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The co-creation of value to address stakeholder contradictions in teacher adoption of technology enhanced learning in California public schools

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THE CO-CREATION OF VALUE TO ADDRESS STAKEHOLDER CONTRADICTIONS IN TEACHER ADOPTION OF TECHNOLOGY ENHANCED LEARNING IN CALIFORNIA PUBLIC SCHOOLS

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Steven B. Hickman

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This dissertation, written by

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under the guidance of a Faculty Committee and approved by its members, has been submitted to and accepted by the Graduate Faculty in partial fulfillment of the requirements for the degree of

DOCTOR OF EDUCATION

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DEDICATION

To my parents David and Mary Hickman:

You showed me the inescapable value of persistence and hard work and demonstrated for me that love is work and work is love. Even, as in this achievement, as I tried to work “smart,” your lessons resonate in every page, in every word, and every syllable. I am blessed and extremely proud to be your son.

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God has blessed me with a wonderful family to motivate, inspire, support, and even obligate me to continue to grow as an individual, as a family member, as a citizen, as a Christian. And though sometimes I fall short in all these categories, it is certainly not the fault of my family whom I love so dearly and to whom I am so grateful for their love and companionship. My wife, RoseMarie, has been there with me throughout this dissertation journey and inspired me on this path. My sister, who opened her home to me on those long Pepperdine weekends, you probably don't know the burden you lifted. My mother-in-law, Mary, who covered for me so many times when I couldn't be there due to school. April and Dennis, two of the most supportive bosses I have ever had, thank you for your understanding. Amar, my brother from another mother, thank you for your support and encouragement. I don't think I'll be prouder of another person than you when you take on that hood. The rest of C20, thank you for making this Pepperdine experience one full of lifelong and joyful memories. Judith Fusco Kledzik, Ph.D., you set the standard for excellence when I entered this program, and it's only fitting that you did so as I exit it. Thank you for your guidance and friendship. I look forward to the possibility of working with you on future projects. To Dr. Polin, and Dr. Davis, I chose you because throughout my coursework, you challenged me to be a scholar. I hope this work meets your expectations and lives up to the Pepperdine brand that I love so much. To my kids, Ashlyee, Aamber, and Steven, the only failure is quitting, and the only success is that which you can enjoy with the ones you love. That's why I look forward to sharing this accomplishment with you.

VITA

Steven B. Hickman

Experience

Riverside County Office of Education, Riverside, CA

1/2016 to Present **Coordinator Educational Technology**

Responsibilities include collaborating with RCOE Educational Services administrators in their support of STEAM, ELA/ELD, Migrant Education, Special Education, and teacher credentialing; planning and conducting educational technology conferences, reviewing and recommending specific digital tools to support 21st century pedagogy, facilitating Leading Edge Certification for teachers and administrators, coordinating the Future Ready Schools implementation at RCOE, convening educational technology stakeholders throughout the county in the Technology Leaders Network, setting the agenda and developing professional learning and collaborative activities for these stakeholders; implementing the county digital badging program, and collaborating with the RCOE Center for Teacher Innovation to develop online modules for their Coaching Academy; planning, coordinating, and problem solving with the RCOE educational technology team and various stakeholders to ensure these responsibilities are achieved.

Northwest Council for Computer Education (NCCE), Coeur d'Alene, ID

7/2016 to Present **Professional Learning Specialist**

Working to increase capacity of teachers through onsite professional learning in 21st century learning design using Microsoft and Office 365 products.

Corona-Norco Unified School District, Corona, CA

10/2015 to 1/2016 **Instructional Coach, Literacy and Educational Technology**

Building capacity of educators to use technology as a tool for effective teaching and learning. Coaching and collaborating with teachers to help them reach their pedagogical goals. Collaborating with the educational technology team and relevant stakeholders to design and implement EdTech initiatives such as digital citizenship, financial literacy, Surface 3 rollout, and Canvas rollout

Corona-Norco Unified School District, Corona, CA

8/2003 to 10/2015 **Teacher, Language Arts**

Prepared students for college and career through rigorous, personalized, collaborative, and standards-based instruction. Worked to develop and demonstrate instructional strategies and educational technology policy as a member of the SHS instructional leadership team and educational technology committees. Facilitated the 9th grade ELA professional learning community.

Perris Union High School District, Perris, CA

8/2002 to 6/2003 **Teacher, Language Arts**

Worked with ELL seniors to improve literacy skills. Team taught with another teacher.

Target Stores, Cerritos, CA

8/1993 to 2/2002 **Store Team Leader**

Led a team of over 150 team members to deliver exceptional customer service. Improved operational processes, managed payroll budgets, coached and trained team members and team leaders to deliver outstanding service. Together we worked to generate sales in excess of 30 million dollars per year. Began as Freight Flow Manager and became Store Team Leader in less than five years.

Wherehouse Entertainment, Torrance, CA

8/1985 to 8/1993 **Store Manager**

Trained and developed staff and assistant managers. Maximized customer service. Maintained a clean and well-organized store.

United States Air Force, Yokota, AB, Japan

8/1981 to 8/1985 **Cable and Antenna Systems Maintenance and Installation Specialist**

Installed and maintained high frequency antenna systems as well as telephone systems throughout Asia.

Education

Pepperdine University, Los Angeles, CA

Ed.D. Learning Technologies - May 2018

Emphasis in learning theory, research methods, technology enhanced learning, gaming theory, and national education policy.

University of California, Riverside, CA

M.A. Education, Curriculum and Instruction - June 2006

California State Polytechnic University, Pomona, CA

B.A. English - June 1997

Conferences

DML 2016. Let's Build. Let's Design. Let's Solve

Digital Citizenship: Creating Culture in Context, Co-Presenter

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Certifications

Leading Edge Certification –Administrator (January 2017)

Leading Edge Certification –Digital Educator (May 2017)

Leading Edge Certification –