented pedagogy to positively influence student achievement.

Finding 2: The HHSLT believes a culture of contextual support is essential for their technology-oriented pedagogy to positively influence student achievement.

Finding 3: The HHSLT believes student-centered learning is essential for their technology-oriented pedagogy to positively influence student achievement.

Finding 4: HHSLT valued the AI process and found it meaningful to reconstruct and envision their technology-oriented pedagogical practices that positively influence student achievement for a shared and preferred future in USD 489/HHS.

Chapter Summary

Chapter 4 provided the four relevant findings from the data that were collected from my study with the HHSLT teachers. The four findings from my study were: (1) The HHSLT believe freedom to take academic risk with visionary leadership is essential for their technology-oriented

pedagogy to positively influence student achievement; (2) The HHSLT believe a culture of contextual support is essential for their technology-oriented pedagogy to positively influence student achievement; (3) The HHSLT believe student-centered learning is essential for their technology-oriented pedagogy to positively influence student achievement; (4) The HHSLT valued the AI process and found it meaningful to reconstruct their education technology experiences and envision how they could best extend their technology-oriented pedagogical practices that positively influence student achievement for a shared and preferred future in USD 489/HHS.

In Chapter 5, I discuss my interpretation of the four findings in the conclusion through my theoretical framework of organizational learning and the continuum of technology adoption, including recommendations for future research and practice, then close with a summary to the study.

CHAPTER 5

Conclusions and Implications

In this chapter, I interpret the findings in relation to my theoretical framework comprised of the Technology Adoption Continuum (Hooper & Rieber, 1995) as my micro theory and Organizational Learning (Argyris & Schon, 1978) as my macro theory. For the first three findings, I discuss the differences and similarities of my findings of the HHSLT's stages on the continuum of technology adoption and discuss the findings through Argyris' single loop learning and Model I governing values versus double loop learning and Model II governing values. For the fourth finding, I discuss how the AI process was meaningful to the HHSLT members as a Model II process through each of the AI principles and conclude each with a self-reflection. I will conclude Chapter 5 with the implications for future research and practice and close with a summary to the study.

HHSLT and the Continuum of Technology Adoption

Hooper and Rieber (1995) refer to teacher-centered approaches to instruction as having a behavioral focus, whereas the alignment of technology integration with constructivist pedagogy is considered a cognitive view of learning. In their framework, a behavioral focus is teacher performance oriented and a cognitive view of learning is the active construction of knowledge by each individual student. To capture this movement of learning with technology-oriented pedagogy, Hooper and Reiber identified and used a continuum of technology adoption that consisted of five stages: familiarization, utilization, integration, reorientation, and evolution (Hooper & Rieber, 1995). To understand how teachers can generate individual and organizational change to foster constructivist pedagogy with educational technologies, it is important to explore a continuum model of technology adoption to model how it is possible and

to reveal the actionable knowledge teachers can use to craft conversations that communicate the meanings they intend for organizational learning.

The growth for HHSLT and HHS during the last 20+ years can be shown in relation to the Hooper and Rieber (1995) continuum of technology adoption. To understand how the HHSLT members generated individual and organizational change to foster constructivist pedagogy with educational technologies, it is important to explore the historical evidence of their continuum model of technology adoption.

The USD 489 and HHSLT historical time line produced an overarching conclusion that the use of educational technology grew from sporadic individual adoption to an organizational culture of student-centered learning with technology-oriented pedagogy focusing on student achievement. Hooper and Reiber (1995) posit that a teacher's transformation from a behavioral view of instruction to a cognitive view requires them to go through all five stages of technology adoption to maximize idea and product technologies. HHSLT members discussed all five stages but evidence gathered revealed that all of them are in the top three stages of the continuum and all expressed the desire to continue to evolve with their learning. The following analysis of the USD 489 and HHSLT historical technology timeline illustrates a culture of organizational learning with technology-oriented pedagogy that is focused on student centered learning. Visionary leadership allowed staff the freedom to take academic risk with technology-oriented pedagogy.

USD 489 and HHS Enter the Familiarization Stage

In the pre-1990's USD 489 entered the familiarization stage of the technology adoption continuum when it made one of its first systematic technology efforts by installing Channel One educational television in each classroom in the high school. This was an early attempt to focus

on student learning with technology because it provided educational programming of relevant current events for every student in every classroom. It was also the beginning of the district's commitment to provide contextual support for technology.

All HHSLT members went through the familiarization stage at some point in their teaching career. Daryl, the teacher with the least experience most recently moved through this stage. In the high point experiences activity, Daryl described how he began teaching in the first year of the 1:1 laptop initiative. He became familiar with the projector, laptops, CPS units, and the web based software because he saw them as opportunities to extend his technology-oriented pedagogy for student achievement. He first had to understand their potential before he could use them. Mark, a more experienced teacher, entered the familiarization stage much earlier in the school's timeline of technology adoption. He did this by first collaborating with the high school business department and his social studies colleagues to become familiar with the web-based software Quia and MOODLE.

From Familiarization to Utilization

The first two stages of the continuum primarily involve teacher-centered behavior and focus on the teacher's familiarization and utilization with technology in management and teaching versus student-centered projects that integrate technology. In the early 1990's HHS teachers began transitioning from the familiarization stage of teacher-centered behavior with technology to the utilization stage on the continuum with the use of computer technology and the Internet. The district supported these efforts through establishing computer labs in HHS and providing each teacher with a desktop computer in the classroom, which gave system-wide access to technology. HHSLT members shared their experiences with moving from the stage of familiarizing themselves with technology to actually using it. Teachers with access to desktop

computers in their classrooms at first did not use them for instruction, but for management purposes, such as taking attendance. When teachers began to use technology in the learning process, in the days before schools had access to the Internet, computer technology was primarily used to teach typing and programming skills. Most functions of the computer merely replaced those of the typewriter. During the timeline activity, HHSLT teachers gave accounts of utilizing computer software to make resumes, for lesson planning, and to create spreadsheets to calculate and record grades.

Teacher centered behavior with technology also tends to be more concerned with monitoring and controlling students' technology use than utilizing and realizing its potential for enhancing students' creativity and learning. When Mark recently was training district teachers to utilize the School View monitoring software, he observed how some teachers were still stuck in the utilization stage because their focus was on using the software to police students and their only motivation was to catch students not using the technology appropriately.

Daryl, being a young teacher who had become familiar with computers in college, was ready to use his technology knowledge as a teacher right away when the 1:1 laptop initiative launched his first year of teaching. He utilized the write boards to replace the traditional overhead projectors and erasable markers for working math problems and then posted his digital classroom examples on MOODLE for students to review or make-up work. He also posted math games for review of instructional objectives with drill and practice through math games. This teacher centered use of technology for recycling math problems previously erased or missed by absent students helped in review and make-up of math work and lessons. Soon this utilization of technology became popular with other math teachers as the convenience had personal value to them and as students expressed its value to positively influence their achievement.

While constructivist teachers are durable and resilient, their success and visions for technology utilization cannot be accomplished without systemic and sustained support from the schools' context and administrative leadership (Hadley & Sheingold, 1993; Patterson & Marshall, 2001; TCER, 2008). The training like Mark provided led to district discussions on how to maximize future technology-oriented pedagogy to positively influence student achievement. These discussions, shared experiences, and visions brought USD 489 and HHS to a decision in 2000 to lease rather than purchase technology. The lease allowed everyone to be on the same page with access, hardware, software, training, and technical support. The district's commitment to support renewing all technology through a lease every three to four years established a broad technology-oriented pedagogical base that could be integrated to a sharp focus that positively influences student achievement.

Moving to Integration

In the mid 1990's USD 489 and HHS moved toward the integration stage on the continuum. HHSLT members listed the beginnings of their integration with technology adoption when they talked about scrounging enough district computers to create labs, having very limited internet access with text-only capabilities to network with other teachers and students, through Daniel using probes with students in science labs for checking temperature and pH values, and through introducing calculators in math classes for student use. These new developments required training of all teachers in district sponsored staff development workshops and began the many trials and errors of integration of technology for student learning.

Daryl is a teacher who is solidly in the integration stage, as he still views students as the object rather than the subject of education. He described beginning to utilize more technology in his classroom and moving away from traditional endeavors such as the textbook, worksheets,

and marker board technologies. He integrated the Computerized Performance Systems (i.e. CPS or “clickers”) into units to give him formative assessment information to adjust his instruction to positively influence student achievement in his units. As a young teacher, he responded to bountiful technology resources and was willing to learn but is just beginning to integrate technology for student centered learning. He uses formative assessment information and students and classroom data to adjust student-learning techniques, but his technology-oriented pedagogy integration is still half teacher behavior and half student centered and limited to formative data analysis.

Mark is an example of a teacher in between the integration and the reorientation stages on the continuum of technology adoption. His technology-oriented pedagogy values and skills focused on student-centered learning associated with positively influencing student achievement through state assessments. He was very proficient with the web-based software Quia for testing and real time feedback. The school and district used Mark’s Quia skills for not only analyzing data for individual student performance but to adjust instruction for groups and subgroups in the building among his department. These adjustments were discussed in collaborative staff meetings and collaborative conversations for student centered learning based on the values of achievement on the state assessments. While Mark’s technology-oriented pedagogy has positively influenced student achievement with test scores, his current pedagogical ceiling is limited to outcomes based competencies associated with standardized assessments. The challenge for Mark and teachers at the integration stage of growth in the continuum is to transform their espoused theories of reorientation and evolution into theories-in-use by learning a “new” set of skills and governing values that go with those stages of the continuum. Integration is the end of technology adoption for most teachers, but some HHSLT members made it their

launch of a constructivist classroom environment by accepting their role to progress to the reorientation and evolution stages.

Reorientation Stage

A few HHSLT members have moved from the integration stage to the reorientation stage, which took place when the classroom focused on students learning, as opposed to instruction by the teacher. These HHSLT members have accepted the role of nurturing a learning environment that assists and serves students as they construct and form their own knowledge. The impetus for movement to this stage occurred in 2004, when the district implemented a 1:1 laptop initiative at HHS through its second lease. In addition to providing each student with a laptop, the district established the infrastructure for wireless access to the Internet throughout the high school. It was at this point the district entered the technology adoption stage of reorientation, as it shifted from the computer lab model to an individual customer service model. The contextual support to foster such an organizational shift was centered on the Computer Care Unit (CCU) concept. Students and teachers were offered contextual support from the techies through the CCU to construct their learning with the technology available.

Consequently, several HHSLT teachers reoriented themselves to the learner becoming the subject rather than the object of education and they constructed the journey together as learners because everyone was empowered via the 1:1 laptop initiative. These HHSLT teachers' constructivist technology-oriented pedagogy focuses on learning, not on technology. According to Dexter, Anderson, and Becker (1999) the technology becomes the supportive tool in which students construct knowledge through pedagogical strategies such as project work, action research, reflective practice, negotiation of meaning, and role play. Not one HHSLT member listed the laptops as a core factor or best trait to positively influence student achievement.

Lora is one HHSLT member who is in the beginning phase of the reorientation stage in the continuum of technology adoption. A culture of contextual support from the district and high school is what Lora attributes as the catalyst for her growth in technology-oriented pedagogy that positively influences student achievement. She told the story of the server space expansion as an example of contextual support acting as her catalyst for reorienting the laptops as a tool for student learning versus them being just a toy. Giving the students responsibility for posting and retrieving assignments online was the catalyst she needed to grow into a new stage of technology adoption. This gave her the ability to log student activity, which she used to hold students in her classes accountable for constructing their own learning on a 24/7 basis.

Cherrie represents a teacher who is midway between the reorientation and evolution stages on the continuum of technology adoption. Her use of project based learning with the Toyota Grant shows her student centered approach of constructing individual knowledge. Her use of educational technology provides constructivist ways to orchestrate an activity that allows the students different ways to express or act on what they know and can do (Means, et al., 2003). She fosters the construction of independent learners who are able to think for themselves. She values visionary leadership that supports her freedom to take academic risk through her technology-oriented pedagogy without nitpicky micro-management. She envisions her future with bold new possibilities in the safety of teaching classroom topics with the freedom to explore and stay current with *Science News* without filter and server limitations. She values the freedom to take academic risk with many topics outside the tested curriculum. HHSLT members described the culture of vision and academic freedom as having administrators that support teachers' technology-oriented pedagogical practices by providing ongoing technical support as

well as multiple opportunities for staff development and a strong commitment to technology integration for student achievement (Dexter, et al., 2003; TCER, 2008).

Alice is in the later stage of the reorientation stage in the continuum of technology adoption. She has the potential to move into the evolution stage because her best traits and core factors of technology-oriented pedagogy are centered on co-constructing learning with students' abilities and interests. Alice is motivated to move to the evolution stage of the continuum by the student success and interest generated in the classroom, which also breeds confidence, and independence. When Alice constructs technology adoption with teachers in the district, she experiences the same student learning dynamics.

As the district's Instructional Technology Coordinator (ITC), Alice attributes the contextual support factors for helping teachers find their student centered learning behaviors. To Alice, contextual support is a comprehensive, coherent blanket of district support for technology-oriented pedagogy including financial, technical, training, and time for collaboration. Teachers who adopt technology-oriented pedagogy in a constructivist manner need an environment of support from multiple catalysts to overcome these barriers to construct such knowledge (Dexter, et al., 1999; TCER, 2008). Alice's ITC position is itself an example of the district's commitment to contextual support for teachers' instructional technology. She meets with individual teachers and customizes their technology-oriented pedagogy. She constructs meaning of grade levels' and departments' technology-oriented pedagogy by surveying the staff's abilities and informed choice.

Alice values the visionary leadership and freedom to take academic risk as evidenced by her envisioned future of paradigm shifts with a change in the brick and mortar concept of education and the freedom to customize school schedules to individual needs. Alice described

paradigm shifts with the structures and schedules as action strategies to approach her envisioned future of interrupting organizational defensive routines and creating organizational learning processes and systems with double-loop learning to accomplish her bold new possibilities. None of her envisioned future paradigm concepts could be accomplished without the freedom to take academic risk and visionary leadership.

Evolution Stage

Two HHSLT members can be considered evolutionary, as they constantly change to meet the potential and challenge of applying educational technology to learner centered purposes (Hooper & Rieber, 1995). Members in the evolution stage are the ultimate constructionist educators who continue to evolve and adapt to meet the challenge and potential provided by new understandings of how people learn. By focusing their educational technology on the construction of knowledge with the active learner, these two HHSLT members have transformed themselves and HHS by moving through the reorientation stage to construct new learning for themselves and their students through continuing in the evolution stage. They have remained open and flexible to new understandings, which is parallel to how double loop learning works with people and organizations.

Daniel represents a teacher in the evolution stage of the continuum of technology adoption. He has a history of reorienting himself to the learner becoming the subject rather than the object of education and constructs their journey together. Daniel has not only been a pioneer of technology-oriented pedagogy at HHS but is the senior member of the HHSLT. The district's historical timeline revealed his progression through all five stages of the continuum. Daniel is a veteran of the evolution stage of adoption because he remains open and flexible to new understandings of constructing student centered learning. When Daniel described his high point

experience of evolving his technology-oriented pedagogy on a major unit of science from lecturing to a student hands-on experience, he defined himself as the ultimate constructionist. He is an educator who continues to evolve and adapt to meet the challenge and potential provided by new understandings of how students learn. Daniel's high point experience involved new understandings of how students learn with technology-oriented pedagogy with his global warming unit. He made the commitment to stop lecturing and convert the unit to a student centered learning experience. He began with using the CPS technology as the opening activity for formative assessment to determine what the students already knew. He then used technology-oriented pedagogy of probes to facilitate student centered learning with hands-on experiments. His students demonstrated a summative assessment by plotting data and drawing their own conclusions from their learning about carbon emissions. This was a high point experience for Daniel because he constructed new learning for himself and his students by continuing in the evolution stage.

On the HHSLT, Carrie was the most evolutionary teacher in the continuum of technology adoption. She emphatically expressed her appreciation for the freedom to take academic risk and believes visionary leadership is essential to maintaining her evolutionary stage decisions in the continuum of technology adoption. Her contemporary view of educational technology focuses on the construction of knowledge with the active learner because she has transformed herself by soaring in the evolution stage and constructing new learning for her students and herself. According to Dexter, Anderson, and Becker (1999), teacher development and the school change process are based on a teacher's beliefs and thus teachers become agents and the main catalyst for change. Her evolutionary influence with her web team classes has created a web-based culture for the entire district and the high school.

Organizational culture is linked to organizational learning because in a society of turbulent change, organizations have to have a speed of rapid learning which calls for a "perpetual learning system" (Schein, 1992). Carrie's web team has become the engine that sustains the rapid and perpetual learning for the district's technology-oriented pedagogy. She attributes the visionary leadership of the administration and freedom to take academic risk as the fuel for the engine of rapid and perpetual organizational learning at USD 489 and HHS. It is the job of visionary leadership to create and sustain such a culture and the leader's own assumptions are shaped by such feedback. Carrie's high point experience of the school's website evolving from a show-and-tell to a tool with real world meaning for the district and community was her epiphany. She was able to harness the dynamics of rapid and perpetual organizational learning experiences with her web team. This happened in the form of student access to permissions inside the school server with administrative passwords; 24/7 access to laptops in the summer with real world software, wireless internet; and access to tech support with training opportunities.

To summarize, the use of educational technology at HHS grew according to Hooper's and Rieber's (1995) continuum of technology adoption stages from sporadic individual adoption to an organizational culture of student-centered learning with technology-oriented pedagogy focusing on student achievement. All HHSLT members are between the integration and evolutionary stages on the continuum of technology adoption for USD 489, but the opportunity always exists for movement to higher levels because of the open culture of double loop learning and Model II theory-in-use. In order for an organization to learn or to move in the stages of the continuum, teachers and districts must inquire and develop action strategies that align with their governing values and theories-in-use. HHSLT members captured their movement from teacher

centered to student centered stages on the technology adoption continuum with artifacts such as reconstructed memories, concept maps, and envisioned programs embedded in their preferred future organizational environment. The following paragraphs use evidence from the artifacts reconstructed and envisioned by the HHSLT to examine the way USD 489 and HHS employ Model II governing values to correct for errors and their theories-in-use for organizational learning.

Understanding Technology Adoption at HHS through Organizational Learning

Learning at the individual or organizational levels occurs whenever errors are realized and corrections adopted. Argyris claims there are two ways to correct for errors. The first, which is single-loop learning, is to simply change the behavior, but not the underlying values or beliefs. The second is double-loop learning, which changes or adopts a new design that eliminates the present errors by addressing the values and beliefs of the organization or individual. Values and beliefs are ultimately choices individuals or organizations make and are not objective but normative thus producing generalizations whose validity must be tested.

According to Argyris (1995), "theories of action" inform organizational members of the strategies they should use to achieve their intended consequences. There are two types of theories of action, espoused and theory-in-use (Argyris & Schon, 1978). Organizational learning theories-in-use are categorized by Argyris (1999) into two models: Model I and Model II.

Learning and correcting for errors with adoption of technology-oriented pedagogy are based on a teacher's governing values. On the technology adoption continuum, those governing values range from teacher behavior learning to student centered learning. The misalignment of a teacher's espoused and theories- in-use creates issues of embarrassment or threat that unintentionally create individual and organizational defensive routines and inhibits learning. This

happens when teachers espouse student centered learning values but their theory-in-use is one of teacher-centered behavior. This single-loop learning on the continuum results in Model I governing values.

The stages of familiarization and utilization represent single-loop learning that can change strategies of action but leave the values of a teacher centered learning theory of action unchanged. The teacher centered learning with technology-oriented pedagogy theory of action is unchanged and Model I governing values informs their actions on the continuum. Model I governing values have four characteristics: (1) Teachers with Model I governing values rarely try to develop purposes with others or are open to altering their purposes into higher student centered learning values such as integration, reorientation, and evolution. They do advocate their purposes and simultaneously try to control others to achieve their purposes of familiarization and utilization; (2) Once they commit to these teacher centered behavior values in the first two stages, they feel that growing further in the continuum would be a sign of weakness so they maximize their winning (obtaining the first two stages) and minimize losing or growing toward more student centered continuum stages; (3) Then they suppress their negative feelings about the anti-learning toward student centered learning because they think it is poor strategy, a sign of incompetence or lack of diplomacy; and (4) To counter their suppressed feelings toward student centered learning, they rationalize anti-learning as only objective or intellectual discussions of the issues, no matter what the underlying feelings of what technology-oriented pedagogy is best for student learning. These Model I governing values of teacher centered behaviors, impede organizational learning to Model II continuum stages of technology adoption. The consequences are organizational defensive routines, which inhibits open inquiries and results in overprotecting the organization and individual. Carrie's technology-oriented pedagogy with her web team class

was an example of how her Model II theories-in-use empowered the students and benefited the district and high school.

Double Loop Learning and Model II Governing Values at HHS

Not allowing web team students to learn on so many meaningful levels of access, training, support, real-world meaning and creativity with such potential world-wide risk and face saving for Carrie or the district was resisted because it was viewed as anti-learning or a defensive activity. Sharing the power with anyone on the web team with competence and relevance in the action strategies is a Model II behavioral strategy. This takes commitment and joint planning from the leadership with all the individuals who are involved and need to be protected from others and themselves. The behavioral strategies of Model II visionary leadership make its own basic learning assumptions and foster such assumptions in the culture of the organization. Leaders, such as Carrie and the administration, manage the learning culture of these assumptions by fostering and communicating the vision, then reward those pockets of the organization such as the web team that represent the desired assumptions of cultural diversity (Argyris & Schon, 1996).

During the AI values activity, Carrie listed her main value as student relationships and attributed good relationships as essential to her productivity and efficiency in student centered learning. Humans are designing organisms and theories of action inform the actors of the strategies they should use to attain intended consequences. The values and beliefs of an individual govern their theories of action, which provides the framework for the action strategies chosen. That is why Carrie's student centered envisions for learning with technology-oriented pedagogy included "bits and pieces learning" focused on the students' customized needs for success. Carrie envisions the next district laptop initiative to drill into the individualized student

needs of the courses they are scheduled to take and customize their laptops and software to meet the specifications of the teachers and courses involved in their learning for each semester. Carrie with her vision, as a designing being, has created, stored and retrieved designs that advise her how to act if she is to achieve her intentions and act consistently with her governing values of student centered learning with good relationships of productivity. Her efficiency visions played out in her converging of related courses. That was consistent with her role she played as the future student at HHS who expressed all the positive efficiency virtues of the convergence course model for the TV interviews. She consistently designs and implements a student centered learning theory-in-use that is the same as her espoused theory. Carrie has persevered in the rapid and perpetual organizational learning of a web-based culture by correcting errors with double-loop learning and relationships that are productive and efficient.

From Single Loop to Double Loop Learning, From Espoused to Theories-in-use

To change organizations and their individuals into double-loop learners, interventions must trigger defensive routines and expose Model I blindness while introducing Model II theories-in-use. Model II theories are often espoused theories at the outset for members, but their actions are consistent with Model I governing values. Therefore, Model II espoused theories must be transformed into theories-in-use by establishing new beliefs and values. Most individuals and organizations are limited to acting on their own to make the transformation from Model I to Model II. Mark's training of teachers acted as an organizational intervener who triggered the Model I defensive routines.

The intervener must be an opportunist to trigger a re-education for organizational defensive routines and base learning on here and now data and values. HHSLT teachers learned from their defensiveness in the familiarization routine of anti-learning to not ignore the dilemma

and see it as an opportunity to learn. This is an example Model II organizational learning by HHS because it is based on Model II governing values of using valid information, informed choice, and vigilant monitoring of the implementation of the choice in order to detect and correct errors.

Mark triggered many teachers' defensive routines in their familiarization and utilization of School View monitoring software. The district used Mark's technology-oriented pedagogical skills as a model to train and intervene with other grade levels and departments for testing efficiency. Mark also used the student management system of MOODLE to link corresponding web sites and post his lessons, videos, and games that were exercises and reviews that were aligned with individual outcomes for the state assessments. This site was shared with colleagues and visiting teams of teachers who valued technology-oriented pedagogy with the 1:1 laptop initiative and testing strategies. His approach to student centered learning used Mastery Learning techniques that focused on the assessments as the big game and competition was used in his class to motivate students. Mark's technology-oriented pedagogy centers on immediate feedback with correctives and enhancements. He moved away from Model I single-loop learning with such strategies and the following paragraph explains why.

At the beginning of a continuum stage Model II theories are espoused before they become theories-in-use. Mark grew in the familiarization stage with Quia and MOODLE and talked about utilizing the technology in his pedagogy. The more he utilized the technology the more he espoused integrating it with student centered learning that positively influenced student achievement. Mark's interaction with colleagues is a form of intervention that exposes his Model II blindness and begins changing the teacher by challenging him with a new set of skills and values simultaneously.

Mark has moved from Model I governing values to Model II because his action strategies are to be open to learning new things and not become defensive or cover-up his shortcomings when introduced to new values and skills. This was why Mark was able to deal with the district software issues around School View, the district's student management software. School View was not working for teachers and the way the district corrected for those errors is important as to whether there would be engagement of the embarrassment or bypass and face saving. Mark engaged the issue with the teachers, acknowledged the impact of the learning errors it was having on the teachers and their technology-oriented pedagogy. He sought and gave information to test the theories in public to create trust and to encourage teachers' risk taking with technology. In the end, the School View software was more difficult than and not as efficient as the previous monitoring software owned by the district. This learning experience and correcting for errors by teachers was communicated in the district with the commitment to change monitoring software on the next lease. Ultimately, some of the teachers Mark was training were dominated by their motivation for monitoring students above constructing new learning together with the students. Their technology-oriented teacher behavior values became their anti-learning defensive routine and resulted in single-loop learning that limited them to the utilization stage of their technology adoption continuum. When they would catch a student not using technology appropriately it would reinforce their individual theory-in-use of utilization of technology-oriented pedagogy. Their teacher-centered behavior became the self-reinforcement to inhibit double-loop learning and overprotect the teachers from moving into student centered learning stages of the continuum.

Collaboration between Model I and Model II teachers is a strategy to reduce anti-learning that arose when monitoring student behavior became more important than student learning.

Collaboration is valuable to Model II schools because very few individuals can routinely act on their espoused values and skills and they are often unaware of this limitation (Argyris, 1995). In the AI process, Mark identified one of his core factors to his learning for technology-oriented pedagogy as collaborating with his colleagues. Open collaboration reduces anti-learning and is the way he has grown and moved in the continuum with his technology adoption.

Model II Governing Values and Student Centered Learning

Teachers who grow into the technology adoption continuum stages of integration, reorientation, and evolution for their technology-oriented pedagogy represent organizational actors who experience double-loop learning with Model II governing values. The stages of integration, reorientation, and evolution represent double loop learning with Model II governing values because not only do these student centered learning stages change strategies and assumptions but they require teachers to change the values of their theory-in-use. The upper stages of the technology adoption continuum connect the two feedback loops of the observed effects of action with strategies and the values served by the strategies (Argyris & Schon, 1996). Student centered learning with technology-oriented pedagogy theory of action is changed and Model II governing constructivist values informs their actions on the continuum of integrating, reorienting and evolving. When the upper stages of the continuum action strategies and student centered learning values are aligned, conditions exist for double-loop learning, which results in teachers with Model II governing values. Model II governing values are valid information, informed choice, and internal commitment to monitor the implementation of choice in order to detect or correct errors. As in Model I, the most common behaviors for Model II teachers are to advocate, evaluate, and attribute. Model II behaviors such as integration, reorientation and evolution stages, however, openly illustrate how teachers and students co-constructed their

student centered learning. This encourages inquiry and testing by others which means threat and embarrassment are engaged and not bypassed or covered-up. The consequences of Model II governing values are that anti-learning is minimized and double-loop learning is sustained for the individual and the organization. Daniel's example exemplified such learning for USD 489 and HHS.

Daniel modeled theories-in-use of governing values of Model I and II in his technology-oriented pedagogical behavior strategies. He used governing variables of valid information, free and informed choice, and internal commitment with the students to correct errors with the data they constructed with the use of the probes. Model I emphasizes that individuals advocate their purposes and simultaneously control the environment and others in order to assure that their purposes are achieved. Daniel stopped using lecture as his method of instruction, which prompted him to evolve in the continuum. His move into Model II behavior in which he advocates a position but rejects the unilateral control that usually accompanies advocacy whose typical purpose is to win. Daniel's Model II governing values allowed him to confront the view and emotions of self and others on global warming by coupling articulateness and advocacy. He sought to alter global warming views with internal commitment by those students who constructed their own positions with the data they gathered and basing their research on the most valid and complete information available. In other words, Daniel is a skilled Model II actor at inviting others to experience double-loop learning with his technology-oriented pedagogy.

Being able to consistently operate on the highest level of the continuum of technology adoption was why Daniel repeatedly expressed his appreciation for the freedom to take academic risk and have visionary leadership. Pioneering educational technology meant that Daniel was constantly challenging the status quo of access, space, speed, contextual support, and policies.

Engaging these issues for student centered learning for Daniel represented a higher issue in the organization of the freedom to take academic risk and the need for support by visionary leadership from the administration. The freedom to take academic risk with such educational technology reform that positively influences student achievement requires visionary leadership with a coordinated shift in culture and historical context such as new standards, new systems thinking, new structures, and new ways to allocate resources (Apple Computer Inc., 2008; Fulton, 1998; ISTE, 2008; TCER, 2008). Daniel named many socialistic action strategies to approach his envisioned future of interrupting organizational defensive routines and creating organizational learning processes and systems with double-loop learning to accomplish his bold new possibilities. None of his envisioned future concepts could be accomplished without visionary leadership and the freedom to take academic risk.

Individuals and organizations that operate with double-loop learning and Model II theories-in-use openly exemplify how members achieved their evaluations and how they crafted them to invite inquiry and testing by others. This takes an openness to engage each other and to be understood by leadership. Daniel's freedom to take academic risk is essential to movement to the evolution stage on the continuum that allows him to use Model II theory instead of merely espousing it. His appreciation of visionary leadership by the administration is because he believes it fosters double loop learning and allows it to persist in our school.

Daniel's deficit-based quote about weighing the pig is a common frustration with mandated assessments and represents Model I single loop learning to him. Model II theories-in-use challenge the system for academic freedom and visionary leadership by Daniel is how he grew through anti-learning on the continuum and how double-loop learning has persisted at HHS. To Daniel, state assessments become a teacher-centered behavior of accountability that

approaches students as the objects of education instead of the subjects of education to construct learning. Such teaching accountability can be accomplished with competency by only reaching the integration stage on the continuum.

HHSLT members espoused technology-oriented pedagogical Model II theories-in-use but grew in the continuum stages as the technology developed and the organization's core factors increased. Model II theories are often espoused theories at the outset for members, but their actions are consistent with Model I governing values. HHSLT members may be in one stage and begin to espouse to another stage of their technology adoption. Therefore, Model II espoused theories must be transformed into theories-in-use by establishing new beliefs and values. Most individuals and organizations are limited to acting on their own to make the transformation from Model I to Model II, and most fail in this quest. HHSLT members' valued visionary leadership with freedom to take academic risk, a culture of contextual support, and student centered learning from USD 489 and HHS, which are consistent with Model II governing values and organizational learning. HHSLT members repeatedly attributed these values as the core factors for their best traits in technology-oriented pedagogy.

The Relationship between the Continuum and Model I and II Governing Values

Hooper and Rieber's (1995) continuum of technology adoption is representative of an organizational learning theory-in-use that is possible because of its universal attributes. The range of stages on the technology adoption continuum represent the range of learning that is governed by the individual's theories that govern their actions. The alignment of a teacher's theory of action, and espoused and theory-in-use, not only determines if they are single-loop or double-loop learners, but how far and fast they move on the continuum and if they continue to ultimately evolve. The stages on the continuum roughly correspond to organizational learning.

The lower on the continuum, the more Model I actions you are likely to observe and the higher on the continuum, the more Model II behaviors you are likely to observe. All HHSLT members gave evidence of having Model II theories-in-use by being in the upper stages of the continuum but there were examples of them overcoming Model I, single-loop learning or dealing with others who were demonstrating Model I values.

HHSLT's core factors are important to organizational learning that generates Model II theories-in-use because it requires the use of double-loop learning in ways that persist instead of merely espousing it. There are many barriers within a high school's culture or context that mitigates sustained technology integration and pedagogical adoption (Dexter, et al., 1999; TCER, 2008). The AI process of reconstruction and envisioning of HHSLT technology-oriented pedagogy demonstrated an alignment with the continuum of technology adoption stages that was sustained at HHS through double-loop learning. Daryl was one such example.

Daryl described being discouraged with barriers of technical difficulties that kept him from integrating the technology for formative assessment so he reverted back to utilizing the teacher behavior pedagogy with the overhead projector. This actionable knowledge produced a Model I theory-in-use of face saving and a potentially extended single loop learning situation for the individual and the organization. Daryl was free to craft the words to bypass and cover-up the fact that he stayed in the utilization stage as a result of his single loop learning and espoused theory-in-use of integration. Because his behavior was teacher centered, Daryl's Model I theory-in-use and organizational defensiveness were highly dependent on his self-confidence, sense of competence, and self-esteem, which can be counterproductive. Generally, Model I theories in use do not allow individuals or organizations to be changed because it does not allow one to change the governing values of suppressing negative feelings, achieving your intended purpose,

maximizing winning and minimizing losing, and behaving rationally. Individuals take for granted that their Model I theories-in-use tacitly advocate their position, evaluate the thoughts and actions of others, and attribute causes for whatever they are trying to understand.

To recognize their blindness to Model I action strategies an intervener must introduce Model II theories-in-use. The CCU intervened in Daryl's anti-learning with double loop learning action strategies of contextual support. As they engaged each other, both parties were able to openly inquire about his failures and craft testing by others. This minimized his anti-learning and transformed his Model I, espoused theory into a Model II theory-in-use. Double loop learning was sustained and Daryl learned new skills and values to facilitate his integration of technology-oriented pedagogy. Individuals and organizations who sustain double-loop learning create new possibilities to construct learning. Daryl described his bold new possibilities as being able to align courses such as English and science with his math courses to gain real world applications that would have obvious value to the students and the community, which would then motivate them to follow their interest. These envisioned bold new possibilities will become his Model II espoused theories and are the beginnings of student centered learning to construct what students should be able to know and do. In organizational double-loop learning, Model II theories begin as espoused theories. These new student centered values have the potential to propel his learning to new skills beyond integration in the continuum of technology adoption stages. This is an example of how the lower and upper stages of the continuum correspond to Model I and Model II values, respectively.

The reconstructed experiences and envisioned future for USD 489 showed how the HHSLT members were designing organisms that had fundamental and systematic alignment between their espoused and in-use designs. Their reconstructed experiences and envisioned

designs demonstrate a constructivist theme of student centered learning values and norms. Constructivist teachers place students in self-directive roles, teachers act as facilitators, and both are supported by technology learning tools (Becker, et al., 1999). Model II theories-in-use were revealed as the HHSLT members used a double loop learning process to move through various stages on the continuum of technology adoption. HHSLT teachers moved from the teacher-centered end of the continuum to the student-centered end by detecting and correcting errors with double-loop learning.

HHSLT and the AI Process

In this section, I discuss how and why the AI Process was meaningful to the HHSLT in the context of the five AI principles and give a self-reflection at the end of each principle. Those five principles are: (a) the constructionist principle, (b) the principle of simultaneity, (c) the poetic principle, (d) the anticipatory principle, and (e) the positive principle. These inspirational principles moved the AI foundation from theory to practice (Cooperrider & Srivastva, 1987b). The HHSLT participants found the AI life-centric search meaningful because it linked their energy from their positive core to the change agenda for a shared and preferred future with their technology oriented pedagogical practices to positively influence student achievement. This AI link creates the energy and excitement to reconstruct and envision the will and a shared dream of USD 489 and HHS.

The Constructionist Principle

This principle is based on the premise that reality for social systems are determined and constructed by its people through their interactions. These interactions create the symbolic and mental processes of its reality. Those human realities become the social knowledge of the

organization. There is an interlocking of the organization's destiny and human knowledge. The way we know has a direct effect on what we do (Cooperrider, et al., 2003). Gergen (1994) stated, "That the way of knowing is fateful." which means, an organization's destiny is interlocked with its social knowledge. How the organization's future is conceived and constructed is linked to the first questions asked of this social knowledge.

The first question asked in the HHSLT's AI process was to reconstruct their technology timeline over the last 20 years. The second question was to reconstruct a peak experience or high point at HHS with technology-oriented pedagogy. These questions reconstructed the social knowledge that provided a vivid picture of the groups and district's historical capacity and strengths with educational technology adoption while tapping into the individual and group's positive core. Participants were exposed to the collective knowledge of both the individual and the group's reconstructed history and peak experiences. The AI process was meaningful to the HHSLT members because they were able to reflect and engage in dialogue that connected their past stories of peak experiences and positive core beliefs to their abilities to create peak experiences in the present and future. The HHSLT high point experiences had three identified themes common to all members: (1) freedom to experiment and take risk pedagogically with visionary leadership, (2) a culture of contextual support, and (3). student centered learning relationships

The members were so impressed with the process and the knowledge they reconstructed, that they had other USD 489 employees come to view the charts and information and were guiding them through the process they had experienced during breaks and before and after our meeting times. The Assistant Superintendent for Instruction was so impressed by the positive reports from HHSLT members that he asked to sit in on some of the second day activities. Many

members reflected how valuable it was to hear the reconstructed stories of their fellow teachers because even though they were in different areas of teaching they found common ground in the patterns and themes of their social knowledge of their historical and peak experiences. Alice reflected,

> Overall, this experience is one I wish all teachers could experience. It was an opportunity to meet with other teachers from different disciplines to find commonality and to share thoughts and perceptions about the teaching profession and the impact technology has had on it. I am grateful for the opportunity to participate in this study.

HHSLT members gained a deeper understanding of each other, which was manifested by the participants' affirming each other's perspectives. As their trust and collaboration grew, they had a deeper appreciation for the diversity that each person brought to the team. This validation of self and others were outcomes of the AI process that was identified as meaningful. As the members engaged in dialogue and activities and their trust grew, they revealed to each other their concealed dreams and hopes for USD 489 and their technology-oriented future to positively influence student achievement. Through this AI reconstruction and envisioning process and its variety of interactive activities that reinforced the sense of self-worth, they established personal identity, re-emphasized the meaning of teaching and revived an appreciation for each other as colleagues which then became a validation of themselves and others. These are the constructionist principle factors they expressed to the group and reflected upon privately that made the AI process meaningful to them as an Organizational Learning Model II process.

What HHSLT knows has a direct effect on what they do. Their reality is determined and constructed through their Model II interactions of governing values of valid information, informed choice and vigilant monitoring in order to correct and detect error in the

implementation of their choices in open action strategies (Argyris, 1995). These open interactions encourage inquiry and testing by others and illustrates how actors reached their attributions and evaluations. This double-loop learning constructs the symbolic and mental processes of HHS reality. This reality becomes their social knowledge of the organization that avoids by-pass, cover-ups, threats and embarrassment and engages defensive routines which minimizes anti-learning and facilitates double-loop learning.

The Principle of Simultaneity

Inquiry and intervention are one in the same, according to the AI principle of simultaneity. Reality is an evolving social construction that can be simultaneously influenced by the nature of inquiry itself. The way we inquire is critically important and sets the stage for what people discover, learn and the way they construct their present and future. HHSLT members experienced the principle of simultaneity when they engaged in the inquiry and shared their stories. This was evident by Lora's reflection about the AI process and questions. Her first quote emphasizes how important it is to take the time in the AI process to personalize the questions, "I guess I had never really considered these questions as they relate to me as an educator." Not only had HHSLT members not taken the time to consider most of these life-centric questions, but most members had not seen a big picture of the district technology timeline to consider how the history of the district reflected their pedagogical culture. Lora's quote about the affect of seeing the district's and members' big picture of the 20-year technology timeline emphasizes how important visuals used in AI are to the simultaneity principle and how it affects participants instantly, "This makes sense. I get it. I had never really thought about the processes, but seeing it on the wall puts it into perspective for me. Lora continues to reflect how the AI process and questions changed her in meaningful ways by saying,

> I think these questions cause us to delve a bit deeper into ourselves and ponder questions we normally don't. And actually, who has the time? On the other hand, it is important to understand why we do what we do and what makes us do this. Perhaps by taking the time to ask questions, we find answers we didn't know existed. This makes me think about possibilities for other lessons that I would like to explore.

Through this AI process, HHSLT members were changed. Once they received the shared knowledge, and captured the vision and will of the district, they simultaneously began to project the shared future for themselves and the district. The principle of simultaneity is therefore manifested as a result of conversations and storytelling in the AI process. As the reality of images of their historical and peak experiences, positive core, values, best traits and core factors were reconstructed and envisioned, it caused their social construction for the organization to evolve simultaneously. Because inquiry and change are inseparable, participants sensed a meaningful change in the perceptions of themselves and others by the nature of the inquiry itself.

In action science and organizational learning the principle of simultaneity begins with reconstructing either the theories-in-use or the organizational defensive routines. Reconstructing one will lead you to the other. The goal is to get the participants to generate enough internal commitment to the social knowledge research and to the eventual intervention or change. The AI process simultaneously exposes the individuals' and districts' designs of action strategies based on their values, beliefs and attitudes. The HHSLT's action strategies reveal whether they are theories that are espoused and/or in-use. Being unaware of these differences prevents double-loop learning for the individual and the organization. The AI process is meaningful to the individual and the organization because the inquiry can simultaneously bring this awareness of inconsistency of espoused beliefs and actions in-use to surface.

The quotes used are proof that the HHSLT members experienced the principle of simultaneity during the process. They valued the AI process and found it meaningful to reconstruct and envision their technology-oriented pedagogical practices that positively influence student achievement for a shared and preferred future in USD 489/HHS.

The Poetic Principle

Any topic in reality, according to the poetic principle, is open for study and discussion (Cooperrider & Whitney, 2004). Reality is a human construction. An organization's members are free to view any part of their reality with any lens they choose; members are coauthoring an organization's story continually (Cooperrider, et al., 2003). Each of the two days generated new AI activities that highlighted and encouraged creative facets regarding any topic of the reality of HHSLT's technology-oriented pedagogy that positively influenced student achievement to be revealed and open for discussion. For such freedom and creativity to make the poetic principle possible, participants must sense a safe and open climate to the AI process. To establish a safe and open atmosphere for such freedom to exist, the HHSLT members co-created the group rules and roles to begin the AI process. After discussion and consensus, members autographed the rules and roles easel posters as an act of agreement and comfort with the process of being open while discussing highpoint experiences, values, best traits and core factors of their technology-oriented pedagogy. Members may be anxious or skeptical which leads to individuals being reluctant to being open to the topics but by staying with the AI protocols and worksheets the risk for members is reduced as evidenced by Daryl's quote, "The ground rules were in place but because of the maturity and professionalism of the people involved I did not feel any apprehension in participating in the AI process."

The anxiety of risk factors for members converting to realizing total openness is proof that the HHSLT members experienced the poetic principle during the process. They valued the AI process and found it meaningful to reconstruct and envision their technology-oriented pedagogical practices that positive influence student achievement for a shared and preferred future in USD 489/HHS.

The Anticipatory Principle

The image or bold new visions an organization has of its self, guides and inspires its current behavior. Positive images will result in positive actions. People and organizations are heliotropic, they grow toward the light of positive anticipatory image (Fry, 2000). The HHSLT focus groups, self-named the Craftinators and Mensa, selected several possible metaphor images to represent their consensus Envision Statement. Members selected images for the district and high school that represented their governing values in the key words of the Envision Statement. The focus groups chose an image of time warp and a global view that embraces its image of the Envision Statement: “By 2014, what we most envision in terms of pedagogy-oriented technology that positively influences student achievement encompasses the entire community collaborating to foster vision, innovation, and excellence to produce accountable, engaged students who mature into thriving, independent adults."

The Anticipatory Principle is fulfilled with the time warp image, which represents being on the cutting edge of technology as HHSLT goes through different time periods of the district’s future. Participants see their future technology-oriented pedagogy, using the latest product and ideals to produce excellence in student achievement. The Craftinators time warp image produces action strategies of innovation that results in student achievement of excellence. This is consistent with their present use of technology-oriented pedagogy that positively influences

student achievement that has produced SOE and AYP in every state assessment category. They have addressed the threats and embarrassment of public disclosure through school improvement strategies that have proven successful and persistently address the causes of student failure with live data through the use of Quia software. The Mensa, which means a constellation of stars viewed from the earth, chose the global view image, which addresses the values of encompassing the entire community with action strategies that foster a world vision. By having global values, Mensa, believe it will produce action strategies that foster a more mature, accountable student capable of thriving as independent adults in the world. The metaphor images helped the HHSLT to create and sustain the future image of themselves and the district to guide and inspire their current values and behavior. Both metaphors are constructivist in nature and strive for teachers to stay in the top of the technology continuum adoption model. These positive images of time warp and global vision will result in the people growing toward the positive anticipatory image of the key words in their heliotropic Envision Statement. The HHSLT found the AI process meaningful because they experienced the Anticipatory Principle in the metaphor activity.

The Positive Principle

The more positive the questions that we ask, the more engaged and excited the participants are and the more successful and longer lasting the change efforts are. The Positive Principle is supported by the AI process with positive effect and collective bonding. In the AI dialogue, a key factor is the positive imagery power. The Positive Principle was used with the HHSLT envisioning their future with the identified positive core factors of their best traits in technology-oriented pedagogy that positively influences student achievement. Those positive core factors were categorized into three areas: (1) Freedom to take academic risk with visionary leadership, (2) a culture of contextual support, and (3) student centered learning relationships.

The premise of the Positive Principle is supported by six main areas of research: the placebo effect, Pygmalion effect, positive effect, internal dialogue, positive imagery, and metacognitive competence. The AI dialogue for the HHSLT was intentionally positive and inspiring based on this premise. The HHSLT found the AI learning process meaningful because they were engaged in positive questions that reconstructed past stories of peak experiences and positive core beliefs and envisioned their abilities to create peak experiences in the present and future.

Powerful placebo. The placebo effect in medicine is where patients by believing and emphasizing positive images ignite healing thus you get positive image resulting in positive action. In the AI process, envisioning a positive shared future and acting it out through creative presentations that emphasize the characteristics of the key words in the Envision Statement can ignite responses of positive change in individuals thus affecting the organization's future. By transcending the positive image of the HHSLT envision statement to positive action through the AI creative presentations activity, the placebo effect was experienced by the HHSLT. This AI learning process allows the participants to get carried away in the acting of a shared future that exist by believing the positive images they boldly envisioned are now true. Daniel reflected on his performance in the Mensa creative presentation by saying, "This was fun and really through producing, I probably went too far, but I couldn't resist." Daniel experienced the placebo effect by believing he was actually experiencing his desired future through producing a TV interview. This ignited an excitement that began a change in him and others who witnessed his belief and emphasis on the positive image created through their Envision Statement.

Pygmalion effect. The image that is seen is believed. The Pygmalion Study (Rosenthal, 1969) took students of equivalent cognitive capacities and randomly sorted to teachers who were

told that some students had positive expectancy images and others had negative expectancy images according to other experts and credible sources. The results of the study mirrored the images that were told and believed by the teachers of their student's cognitive capacities. The lesson from the Pygmalion Effect is that other's expectations can shape and cue the cognitive capacities. People respond to the type of behavior treatment they receive. Positive and negative images or expectations result in a relational pathway to positive and negative treatment or actions. These relational pathways create the positive image to positive action dynamic.

The AI process uses a positive, affirmative topic that reconstructs peak experience images and envisions a preferred and shared future with relational pathways that are positive images with change designs to positive action. The positive imagery is woven into the AI agendas, protocols, activities and worksheets. The first challenge in becoming double-loop learners is to have enough self-esteem, competence and confidence to challenge individual Model I theories-in-use and organizational defensive routines. Model I governing values are not likely to be changed by incompetent individuals with counterproductive theories-in-use. Reconstructing high point experiences, examining values, best traits and the core factors for the individual theories-in-use in a positive AI image environment is how relational pathways are established. AI methodology creates these relational paths to establish positive behavior treatment with positive images of self-esteem, competence and confidence that can be envisioned with change designs that lead to positive action by the participants and the organization. The HHSLT members found the AI process meaningful through the Positive Principle because they experienced the Pygmalion Effect of responding to the positive behavior treatment they received in the methodology of the AI agendas, protocols, activities and worksheets.

Positive effect and learned helpfulness. Positive emotions come from positive images and move people toward positive actions (Seligman, 1992). This research asserts that to pull people away from their self-preoccupation and focus on a global solidarity and social helpfulness for mankind, they must have positive emotions. The positive emotions flowed on day two with the opening activity when the HHSLT assigned positive imagery to their stories of how "*I made a difference*" in the lives of people. Daniel's story of positive image that evoked positive emotions that resulted in action involved him finding a way to make a difference with insignificant people across the world that most people could not reach. The positive emotions he received from helping needy people and projects he valued globally caused him to take action through KIVA. In organizational learning emotions of social virtues such as caring, support and integrity are espoused values and skills that very few individuals can act on and are often unaware of this limitation. The fact that HHSLT members could describe positive images that evoked positive emotions because of their learned helpfulness actions shows that the HHSLT have transformed their espoused theories into Model II theories-in-use. Being able to provide examples of how they routinely act on their governing values that involve positive emotions shows the HHSLT members have eliminated skillful Model I blindness. HHSLT members can realize a positive student-centered image because they skillfully apply consideration of positive emotions. The AI process was meaningful to HHLST because it allows the researcher and other members to act as the intervener by introducing Model II theories-in-use of social virtues to help participants recognize Model I blindness. The HHSLT found the AI process meaningful because it involves the positive effect and learned helpfulness by reconstructing stories of positive images that evoke positive emotions from positive actions that align espoused theories with tacit theories-in-use to challenge or trigger whether individuals and organizations are Model I or Model II.

The inner dialogue. Human systems have a continuing visual imagery like an ongoing video news reel that composes the inner dialogue (Cooperrider, et al., 2003). Adaptive statements that are positive and negative make up the inner dialogue. The outcome of an individual's and organizations' guiding imagery is the result of this positive vs. negative inner dialectic. A 2:1 ratio of positive images to negative images is required for psychologically and socially functional groups or individuals. The guiding images of the future are created in the AI dialogue from the group as a collective whole. Positive guiding imagery emerges from the AI process if there is overwhelmingly positive inner dialectic from the group.

The use of the LHRHCCM in the AI process produced directly observable data from members that reflected a very positive inner dialogue of reasoning and actions. I was able to observe if the espoused theories from the HHSLT members in the right hand column, was the same as their governing values and beliefs in their left hand reflection. The inner dialogue was transcribed from their reflection into their espoused theories and they were consistent with their theories-in-use. The inner dialogue of all HHSLT members revealed a very positive constructivist that confronted defensive routines of anti-learning and allowed theories-in-use to be inferred.

Positive imagery as a dynamic force. A bright positive image of the future ensures that the organization's dynamic culture is growing and flourishing. The purpose of the envision stage of the AI process is to create a shared and preferred future. This was accomplished in the AI process by creating the opportunity/concept map which identified the Bold New Possibilities themes as: 1) freedom to take educational risk with visionary leadership; 2) a culture of contextual support; and 3) student-centered learning. The core factors for individuals and the organization to create these Bold New Possibilities were identified by the HHSLT as having the

following patterns: 1) a student-centered philosophy with visionary leadership; 2) an organizational culture with contextual support; 3) and collaboration to take educational risk. The Bold New Possibilities themes and core factor patterns were again similar to the patterns of the positive core from the HHSLT high point experiences. These positive patterns and themes create a positive imagery to guide the organization and its future. One such example was Alice's envisioned future. Alice envisions the technology-oriented pedagogical future into the district's technology lease by reorienting the techies, administration and BOE members to the instructors preferred future. She believes that the student centered learning should drive the contextual support of hardware and software and be seamlessly integrated into the curriculum. In her bold new possibilities she envisioned a future with a systemic change in society where a form of socialism is accepted and schools are viewed altruistically. She envisions a society where resources for contextual support for technology-oriented pedagogy between schools and community could be shared with efficiency and where the BOE could customize regional issues of contextual support. Alice envisions a positive image of a new socialism in society as a dynamic force with control over regional issues such as the economy and taxes with all of its issues such as flaws in the tax system, unfunded mandates and educational cuts. The AI process was meaningful to the HHSLT members because Hays High School's shared imagery was envisioned as a dynamic culture with a bright future that inspires hope, that attracts and retains people in a culture that will flourish.

Metacognition and conscious evolution of positive images. Organizational change is created by breaking the paradigms of a "deficit-based" approach to problem solving. Using metacognition to think about your thinking is an affirmative approach. Conscious evolution of positive images does not see organizations as a problem to be solved but as centers of relatedness

with infinite capacity to be embraced. This affirmative competence can be learned and developed by metacognating and choosing the positive imagery. AI is unique and refreshing in its approach to organizational change. HHSLT member, Cherrie, experienced and reflected her positive principle of metacognition and conscious evolution of positive images the AI process had on her through her LHRHCCM journaling. In the following reflection, Cherrie starts off Day One using deficit-based language to describe her feelings of the process being condescending and putting her at risk because her supervising administrator was conducting the research but by the end of Day Two she was appreciative of the AI process and her colleagues,

Cherrie's LHRHCCM reflections, Day One,

> I understand the need for the ground rules, but we're professionals and they seemed to be somewhat condescending. The risks of participating in the study were explained, but I'm not sure I'm completely comfortable with an administrator using his supervisees as research subjects. My challenge is to be honest without being confrontational.

Cherrie's LHRHCCM reflections, Day Two,

> This two-day process was an enlightening experience in that the dedication, intelligence, and creativity of my colleagues spurred me to think more deeply about the role of technology in learning. All of my colleagues recognize that the technology is the means, not the end, and are very concerned about staying current with the hardware and software. At various times, we each expressed the need for more time to collaborate with our colleagues horizontally – within departments – and vertically – across the district. I've taught at other schools in the Midwest. When I first started working for USD 489, I was impressed with the high-caliber intelligence of the teachers at Hays High School. Through the ensuing years, some of the shine has worn off as we've weathered

> departmental squabbles and interference from the state board of education. These two days reminded me how fortunate I am to work at Hays High School with this group of outstanding professionals. Yes, it was good to work on technology. It was even better to have the chance to commune with other teachers on an intellectual level!

Cherrie's LHRHCCM reflection shows the transformation between her espoused theory at the beginning of the AI process and her theory-in-use at the completion of the AI process.

Cherrie and the rest of the HHSLT, found the AI process meaningful because of its fresh and unique ways. AI brings awareness of one's own cognitive systems and knowledge of insight into its workings. Learning team members then have the ability to choose between the cognitive process of positive and negative images when desired of technology-oriented pedagogy that positively influences student achievement.

Implications for Future Research and Practice

This study will provide research to teachers and school districts to positively influence student achievement with their technology-oriented, pedagogical practice decisions. Findings from this study may impact the district's technology initiative planning, policy and procedures (Schein, 1992) based on a district's need to maintain AYP for NCLB ("No Child Left Behind Act of 2001," 2002).

Change Requires Moving from Model I to Model II Governing Values

It is hard for districts to change instructional practices. Districts must be aware of anti-learning and Model II issues involved for correcting errors for technology-oriented pedagogy that positively influence student achievement. Teachers in districts that use Model I governing values have action strategies that generate defensive and self-reinforcing routines that encourage individuals to bypass and cover-up, which result in organizational bypass and cover-up, which

reinforces this theory-in-use. Model I schools and teachers do not have student centered values but teacher behavior values, as they try to attain their intended purpose, maximize winning and minimize losing, suppress their negative feelings, and behave as though their actions are rational. Teacher behavior values create single loop learning with action strategies that advocate selfish positions, judge the thoughts and actions of others, and make excuses for their learning errors. If action strategies are changed without changing the values of the teachers and district, the corrective strategies will fail or will not persevere. For instance, as teachers and districts look to positively influence student achievement in state assessments by meeting the NCLB terms of AYP and state expectations, districts create assumptions for its errors to correct learning when the expectations do not match the outcomes of action or student achievement. Model I high schools with single-loop learning, may assign or change an action strategy but keep the theory-in-use unchanged. As long as the Model I high school performance values and norms stay within a constant framework, single loop learning may be sufficient. But with NCLB moving the existing range of AYP of student achievement toward 100% by the year 2014, the correction of error by teachers and districts in tested areas will require not only organizational inquiry into its action strategies but will require modification of its values and norms to its theories-in-use.

The reality of state and federal educational policy is that educators must accomplish the minimum requirements to get to the student-centered learning they want. Single-loop learning governs individuals' and organizations' actions and unintentionally creates defensive routines and inhibits learning. This creates a whole system of theories that govern actions with defensive routines that inhibits learning unintentionally. Maintaining flourishing Model II schools with double-loop, student centered learning experiences, becomes the challenge for such organizations. Networking with Model II districts that demonstrate technology-oriented

pedagogy that positively influences student achievement is essential to sustain double-loop learning.

Benefits of the AI Process for Facilitating Change

The AI process provides districts learning teams an opportunity to share their reconstructed positive core experiences, and envisioned future actions, attitudes, values and beliefs to positively influence student achievement. This action research single-case study benefited the participating high school (Schein, 1987) because the teachers shared an experience where they reconstructed a positive core of experiences and then envisioned a preferred future that continues to positively influence student achievement with technology-oriented pedagogical practices.

Summary

HHS and USD 489 demonstrated in its historical technology timeline, the progression of growth through the continuum stages from teacher behavior to the pursuit of student centered learning. HHS approached growth as a Model II organization because when errors were realized, corrections were adopted in an open and nonthreatening way to learn from its historical errors to pursue a shared and preferred future. Through its values and beliefs of freedom to take academic risk, a culture of contextual support and student centered learning, HHS adopted new designs like the stages of the technology adoption continuum for its individuals and thus the organization through double-loop action strategies that eliminated errors and sustained double-loop learning. The HHSLT followed the stages of the continuum and their correction of errors did not keep them from being aware of discrepancies of their espoused theory versus their theory-in-use.

HHSLT members on the higher end of the continuum of technology adoption stages valued the findings as prioritized in their concept map: (1) freedom to take academic risk with visionary leadership, (2) a culture of contextual support and (3) student centered-learning

HHSLT teachers moved from the teacher behavior stages of the continuum to the student centered stages by correcting errors with double-loop learning. HHSLT members that are evolutionary, constantly change to meet the potential and challenge of applying educational technology to learner centered purposes (Hooper & Rieber, 1995). Members in the evolution stage are the ultimate constructionist educators who continue to evolve and adapt to meet the challenge and potential provided by new understandings of how people learn. By focusing their educational technology on the construction of knowledge with the active learner, HHSLT members have transformed themselves and HHS by entering the reorientation stage and construct new learning for themselves and their students by continuing in the evolution stage. The LHRHCCM reflections revealed the espoused theories in the right hand column from the HHSLT members were the same as their governing values and beliefs in their left hand reflection.

The AI case study reconstruction and envisioning activities revealed that HHSLT member's student centered technology-oriented pedagogy theories-in-use were consistent with Model II double-loop learning. Because the HHSLT's theory-in-use is student centered they are governed by Model II values of valid information, informed choice and vigilant monitoring of the implementation of their choices in order to detect and correct errors (Argyris, 1995).

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APPENDICES

APPENDIX A

Department of Educational Leadership

Box 142, Wichita, KS 67260-0142

Letter of Participant Invitation

Thank you for the opportunity to meet with you today. I am here to share the purpose of my study and to extend an opportunity for you to volunteer to participate in the study. The purpose of my study is to describe the positive core beliefs, attitudes, experiences and actions of Hays High School lead teachers who use technology-oriented pedagogical practices to positively influence student achievement in an Appreciative Inquiry (AI) Learning Team. If you voluntarily decide to participate, you will be asked to participate for 2 days with 5-6 other HHS lead teachers in the first two 4-D stages that I call *Reconstruction and Envision*.

I am conducting this research in partial fulfillment of the requirements for a Doctoral degree from Wichita State University. The information generated from your participation will assist in making a difference to improve teaching and learning for other educators, as well as for students. Benefits to you for participating may include enhanced collaborative working relationships with your peers and an opportunity for fun by participating in activities that allow you to share high point teaching experiences. It will also allow you the opportunity to describe how you think the future for teaching with technology-oriented pedagogy for to positively influence student achievement could be improved for teaching and learning in USD 489.

Your learning experiences and opinions are highly valued. Your contributions to this study are important, so you can help make a difference for improving teaching and learning. Your participation is completely voluntary and will involve your participation in an AI action research project. AI as a research methodology was chosen because it appreciates and values what you bring to the process. I will present an orientation session to participants about their involvement in the first two stages of the AI 4-D Cycle: reconstruction and envision stages. The time commitment for the AI learning Team will involve approximately 12 hours over a two day period taking place at Rockwell Administrative Center during normal school hours. The district will provide substitute teachers for your classes to accomplish this stud. The contributions made by your involvement will be protected and confidentiality of information guaranteed. Any data collected from you in this study will be aggregated and the confidentiality of all participants will be protected. Once the study is complete, the findings will be made available to you. In addition, the final report of my study will be on file with Wichita State University.
Michael L. Hester, Doctoral Student

WICHITA STATE UNIVERSITY

Department of Educational Leadership

Box 142, Wichita, KS 67260-0142

Consent Form

Purpose: You are invited to participate in an Appreciative Inquiry (AI) study of Hays High School technology-oriented pedagogy that positively influences student achievement**.** I am conducting this research in partial fulfillment of the requirements for a Doctoral degree from Wichita State University.

I hope to reconstruct your technology-oriented pedagogical practices and establish the hopes and dreams of your teaching with educational technology that positively influence student achievement**.** The information generated from your participation will assist in making a difference to improve teaching and learning at HHS and for other educators.

Participant Selection: Participants will include 5-7 USD 489 HHS lead teachers who voluntarily choose to participate in the study. You were selected as a possible participant in this study because of your distinguished technology-oriented pedagogy and successful student achievement on the state assessments in one of the five specific content areas of reading, writing, math, social studies, science and technology.

Explanation of Procedures: If you voluntarily decide to participate, you will be asked to participate for 2 days with 5-6 other HHS lead teachers in the first two 4-D stages of *Reconstruction and Envision*.

A. Two AI group meetings will take place during this study. Meetings will be held at USD 489 Rockwell Administrative Center in Hays, KS. Meeting times with the HHS lead teachers will occur during the contractual school day. The district will provide substitute teachers for their classes to accomplish this study. The typical length for a meeting will be approximately 6-7 hours; however, the length may vary due to the nature of inquiry, but no meeting will exceed 7 hours. Meetings will occur for the following purposes:
    1. The two sessions will focus on the facilitation of the AI process as the HHS lead teachers progress through the first two AI phases:
        a. The first stage will involve a group meeting with 5-7 HHS lead teachers in the *Reconstruction* stage. The HHS lead teachers will have the opportunity to share peak experiences, reflecting on what they have done in the past that was successful with students using technology-oriented pedagogy that positively influenced student achievement. The key activities will consist of 3 semi-structured participant paired interviews and 4 whole group discussions of the interviews. Participants will reflect individually via, Left Hand, Right Hand Column Case Method (LHRHCCM).
        b. The second stage, known as the *Envision* stage, will involve a group meeting of the HHS lead teachers where they envision the future based on the strengths generated in the *Reconstruction* stage and develop an envision statement. The key activities will consist of semi-structured participants paired interviews, 2-3 focus groups and 3 whole group discussions form the activities. Participants will reflect individually via, Left Hand, Right Hand Column Case Method (LHRHCCM).
    2. A final group meeting will be held in February 2009 with the 5-7 HHS lead teachers to get their input on the data analysis and findings.

Discomfort/Risks: Because the researcher is also your principal you may feel vulnerable participating in this study. To minimize the risk or lessen your feelings of vulnerability you will be reassured of privacy,

confidentiality and your participation will not be reflected in any way on USD 489 evaluation/supervision processes or procedures. AI inquiry focuses on the positive core and highlights best practice experiences. It will be my role as the researcher to establish and maintain good rapport, and model good listening skills with all participants. I will make every effort to communicate in an honest and respectful manner.

Benefits: The results of my study will provide a positive model to enhance technology-oriented pedagogy that influences successful student achievement. Lead teachers from HHS will be empowered and supported by the administration to adjust the instruction, assessment, personnel and sub-groups of HHS based on assessment data, feedback and other research from this AI study. It will also provide a contribution to the field of theoretical knowledge by implementing an AI Learning Team as a venue to empower the HHS educators as they describe their high point technology-oriented pedagogical practices, including their hopes and dreams for teaching with educational technology that positively influence student achievement. My research will extend the existing known AI research literature to include high school teachers participating in the first two stages of the AI 4-D Cycle known as reconstruction and envision. My study may inform other educators and decision makers regarding their technology-oriented pedagogical practices that influence successful student achievement. In addition, the use of AI as an alternative research methodology in schools may contribute to changing the way educational problems are approached in traditional deficit-based problem solving cultures.

Confidentiality: Any information obtained in this study in which you can be identified will remain confidential and will be disclosed only with your permission. Your participation is voluntary. And in the event you decide not to participate that decision will not affect your future relations with HHS, USD 489, or Wichita State University. The data will be treated confidentially and none of the data will be personally identifiable. Your privacy will be protected and confidentiality of information guaranteed. Any data collected from you in this study will be aggregated and only available to me (the researcher) and my major professor. Your name will not appear in any report, publication, or presentation resulting from this study. Findings from this research may be presented at national conferences or published in scholarly journals. If this is the case your name will not be associated with the data, thus assuring confidentiality. By signing a copy of this form you are granting your permission to participate in this study. Your signature indicates that you have read the information provided above and voluntarily agree to participate in the study.

Refusal/Withdrawal: Participation in this study is entirely voluntary. Your decision whether or not to participate will not affect your future relations with Wichita State University and/or USD 489 and Hays High School. If you agree to participate in this study, you are free to withdraw from the study at any time without penalty or fear of reprisal.

Contact: If you have any questions about this research, you can contact my advisor at: Dr. Jean Patterson at 1845 Fairmount, Box 142, Wichita State University, Wichita, KS, 67260, phone 316.978.6392 or email jean.patterson@wichita.edu or Michael L. Hester, 2300 E. 13th St, Hays KS, 67601, (785) 623.2600, mhester@usd489.com. If you have questions pertaining to your rights as a research subject, or about research-related injury, you can contact the Office of Research Administration at Wichita State University, Wichita, KS 67260-000, telephone (316) 978-3285.

You are under no obligation to participate in this study. Your signature indicates that you have read the information provided above and you are one of 5-7 HHS teachers who have voluntarily decided to participate. You will be given a copy of this signed consent form to keep.

_____ _____

Signature of Subject Date

APPENDIX B

HHSLT Day 1 AI Reconstruction Agenda

HHSLT Day One – Reconstruction Stage		
Time	**Key Activity**	**Purpose/Description**
8-8:40	**Opening Activity:** HHSLT building with whole group activity *(Appendix B – Protocol Day 1 Opening Activity).*	**Opening Activities:** • Warm welcome and consent form. • Setting the stage and building relationships: Make comments to establish a safe and open climate within the HHSLT and create a sense of AI productivity and engagement by addressing discomforts and risk. • Establish ground rules & roles. • Invite participants to list high point events of educational technology in the history of USD 489 on a timeline.
8:40- 9:10	**Introduction to AI** *(Appendix B- Day 1 Overview and AI Intro)*	**Overview -** • 2-day AI HHSLT activities including introduction to AI, the REDD Cycle, and purpose of the study.
9:10- 10:10 (includes self-managed break)	**Interview 1: Reconstructing Positive Core** Semi- structured Participant Paired interview questions – 2 x (3) ABC and each person will richly share the story of their observed and recorded interview.	**Reconstructing Positive Core** • Protocol: *(Appendix B – Protocol Positive Core Interview 1)* Introduction to semi-structured participant paired interviews; assign partners, provide directions for conducting the interview, hand out and review the interview 1 guide. • Interview 1: *(Appendix B – Interview 1: Reconstructing High Point Experiences)* Teachers conduct semi-structured participant paired interviews with each other. The goal is to exchange a best example of a high point technology-oriented pedagogical experience that positively influenced student achievement. • Approximately twelve minutes is allotted per person to conduct the interview.
10:10- 10:50	**Whole Group 1**: Allow each participant time to debrief and richly share the story of their partners by reconstructing and mapping the positive core in an appreciative manner.	**Reconstructing and Mapping the Positive Core** • Metacognition – Debrief the interview process. • Protocol: *(Appendix B – Protocol Positive Core Whole Group 1)* • Interview highlights - Participants will be asked to share their notes from the interview guide- *(Appendix B - Reconstructing Positive Core Interview 1).* **Member Checking:** • **Recorder** will list positive core highlights shared from each participant on projected and shared word document entitled ***Positive Core Map***. • I will also have participants review for accuracy and confirm. **Identifying Common Themes:** • HHSLT will have their time to share, • They can volunteer to discuss common patterns that they heard or see from the projected positive core document that support the best examples of high point technology-oriented pedagogy experiences. • Researcher will post a projected and shared word document

		entitled ***Positive core Themes*** from the Positive Core Map **Document Review** – • HHSLT will collaboratively identify the common patterns or themes that support their descriptions of high point technology-oriented pedagogy experiences that positively influence student achievement. • I will file created ***Positive Core Map*** documents on a common shared file.
10:50-11:20	**Interview 2:** Semi- Structured Participant Paired Interviews	**Reconstructing Values**: (Appendix 8) Hand out and review the interview 2 guide • HHSLT conduct AB semi-structured participant paired interviews with each other. The goal is to exchange stories about what they value most of themselves and others in USD 489/HHS. • Fifteen minutes is allotted per person to conduct the interview. **(**Appendix 8-A)**Paired Interview Protocol:** Paired questions 3 x (2) AB – 3 Team's of two partners that interview a different partner than the first ABC interview group. Organize three teams in groups of two: A>B = B>A, C>D=D>C, D>E=D>E.
11:20-12:00	**Whole Group 2**: HHSLT members will richly share the stories that their partner's value about themselves, others and USD 489/HHS.	*Reconstructing Values* • **(Appendix B - Interview 2)*: Reconstructing Values*** of what they value about themselves, others and USD 489/HHS. • Introduce your partner and richly share their share the stories • Participants will share from their notes on the interview guide, allowing each participant time to appreciatively share about his/her partner. **Member Checking:** • **Recorder** will list summarized comments from each participant on projected and shared word document entitled ***HHSLT Reconstructed Values***. • I will confirm accuracy and validity of the information through member checking. • I will also have participants review for accuracy and confirm. **Identifying Common Themes:** • HHSLT will have their time to share. • Participants may volunteer to discuss common patterns that they heard or see from the projected reconstructed values document that support patterns of common values themes. • Researcher will post a projected and shared word document entitled ***HHSLT Reconstructed Values Themes*** from the discussion and identified values list by HHSLT members. **Document Review** – • HHSLT will collaboratively identify the common patterns or themes that support what they value about themselves, others and USD 489/HHS. • I will file created ***HHSLT Reconstructed Values Themes*** documents on a common shared file. • Participants will be asked to listen for the common factors that describe the characteristics or qualities of what they

		value about themselves, others and USD 489/HHS. • Whole Group: Each person will richly share the story of their partners values to the whole group A>B = B>A, C>D=D>C, D>E=D>E.
12- 12:30	**Lunch**	
12:30-1:10	**Interview 3:**	**Continuity Search - Positive Core Map** • *(Appendix B* **-Interview 3: Reconstructing Best Traits and Core Factors)**Hand out and review the ***interview*** guide. • Teachers conduct semi-structured one-to-one paired interviews with each other. The goal is to exchange stories about what each other does well and to identify the core factors or traits that they feel exhibit the best examples of high point technology-oriented pedagogical experiences that positively influences student achievement. • Twenty minutes is allotted per person to conduct the interview.
1:10-2:10 (includes self-managed break)	**Whole Group Discussion 3:** Discovering the Positive Core— What I Do Well and Identify the Core Factors from high point teaching with educational technology experiences. **Document Review** – Whole Group: Each person will richly share the story of their partners values to the whole group A>B = B>A, C>D=D>C, D>E=D>E.	**Reconstructing Best Traits and Core Factors:** *(Appendix B – Protocol: Interview 3)* Direct HHSLT participants' attention to the projected ground rules and roles as a reminder of the rights and responsibilities of the participants sharing in the whole group discussion. • *(Appendix B - Interview 3: Reconstructing Best Traits and Core Factors)* Give participants two-three minutes to review the interview guide. • HHSLT participants introduce their partner and share their partner's story and notes about some of their Best Traits and describe the partner's Core Factors of USD 489/HHS, allowing each participant an opportunity to appreciatively share about his/her partner. **Member Checking:** • **Recorder:** will list summarized comments from each participant of what they do well and list as core factors on projected and shared word document entitled ***HHSLT Best Traits and Core Factors***. • **Participants**: will be asked to listen for the common factors that describe the Best Traits and Core Factors of themselves and USD 489/HHS. • **Researcher**: will have participants review the items and notes listed for accuracy and confirm. **Document Review:** • **Recorder**: will post a projected and shared document or easel sheets entitled ***HHSLT Best Traits and Core Factors*** from the discussion by HHSLT members. • Researcher: will review the document and ask for confirmation as a form of member checking in a continuity search. • Researcher will file created ***HHSLT Best Traits and Core Factors*** documents on a common shared file. **Identifying Themes:** • After all HHSLT participants have had the opportunity to share their partner's story and review the posted notes, the participants can volunteer to discuss and identify the themes/patterns that they heard or see from the visuals

		projected on the wall or posted on the easel pad that are characteristic of their Best Traits and the Core Factors of USD 489/HHS. • Researcher will file created document ***HHSLT Best Traits and Core Factor Themes*** on a common shared file. • **Images of a Shared Future:** Participants will be asked to take the list of USD 489/HHS core factors and the list of best traits of HHSLT's technology-oriented pedagogy that positively influences student achievement so they can compare/contrast noting similarities and differences in the two lists. • **Scatter Gram:** will be created using Avery sticky dots. Each participant will have 5 orange Avery dots to place next to the core factors/best traits that he/she feels are essential or most important. • HHSLT participants will discuss patterns or themes in the placement of the numbers of dots. The goal is to give a visual representation of what core factors/best traits are most important to them as a whole (the shared images of a preferred future).
2:10-2:50	**Individual reflection:** *(Appendix B - LHRHCCM Day One)* Please insert or use as many rows and pages as necessary to complete your LHRHCCM reflections with rich details of the entire day.	**LRRHCCM Activity:** (Appendix B - LHRHCCM) HHSLT participants will reflect on the day's activities of what they heard or espoused in the right hand column. The agenda listed in the right hand column simply is a guide to remind them of the discussions of what was articulated. Once they have finished constructing their perceived dialogue in the right-hand column, they will read the constructed dialogue and in the left-hand column and write down what they thought or what theories they really used but did not communicate aloud for whatever reason (i.e. On the right hand side describe the event as you see, heard or understood it; write how your interview or meeting began; what you actually said; what others said; then write your response to their response; continue the scenario until you have described the itinerary event. On the left hand column write any feeling or idea that you had that you would or did not communicate for whatever reason about each of the scenarios.).
2:50-3:00	**Summary**	**Review**: Day 1 - Reconstruction Stage and preview Day 2 - Envision Stage.

Protocol: Day 1 Opening Activity

<table>
<tr><th colspan="2">Protocol: HHSLT Opening Activity–High Point Timeline & Expectations</th></tr>
<tr><td>Purpose:
Welcome the HHSLT participants upon arrival. Introduce an ice breaker whole group activity that creates a sense of safety and productivity with some group conversation that activates their prior knowledge.</td><td>Participants:
All HHSLT participants
Time:
8-8:40 a.m. - 40 minutes Welcome, consent forms, overview and create timeline
Materials:
HHSLT name tags; Individual laptops, shared document folders and projectors, wall timeline pre-constructed and projected in the room; colored markers, large easel pad, paper and stand, digital recorders and snacks.</td></tr>
<tr><td>Directions:
HHSLT expectations!
Ground rules:
1. We appreciate, affirm, value and respect each other at all times.
2. All input/comments are valuable.
3. We encourage each other to share their dreams!
4. All dreams are possible.
5. Focus on the best in Hays, USD 489, each other and yourself.
6. Every one participates but everyone has the right to pass when asked to contribute.
Roles:
1. Facilitator
a. Manage the overall AI process
b. Establish structure and time frames
c. Review purpose and guidelines for activities
d. Generate a constructive learning environment
2. HHSLT Participants
a. Contribute your knowledge, experience, and ideas
b. Bring out the best in your fellow HHSLT members
c. Tell lots of stories.
d. Listen for great quotes and stories to richly share to the whole group.
e. Analyze information and envision new future possibilities
f. Self-manage your group,</td><td>Continuity Search –USD 489/HHS Historical Educational Technology Timeline:
Construct a USD 489/HHS high point historical educational technology timeline and establish the HHSLT Expectations of ground rules, roles and confidentiality for working and talking with each other.

• Participants choose their own random seating.
• Warmly greet participants as they enter the room.
• Distribute, review and collect signed consent forms.
• Setting the stage and building relationships: Make comments to establish a safe and open climate within the HHSLT and create a sense of AI productivity and engagement by addressing discomforts and risk.
• State to participants that for our class to succeed we must establish ground rules for activities to establish a safe climate where to share our experiences, opinions, and ideas.
• Establish “HHSLT Ground Rules & Roles.”
• Project on the wall and review the “HHSLT Ground Rules and Roles”. Then allow the participants to contribute to the list.
• As facilitator fill in missing information such as a confidential reminder and that everything spoken or written will be recorded for the purposes of the study.
• Inform participants about the projected timeline on the wall and invite them to list high point events of educational technology in their history of USD 489/HHS. The timeline provides a vivid picture of the organization’s historical capacity and strengths.
• Using the Ground rules as your guide, allow the participants to share from the high point events listed on the projected wall timeline.
• After all participants have volunteered to share the high point events, ask the whole group to brainstorm this question: Why were these events a high point for you?
• Summarize the high points and why on the projected wall while participant comments are made, events and why’s will be summarized on the document for the group to see as a visual and later posted on a common document sight.</td></tr>
</table>

task and time g. You're constructing the future you want for USD 489. 3. Group Leadership a. Discussion Leader, timekeeper, Recorder, Reporters. Confidentiality!	
Member Checking and Summary:	• Participants will be asked to sign their name on the word document of ground rules as part of their personal commitment to each other. • As a reminder of the agreed to rules to be followed, the HHSLT Expectations will be printed and posted throughout the AI 2-day process. • The facilitator will summarize the high point and why list. Member check with all participants for understanding while confirming and clarifying what was said is reflected on the projected word document.

Day 1 Overview and AI Introduction – Protocol

Protocol HHSLT 2-Day Overview, Purpose and AI Introduction	
Purpose: Overview of the 2-day process with the HHSLT and review the purpose of the AI activities and introduce AI with first two stages the REDD Cycle.	**Participants:** All participants—whole group **Time:** 8:40- 9:10 a.m. - 30 minutes (Appendix B) - Overview of the 2-day AI process and the HHSLT activities including introduction to AI power point, with the first two stages of the REDD Cycle, and purpose of the study.
Directions:	**Activity:** Overview with the teachers with a review the purpose of the study of what will be happening over the next two days in the HHSLT and introduce AI and the REDD Cycle. I will say that I am seeking to (a) learn from you by (b) listening to your stories of when you really and truly experienced technology-oriented pedagogy that positively influenced student achievement, and (c) understand how you believe you can best sustain and extend your technology-oriented pedagogical practices that positive influence student achievement for a shared and preferred future in USD 489/HHS. The AI process looks for the good instead of deficit-based problem solving methodology. In the *Reconstruction Stage*, you will describe a high point teaching and learning experiences. Next, in the *Envisioning Stage*, you will imagine the future possibilities of what learning could be. Your input will have influence for the district's shared and preferred future in educational technology.
Summary:	**Continuity search by member checking:** Participants will be given time and, opportunity to ask questions and get clarification, before moving to the next activity.

Interview 1: Reconstruction High Point Experiences

Positive Core Guiding Statement: During your time at HHS, I'm sure you've had some ups and downs, some peaks and valleys, some highs and lows. Reflect and reconstruct a peak experience or high point experience at HHS with technology-oriented pedagogy that positively influenced student achievement.

A best example is a high point technology-oriented pedagogical experience that has the characteristics of a time when you felt most alive, most engaged and extremely proud of the important work you accomplished to positively influence student achievement.

Each observer should listen to the interviewee for great quotes and stories to richly share to the whole group.

When did it occur?

What was the setting/environment?

Who was there?

How were you involved?

What was happening?

What made it exciting (a high point)?

Describe how you felt.

What did you value most that positively influenced student achievement about the high point technology-oriented pedagogy experience?

How did you feel afterwards?

Were there other factors that contributed to making this a high teaching and learning with educational technology experience?

Protocol: Positive Core Interview 1

Protocol - HHSLT Reconstructing Positive Core Interview 1	
Purpose: HHSLT participants will share a best example of a high point technology-oriented pedagogical experience that positively influenced student achievement.	**Participants:** Two teams of ABC triples **Time:** 9:10-10:10 a.m. (includes self-managed break) One hour (Twenty minutes allotted per person to conduct the interview) **Materials:** Handout: Interview 1: Reconstructing Positive Core; pens/pencils, a laptop w/projector and tape recorder per team
Directions: Select interview partners for two teams of 3: Organize in groups of three: Team One: ABC: A>B=C observer, B>C=A observer, C>A=B observer Team Two: DEF D>E=F observer, E>F=D observer, F>D=E observer Whole Group: Sharing the interviewee's story to the whole group: • C>B, A>C, & B>A • F>E, D>F, & E>D	**Activity:** Introduction to semi-structured participant paired interviews; select partners, provide directions for conducting the interview, handout and review the (Appendix B - Interview 1): Reconstructing Positive Core. Suggested directions for conducting the paired interviews: • Each participant conducts an interview, is interviewed and observes/records an interview. • Each observer should listen to the interviewee for great quotes and stories to richly share to the whole group. • Use positive energy to draw your interviewee out and keep encouraging them to tell their story. • The guiding questions on the Interview 1: Reconstructing Positive Core will help provide direction so you can reconstruct your partner's positive core. • Questions can be skipped if the interviewee has no answer. • You may ask other questions for more details by asking who, what, when, why, and how questions. • Listen and take notes on the stories you hear, so you can introduce your observed/recorded partner and share their stories and quotes (Ludema et al., 2003). • Each interview will be recorded for research purposes. • The information we collect in this interview will be used to shape the strategic future of USD 489 and HHS.
Summary:	**Continuity search by member checking:** Review your partner's story and quotes with partner for accuracy and validity. Return to any skipped questions.

Protocol: Positive Core Whole Group 1

<table>
<tr><th colspan="2">Protocol - HHSLT Reconstructing Positive Core Whole Group 1</th></tr>
<tr><td>Purpose:
HHSLT participants interrelate in a whole group discussion about semi-structured participant paired interviews and to start to comprehend the AI process. Reflect and reconstruct a peak experience or high point experience at HHS with technology-oriented pedagogy that positively influenced student achievement.</td><td>Participants:
Whole group discussion w/HHSLT – Recorder & Time Keeper

Time:
10:10 – 10:50 a.m. - 40 minutes

Materials:
Handout: (Appendix7) Interview 1: Reconstructing Positive Core. Laptops with internet connectivity; projectors, large easel pad/easel; markers, pens/pencils.</td></tr>
<tr><td>Directions:
Select interview partners for two teams of 3:
Organize in groups of three:
Team One: ABC:
A>B=C observer, B>C=A observer, C>A=B observer

Team Two: DEF
D>E=F observer, E>F=D observer, F>D=E observer

Whole Group: Sharing the interviewee’s story to the whole group:
C>B, A>C, & B>A
F>E, D>F, & E>D</td><td>Activity:
Remind HHSLT of the Expectations document as a reminder of the ground rules, roles and confidentiality of the participants sharing in the whole group discussion.
<u>Metacognition</u> - The participants are invited to share their experience of the ABC semi-structured participant paired interview process.
The goal is for HHSLT participants to interrelate in a whole group discussion about semi-structured participant paired interviews and to begin to comprehend the AI process.
HHSLT members will reflect and reconstruct a peak experience or high point experience at HHS with technology-oriented pedagogy that positively influenced student achievement. A best example is a high point technology-oriented pedagogical experience that has the characteristics of a time when you felt most alive, most engaged and extremely proud of the important work you accomplished to positively influence student achievement.
HHSLT participants will be asked share their partner’s example of a high point of best technology-oriented pedagogical teaching experience with the whole group.
RECORDER - will list the positive core examples shared from each participant on a projected Positive Core Map document as a visual.
After HHSLT participants have shared their values they can volunteer to discuss patterns or possible themes that they have heard or see from the projected Positive Core Map document and the Technology Timeline.</td></tr>
<tr><td>Summary:</td><td>Continuity Search by Member Checking:
I will review the document with the whole group for accuracy and ask for confirmation as a form of member checking.
I will file the Positive Core Map document in a shared folder.</td></tr>
</table>

Interview 2: Reconstructing Values

Values Guiding Statement: At the heart of who you is a wonderful person, without being modest:

What do you value most about yourself as a person?

What are your special talents, gifts or attributes?

What do you value most about your work with (students, parents, staff, teachers, administrators, and community)?

What do you value most about USD 489 and HHS?

Protocol: Interview 2

HHSLT Protocol: Reconstructing Values Interview 2	
Purpose: HHSLT members share stories with each other over what they value about themselves, others and the organization.	**Participants:** AB Pairs **Time:** 10:50-11:20 a.m. – 30 minutes **Materials:** Handout : ***(Appendix B - Interview 2): Reconstructing Values; pens/pencils,*** a laptop w/projector and digital recorder per team
Directions: AB Semi-Structured Paired Interview Protocol: 3 x (2) AB – 3 Team's of two partners that interview a different partner than the first ABC interview group. Organize three teams (AB, CD, and EF) in groups of two: A>B = B>A, C>D=D>C, E>F=F>E. Whole Group: Each person will richly share the story of their partner to the whole group A>B = B>A, C>D=D>C, E>F=F>E.	**Activity:** • Select new interview partners, review the directions for conducting the interview, hand out and review ***(Appendix B - Interview 2): Reconstructing Values***. • Suggested directions for conducting the paired interviews • Each participant conducts an interview, then gets to be interviewed • The guiding questions on the (Appendix B ***Interview 2): Reconstructing Values*** will help provide direction so you can reconstruct what matters most to your partner. • Questions can be skipped if the interviewee has no answer. • You may ask other questions for more details by asking who, what, when, why, and how questions. • Listen for great quotes and stories to introduce your partner and richly share to the whole group. • HHSLT conduct semi-structured paired interviews with each other and take notes using their laptops (Appendix B - ***Interview 2): Reconstructing Values*** document as the interview guide. Each interview will be recorded for research purposes. The goal is to share stories with each other over what they value about themselves, others and USD 489/HHS. • 10 minutes is allotted per person to conduct the interview.
Summary	**Continuity search by member checking:** Before moving to the next activity, HHSLT will be asked to review for accuracy and confirm the notes they have taken about their partner's stories with each other over what they value about themselves, others and the organization so each participant can be prepared to share.

Protocol: Whole Group 2

HHSLT Protocol: Reconstructing Values Whole Group 2	
Purpose: HHSLT will richly share the stories of what their partners' value about themselves, others and USD 489/HHS.	**Participants:** Whole group discussion with recorder, time keeper and facilitator. **Time:** 11:20-12:00 a.m. - 40 minutes **Materials:** Handout: (Appendix B - Interview 2): Reconstructing Values; Laptops with internet connectivity and shared document files; projectors, large easel pad/easel; markers, pens/pencils.
Directions: AB Semi-Structured Paired Interview Protocol: 3 x (2) AB – 3 Team's of two partners that interview a different partner than the first ABC interview group. Organize three teams (AB, CD, and EF) in groups of two: A>B = B>A, C>D=D>C, E>F=F>E. Whole Group: Each person will richly share the story of their partner to the whole group A>B = B>A, C>D=D>C, E>F=F>E.	**Activity:** • Remind HHSLT of the Expectations document as a reminder of the ground rules, roles and confidentiality of the participants sharing in the whole group discussion. • Give participants time to review their (Appendix B -Interview 2): Reconstructing Values notes. • Allow all HHSLT members an opportunity to appreciatively introduce their partner and share their stories of what they value about themselves, others and USD 489/HHS. • **RECORDER** - will list the examples shared from each participant on a projected ***Value Theme***s document as a visual. • After HHSLT participants have shared their values they can volunteer to discuss patterns or possible themes that they have heard or see from the projected ***Value Themes*** document. • The facilitator should then have the group compare and contrast similarities and differences with the High Point Experiences documents.
Summary:	**Continuity search by member checking:** • I will review the *Value Themes* document with the whole group for accuracy and ask for confirmation as a form of member checking. • I will file the *Value Themes* document in a shared folder.

Interview 3: Reconstructing Best Traits and Core Factors

Guiding Statement: Best traits and positive core factors move individuals and organizations into a positive, generative future. Please identify the following life-giving capacities that move us.

Best Traits:

When are you at your technology-oriented pedagogical best?

When are you feeling best about teaching with technology-oriented pedagogy?

What is the most important thing that USD 489/HHS has contributed to your life? (You can refer back to this morning's main USD 489/HHS technology events lists that we created).

Core Factors:

What are the Core Factors that give life to the educational technology of USD 489 and HHS, without which educational technology in USD 489 and HHS would cease to exist?
1.

2.

3.

4.

5.

Protocol: Interview 3

<table>
<tr><th colspan="2">HHSLT Protocol: Reconstructing Best Traits and Core Factors Interview 3</th></tr>
<tr><td>Purpose: (Appendix 9-A). HHSLT participants conduct semi-structured one-to-one paired interviews with each other. The goal is to exchange stories about what each other does well and to identify the core factors or traits that they feel exhibit the best examples of high point technology-oriented pedagogical experiences that positively influences student achievement.</td><td>Participants:
Two teams of ABC triplets
Time:
12:30-1:10 p.m. (includes self-managed break) 50 minutes (Fifteen minutes allotted per person to conduct the interview)

Materials:
(Appendix B - Handout: Interview 3): Reconstructing Best Traits and Positive Core Factors guide; pens/pencils, a laptop w/projector and tape recorder per team</td></tr>
<tr><td>Directions:</td><td>Activity:
(Appendix B - Interview 3): Reconstructing Best Traits and Core Factors Review semi-structured participant paired interviews; select a new combination of partners you have not interviewed yet, provide directions for conducting the interview, handout and review Interview 3: Reconstructing Best Traits and Positive Core Factors. Suggested directions for conducting the paired interviews:
Each participant conducts an interview, is interviewed and observes/records an interview.
Each observer should listen to the interviewee for great quotes and stories to richly share to the whole group.
Use positive energy to draw your interviewee out and keep encouraging them to tell their story.
The guiding questions on the (Appendix B -Interview 3): Reconstructing Best Traits and Positive Core Factors will help provide direction so you can reconstruct your partner’s positive core.
Questions can be skipped if the interviewee has no answer.
You may ask other questions for more details by asking who, what, when, why, and how questions.
Listen and take notes on the stories you hear, so you can introduce your observed/recorded partner and share their stories and quotes (Ludema et al., 2003).
Each interview will be recorded for research purposes.
The information we collect in this interview will be used to shape the strategic future of USD 489 and HHS.</td></tr>
<tr><td>Summary:</td><td>Continuity Search by Member Checking:
Before moving to the next activity, participants will be asked to review for accuracy and confirm the notes they have taken about their partner’s exploration and stories of what the partner does well, so each participant can be prepared to share.</td></tr>
</table>

Protocol: Whole Group 3

<table>
<tr><th colspan="2">HHSLT Protocol: Reconstructing Best Traits and Core Factors Whole Group 3</th></tr>
<tr><td>Purpose:
(Appendix 9-B) HHSLT participants from the ABC semi-structured participant paired interviews introduce their partner and share their partner's story about some of their Best Traits and describe the partner's Core Factors of USD 489/HHS.

Next, the purpose in the scatter gram is to give a visual representation of what best traits/core factors of the HHSLT are most important to the participants as a whole group (the shared images of a preferred future).</td><td>Participants:
Whole group w/recorder, timekeeper and facilitator

Time:
1:10-2:10 - One Hour

Material:
(Appendix B - Interview 3): Reconstructing Best Traits and Positive Core Factors, pens/pencils; easel pad and easel; markers; 98Avery sticky dots; project or post the earlier easel pad paper sheets created with high point technology-oriented pedagogical experiences that positively influence student achievement themes or commonly identified words for comparison.</td></tr>
<tr><td>Directions:
Select interview partners for two teams of 3:
Organize in groups of three:
Team One: ABC:
A>B=C observer, B>C=A observer, C>A=B observer

Team Two: DEF
D>E=F observer, E>F=D observer, F>D=E observer

Whole Group: Sharing the interviewee's story to the whole group: C>B, A>C, B>A, F>E, D>F, & E>D</td><td>Continuity Journey:
(Appendix B - Interview 3): Reconstructing Best Traits and Positive Core Factors, Direct HHSLT participants' attention to the ground rules and roles that projects in the room as a visual reminder of the rights and responsibilities of the participants sharing in the whole group discussion.
(Appendix B – Interview 3) Give participants two-three minutes to review Interview 3: Reconstructing Best Traits and Positive Core Factors guide.
HHSLT participants introduce their partner and share their partner's story and notes about some of their Best Traits and describe the partner's Core Factors of USD 489/HHS, allowing each participant an opportunity to appreciatively share about his/her partner.
Recorder: will list the items that are shared from each participant on what they have stated as Best Traits and the Core Factors of themselves and USD 489/HHS on projected wall or easel pad as a visual.
I will review the projected or easel document for accuracy and ask for confirmation as a form of member checking in a continuity search.
After all HHSLT participants have had the opportunity to share their partner's story and notes, the participants can volunteer to discuss patterns that they heard or see from the visuals projected on the wall or posted on the easel pad that are characteristic of their Best Traits and the Core Factors of USD 489/HHS
Participants will be asked to take the list of USD 489/HHS core factors and the list of best traits of HHSLT's technology-oriented pedagogy that positively influences student achievement so they can compare/contrast noting similarities and differences in the reconstructed lists of Values and High Point Experiences.
A scatter gram will be created using 49 Avery sticky dots. Each participant will have 14 Avery dots to place next to the core factors/best traits that he/she feels are essential or most important. Then, participants will discuss patterns or themes in the placement of the numbers of dots. The goal is to give a visual representation of</td></tr>
</table>

	what core factors/best traits are most important to them as a whole (the shared images of a preferred future).
Summary:	**Continuity Search by Member Checking:** Before moving to the next activity, HHSLT participants will be asked to review for accuracy and confirm the patterns or theme words they have heard, seen, and marked to create a scatter gram on the projected wall or easel pad that are characteristic as the most important Core Factors to the participants as a whole group (the shared images of a preferred future).

Reflection: LHRHCCM of HHSLT AI Process

Guiding Statement: You have been participating in an Appreciative Inquiry (AI) research study as part of my Wichita State University Education Leadership Doctoral Program fulfillment. This study is focusing on the technology-oriented pedagogy that positively influences student achievement. You will be asked to construct a dialogue based on the HHSLT AI Day One - Reconstruction Stage process in a Left Hand, Right Hand, Column Case Method (LHRHCCM). LHRHCCM is an instrument used in action science research to produce and collect observable data about individual's theories. The right-hand column reflects your espoused theories and in the left hand column your theories-in-use (Argyris 1995). Your confidentiality is guaranteed and privacy of all participants and information will be protected. No respondents will be personally identified. Because of data analysis coding, only the researchers will be able to identify any respondent.

"It is only after time has been given for a cool and deliberate reflection that the real voice of the people can be known." George Washington

Protocol: LHRHCCM Reflection of HHSLT AI Day 1 Process

Protocol: I am asking you to reflect on the day's activities of what you heard or espoused in the right hand column. The agenda is listed in the right hand column simply is a guide to remind you of the discussions of what was articulated. Once you have finished constructing your perceived dialogue in the right-hand column , read your constructed dialogue and in the left-hand column write down what you thought or what theories that you really use but did not communicate aloud for whatever reason (i.e. On the right hand side describe the event as you see, heard or understood it; write how your interview or meeting began; what you actually said; what others said; then write your response to their response; continue the scenario until you have described the itinerary event. On the left hand column write any feeling or idea that you had that you would or did not communicate for whatever reason about each of the scenarios.)

Please insert or use as many rows and pages as necessary to complete your LHRHCCM reflections with rich details of the entire day.

Left Hand Right Hand Column Case Method (LHRHCCM)	
Left-Hand Column (What is not expressed aloud – Theories in-use)	Right-Hand Column (What is articulated verbally – Theories espoused)
Reconstruction Stage	
	Technology timeline in USD 489
	Ground rules and roles
	Introduction to AI
	High point Paired interviews:
	High point Whole group 1discussion:
	What you value most about yourself, others and HHS paired interview s :
	Values Whole group 2 discussion:
	Best traits and core factors Paired interview 3:
	Best traits and core factors Whole group 3:
	LHRHCCM individual reflection:

APPENDIX C

HHSLT Day 2 AI Envision Agenda

HHSLT Day Two – Envision Stage		
Time	**Key Activity**	**Protocol/Directions**
8:00-9:30 (8-8:30) (8:30-9) (9-9:30)	**Whole Group activity:** Reflect Day 1's learning, sharing of notable quotes, and Highlight experience from members. Introduce Day 2 with positive image positive action.	**Welcome** • (Appendix C - Power point) Highlights from Day 1 and testimonies from HHSLT members using the data from the created documents and easel sheets. • Projected information and posted easel sheets on walls for viewing. Member checking by asking the participants to check again for accuracy confirming the data will be a part of the process with the PowerPoint. • I will share some notable quotes from each participant from Reconstruction Stage. • Whole group "*I made a difference"*, activity • (Appendix C - Day Two AI Envision Stage) and introduction with understanding of positive image-positive action.
Envision Stage		**Novelty Journey**
9:30-10:00 (includes self-managed break)	**Individual/Paired Interviews:** Envisioning bold new possibilities like no one has dared conceive for educational technology in USD 489.	**Bold New Possibilities:** • Refer to the high point educational technology experiences data from information projected and posted on easel sheets on the wall already described in the Reconstruction Stage. • (Appendix C – Worksheet 1: Envision Bold New Possibilities) HHSLT participants will share with each other in paired partners Envision "Bold new possibilities like no one has dared conceive", for a more effective technology-oriented pedagogy that will positively influence student achievement in USD 489/HHS.
10-11:15 (10-10:30) (10:30-11:00)	**Whole group:** **Paired interviews:**	**Bold New Possibilities Novelty Journey:** • (Appendix C – Worksheet 1): Envision Bold New Possibilities, participants will share with HHSLT the whole group their bold new vision for creating the technology-oriented pedagogy that positively influences student achievement in USD 489/HHS? • Next, HHSLT paired interviews will complete (Appendix C - Worksheet 2): Envisioning the Future by imagining that 5 years have since past so they can describe what technology-oriented pedagogy that positively influences student achievement in USD 489/HHS could look like.
11:00-11:30 (includes self-managed break)	**Whole Group:** Discussion – Share the imagined future and co-construct the opportunity/concept map.	**Opportunity/Concept Map** • HHSLT participants will share the (Appendix C - Worksheet 2): Envisioning the Future • Using the (Appendix C - Worksheet 2): Envisioning the Future the HHSLT can collectively create an opportunity/concept map (Appendix C – Protocol Envisioning Bold new Possibilities).
11-12:00	**Paired Interviews/ Focus Groups/ Whole Group:** Capture the dream in an envision	**Envision Statements** • In a whole group, Review the HHSLT opportunity/concept map. • (Appendix C - Worksheet 3): Crafting Envision Statements,

	statement	(2) HHSLT focus groups will create a statement using the most important ideas from the HHSLT opportunity/concept map so they can craft the envision in one statement • (Appendix C – Protocol): Crafting Envision Statements (2) HHSLT focus groups will share dream statements with each other. • The whole group will then revise the dream statements into one dream statement. • The HHSLT whole group comes together and shares their envision statements. • Collaboratively the whole group creates one common envision statement for the HHSLT.
12-12:30	**Lunch**	
12:30-1:15	**Focus Groups:** Creative presentation of envision statements	**Creative Presentations** • (2) HHSLT focus groups, participants choose a creative way to represent or present the envision statement as if it were happening now. • (Appendix C - Worksheet 4): Creative Envisioning Presentations e.g., examples can include a TV news report, the creation of a song or poem, skit, or an interview. • Present the common envision statement and then discuss and identify the main ideas or core factors that were reflected by the presentation for the most effective learning (Appendix C –Protocol): Presentation of Envision Statement. Refine the envision statement if necessary.
1:15-1:45 (includes self-managed break)	**Focus Groups:** Introduction to the metaphor, choosing a metaphor, and creating/drawing the metaphor **Whole Group** Discussion 5: Sharing the metaphor	**Novelty Metaphor:** • (Appendix C - Worksheet 5): Creation of a Metaphor - Distribute and review the description of a metaphor • Review of metaphors and look at how metaphors are used. • (2) HHSLT focus groups participant chooses a metaphor that is representative of their envision statement and presentation. • HHSLT members may refer to the essence of the envision statement that were listed from Appendix C - Worksheet 4 and Worksheet 2. The goal is to choose a visual representation (metaphor) that illustrates the essences of their envision statement from their focus group. • HHSLT members will be asked to draw their metaphor (Appendix C - Protocol): Creation of Metaphor, using the laptops or easel pad and coloring supplies. • Focus groups share their metaphor and explain how it symbolizes their envision statement.
1:45-2:15	**Whole Group:** Closing	Review of created documents and reviewing the 2 AI Stages (Reconstruction and Envision) of the AI REDD Cycle (Appendix C – Protocol: LHRHCCM Reflection of HHSLT AI Day 2 Process
2:15: 3:00	**Summary:** Individual LHRHCCM	**Novelty Reflection:** (Appendix C - Reflection): LHRHCCM HHSLT AI Day 2 Process

Protocol: Review of Day 1 and Introduce Day 2

HHSLT Review of Day One Reconstruction Stage and Introduce Day Two Envision Stage	
Purpose: To reflect on prior day's learning, sharing of notable quotes, and introducing Day 2 with thoughts on positive image positive action.	**Participants:** Whole group **Time:** 8 – 9:30 a.m. – 90 minutes **Material:** Large flipchart sheets created on Day 1 posted throughout the room for view; laptop with power point presentation Day One Review (Appendix 11-B) and projection system;
Directions:	**Novelty Journey:** • Welcome (Appendix C - Protocol): Review of Day 1 and Introduce Day 2. • Sharing of highlight's from the previous day's work on the Reconstruction Stage (I will create a PowerPoint presentation as the review, based on the previous day's work using the data from the created documents on the laptop and easel pad. The created documents and easel sheets will be projected and posted around the room for whole group viewing. Member checking by asking the participants to check once again for accuracy confirming the data will be a part of the process while reviewing the PowerPoint. • I will share some notable quotes from each participant from the previous day's work. • Introduction to the day's work with understanding of positive image-positive action.
Summary:	**Novelty Envisions by Member Checking:** Check for understanding with members as I share and review created documents.


HHSLT Day One
• Opening Activity
• Intro to AI
• Reconstruct and Mapping the Positive Core
• Reconstructing Values
• Continuity Search
• Reconstructing Best Traits and Core Factors
• LHRHCCM Reflection


HHSLT Day Two
• Highlights – Day One
• Notable Quotes
• "I made a difference"
• Novelty Journey
• Bold New Possibilities
• Envision Statements
• Creative Presentations
• Novelty Metaphor
• LHRHCCM Reflection

Worksheet 1: Envisioning Bold New Possibilities

Guiding principle: Our hope is what we envision as new possibilities. What we envision is what propels us toward a preferred and shared future. Today, we have the opportunity to envision bold new possibilities. Envision "like no one has dared conceive yet," bold technology-oriented pedagogy that will positively influence student achievement in USD 489/HHS.

Challenge: Referring to the high point educational technology experiences you have already described, Envision "like no one has dared conceive yet," bold educational technology possibilities by describing a future vision for your educational technology (product and idea) experience.

What 3 wishes do you have for creating the ideal technology-oriented pedagogy to positively influence student achievement at USD 489/HHS.

1.

2.

3.

Protocol: Envisioning Bold New Possibilities

HHSLT Protocol: Envisioning Bold New Possibilities	
Purpose: Envisioning Bold New Possibilities for educational technology like no one has dared conceive for USD 489/HHS.	**Participants:** Paired/focus group/whole group **Time:** 9:30- 10 a.m. - 30 minutes **Material:** Reconstruction Stage created documents (Appendix C - Worksheet 1): Envisioning Bold New Possibilities
Directions:	**Bold New Possibilities:** Using the data from information projected and posted on easel sheets on the wall from Reconstruction Stage. • (Appendix C - Worksheet 1): Envisioning Bold New Possibilities HHSLT participants will be asked to share with each other in paired partners the Envision, "Like no one has dared conceive", bold technology-oriented pedagogy that will positively influence student achievement in USD 489/HHS. • Our hope is what we envision as new possibilities. What we envision is what propels us toward a preferred, shared future. Today, we have the opportunity to envision bold new possibilities.
Summary:	**Novelty Envisions by Member Checking:** • (Appendix C – Worksheet 1): Envisioning Bold New Possibilities, participants will share with HHSLT focus groups their future vision for creating the ideal educational technology experience in USD 489/HHS?

Worksheet 2: Envisioning the Future

Guiding principle: Our envisioning can come true. What we focus on becomes our reality.

Some men see things as they are and say, "Why?" I dream of things that never were and say, "Why not?" – Robert F. Kennedy

Imagine you have awakened from a deep sleep and five years have passed. The year is now 2014 and the technology-oriented pedagogy to influence positive student achievement at USD 489/HHS is different. USD 489/HHS is the top district and high school in state achievement because the staff is functioning as you dreamed and students are achieving as you had imagined.

1. What is happening?

    a. How did this come about?

    b. What helped it happen?

    c. What are the things that support this vision (leadership, structures, training, procedures, etc...)?

    d. What makes this vision exciting for you?

    e. How does this vision maximize technology-oriented pedagogy that positively influences student achievement?

Protocol: Envisioning Bold New Possibilities and Future Opportunity/Concept Map

HHSLT Protocol: Envisioning Bold New Possibilities & Future Opportunity/Concept Map	
Purpose: Share bold new possibilities, the envisioned future and create an opportunity/concept map.	**Participants:** Whole Group **Time:** 10-10:30 a.m. – 30 minutes **Material:** Handouts: Worksheets 1 and 2 (Appendices C Worksheet 1 & 2): Bold New Possibilities and Future; projected or easel sheet circle-in-a-circle opportunity/concept map, envisioned future and bold new possibilities documents on the wall, easel pad and easel; markers; digital recorder;
Directions	**Novelty Journey:** • Whole group - Direct participant's attention to the Ground rules as a visual reminder of the roles, rights and responsibilities while sharing in the discussion. • Each paired team will have the opportunity to share the 3 wishes for bold new possibilities in educational technology. • Next, each paired team will have the opportunity to share and describe what was happening and what helped make the scenario happen: Imagine you have awakened from a deep sleep and five years have passed. The year is now 2014 and the technology-oriented pedagogy to influence positive student achievement at USD 489/HHS is different. USD/489HHS is the top school in state achievement because the staff is functioning as you dreamed and students are achieving as you had imagined (Appendix 12). • **Recorder:** will list the items that are shared to the whole group from the paired participant's descriptions of the envisioned future scenario each pair's 5 year future including the participants' three wishes and the descriptions of the scenario on the projected wall. • I will also review the data for accuracy and ask for confirmation as a form of member checking. • After all pairs of participants have had the opportunity to share the three wishes for bold new possibilities and shared the participant's descriptions of the envisioned future scenario, the participants will be asked to use the data from the created documents as the basis to collectively create an opportunity/concept map with the envisioned future vision educational technology components. • The goal of the opportunity/concept map is to have the participants begin to develop a positive guiding image of the future for more effective learning experiences (Ludema et al., 2003). • HHSLT as a **whole group** will create the opportunity/concept map: Projecting a circle with in a circle graph, with center labeled "Future Technology-Oriented Pedagogy," HHSLT members will draw lines out from the center with the opportunity written on the line that defines the ideal technology-oriented pedagogy. • Participants can refer to the data from the pairs of participant presentations. • When participants are satisfied with the components necessary for future technology-oriented pedagogy, opportunity/concept map: then the process is drawn to closure.

Summary:	**Novelty Envisions by Member Checking:** Before moving to the next activity, participants will be asked to review for accuracy and confirm what is presented in the opportunity/concept map.

Worksheet 3: Crafting Envision Statements Guidelines

Guiding Principle: Capture the essence of this vision in an Envision Statement: "By 2014, what we most envision in terms of technology-oriented pedagogy that positively influences student achievement is …"

- Use vivid language.
- Be positive.
- Be bold and provocative enough to challenge the status quo.
- Make it a stretch that will attract the best teachers.
- Captures the imagined dream form technology-oriented pedagogy.
- Is written in the present tense.
- Reflects the cliché, be careful what you wish for; it may come true.
- Is grounded enough with examples so it could really happen.

Protocol: Crafting Envision Statements

Protocol: HHSLT Crafting Envision Statements	
Purpose: To capture the essence of the ideal envision statements and then craft them into one co-constructed envision statement.	**Participants:** Paired/focus group/whole group **Time:** 11a.m. – 12 p.m. One hour **Material:** Projected documents with the whole group's co-constructed opportunity/concept map; markers and easel pad; (Appendix C - Worksheet 3): Crafting Envision Statements - document prepared with the envision statement guidelines.
Directions:	**Novelty Journey:** • As a whole group, participants will review and discuss the opportunity/concept map to clarify any lines on the map. • (Appendix C - Worksheet 3): Crafting Envision Statements I will explain what an envision statement is and the guidelines. • (2) HHSLT focus groups members, create an envision statement using the most important ideas from the opportunity/concept map so the participants can capture the vision in one statement. • (2) HHSLT focus groups members will share envision statements with each other. The participants will then revise their envision statements in their focus group so there is one envision statement for each focus group. • The whole group comes together and the two remaining envision statements are shared. Collaboratively the whole group creates one common HHSLT envision statement. • This type of collaborative inquiry is modeled after Wellman and Lipton's (2004) 5-3-1 activity. The two focus groups envision statements are posted for the whole group to review. In a round robin format, the first participant offers input and begins the writing of the one envision statement; then each participant has the opportunity to add to/delete/revise the envision statement until everyone agrees on one envision statement that follows the envision statement guidelines.
Summary:	**Novelty Envisions by Member Checking** : Before moving to the next activity, participants will be asked to review for accuracy and come to consensus on the one envision statement.

Worksheet 4: Creative Envisioning Presentation

Guiding statement: Imagine five years have elapsed from today, ABC Good Morning America has chosen to spotlight your accomplishments over the last five years with technology-oriented pedagogical practices in USD 489/HHS that positively influenced student achievement. Create a bold headline and a supporting one paragraph lead in story that describes the bold vision that led to these accomplishments.

a) Why is Good Morning America spotlighting you?

b) What are students saying to Good Morning America?

c) What is the community saying to Good Morning America?

d) What are board members saying to Good Morning America?

e) What are administrators saying to Good Morning America?

f) What are the USD 489 staff members saying to Good Morning America?

4. Each pair/group presents a newscast of their Good Morning America Story to the whole group.

5. What did we learn from these stories?

6. Review the presentation of the other groups – What was the important lesson/theme/central idea?

Protocol: Presentation of Envision Statement

HHSLT Protocol: Presentation of Envision Statement	
Purpose: To creatively capture the envision statement in a presentation by the group.	**Participants:** (2) Focus Groups and whole group **Time:** 11:00- 1:15 p.m. - 105 minutes (30 minute lunch break in between) **Material:** Laptops with projectors and easel pad with the co-constructed statements. Whatever materials used by the participants to present the dream statement
Directions:	**Presentation of Envision Statement :** • (2) HHSLT focus groups will choose a creative way to represent or present the envision statement to the whole group as if it were happening now. Examples can include a TV news report (e.g. ABC Good Morning Show), the creation of a song or poem, skit, or an interview. • All HHSLT members are asked to have a role in the presentation of the creative presentation of the dream statement.
Summary:	• **Novelty Envisions by Member Checking**: • HHSLT will reflect and discuss the image for the USD489/HHS future for technology-oriented pedagogy that positively influences the future. • Member checking will allow for refining of the future image if necessary.

Worksheet 5: Creation of Metaphor

Guiding Statement: Metaphors are a figure of speech in which an expression is used to refer to something that it does not literally denote in order to suggest familiarity. You will use metaphors as an important way of visualizing what your envision statement captured. Choose a metaphor that exhibits some of the best traits of the envision statement, key words that you described in the Worksheet 3: Crafting Envision Statements.

"The metaphor reminds us that the universe is full of cousins." J.D. Casnig, Resident Observer

Example metaphors: Troop surge, perfect storm, tsunami, Razr and addicted to oil.

Using your laptop or the easel pad and coloring supplies, draw a picture of your metaphor.

Why does your metaphor capture the essence of your envision statement?

Protocol: Creation of Metaphor

HHSLT Creation of Metaphor	
Purpose: Introduce the metaphor to HHSLT and have focus groups choose a visual representation (metaphor) that captures the essence of the envision statements.	**Participants:** Whole group, focus groups and recorder **Time:** 1:15 - 1:45 p.m. – 30 minutes Intro to metaphor, focus groups create metaphors that capture the envision statement 10 minutes—Focus groups sharing metaphors created and how they capture the envision statement. **Materials:** (Appendix C - Worksheet 2): Envisioning the Future and (Appendix C - Worksheet 4): Creative Envision Presentation available for reference; Laptops w/projectors and internet access, pens/pencils; easel pad paper for each participant; multi-colored markers.
Directions:	**Novelty Metaphor Journey:** • (Appendix C -Worksheet 4): Creation of Metaphor. Distribute and review the description of a metaphor and the metaphor worksheet. • Each focus group draws a metaphor that is the essence of the envision statement. (Appendix C Worksheet 2): Envisioning the Future and (Appendix 15) Worksheet 4: Creative Envision Presentation available to HHSLT participants to represent the essence of the envision statement. • Using the laptops and projectors or the easel pad and coloring supplies, HHSLT focus groups will be asked to draw the metaphor they have chosen to represent the essence of their envision statement. • Next the focus groups share how their metaphor chosen represents the essence of their envision statement. • **Recorder:** will list the metaphors chosen and how the metaphor represents the essence of their envision statement as the focus groups share with the whole group. • I will also review the projected documents or easel pad for accuracy and ask for confirmation as a form of member checking.
Summary:	**Novelty Envisions by Member Checking**: Before moving to the next activity, participants will be asked to review for accuracy and confirm what is created on the documents to what they have heard as the metaphors and how they represent the essence of their envision statement.

Reflection: LHRHCCM of HHSLT AI Day 2 Process

Guiding Statement: You have been participating in an Appreciative Inquiry (AI) research study as part of my Wichita State University Education Leadership Doctoral Program fulfillment. This study is focusing on the technology-oriented pedagogy that positively influences student achievement. You will be asked to construct a dialogue based on the HHSLT AI Day One - Reconstruction Stage process in a Left Hand, Right Hand Column Case Method (LHRHCCM). LHRHCCM is an instrument used in action science research to produce and collect observable data about individual's theories. The right-hand column reflects your espoused theories and in the left hand column your theories-in-use (Argyris 1995). Your confidentiality is guaranteed and privacy of all participants and information will be protected. No respondents will be personally identified. Because of data analysis coding, only the researchers will be able to identify any respondent.

"It is only after time has been given for a cool and deliberate reflection that the real voice of the people can be known." George Washington

Protocol: LHRHCCM Reflection of HHSLT AI Day 2 Process

Protocol: I am asking you to reflect on the day's activities of what you heard or espoused in the right hand column. The agenda is listed in the right hand column simply is a guide to remind you of the discussions of what was articulated. Once you have finished constructing your perceived dialogue in the right-hand column , read your constructed dialogue and in the left-hand column write down what you thought or what theories that you really use but did not communicate aloud for whatever reason (i.e. On the right hand side describe the event as you see, heard or understood it; write how your interview or meeting began; what you actually said; what others said; then write your response to their response; continue the scenario until you have described the itinerary event. On the left hand column write any feeling or idea that you had that you would or did not communicate for whatever reason about each of the scenarios.)

Please insert or use as many rows and pages as necessary to complete your LHRHCCM reflections with rich details of the entire day.

Left Hand Right Hand Column Case Method (LHRHCCM)	
Left-Hand Column (What is not expressed aloud – Theories in-use)	Right-Hand Column (What is articulated verbally – Theories espoused)
Envision Stage	
	Review Day Two – Envision Stage
	Notable Quotes:
	"I made a difference"
	Bold New Possibilities
	Opportunity/Concept Map
	Envision Statements
	Creative Presentations of Envision Statements
	Metaphor
	Document Review Day One and Two
	LHRHCCM individual reflection: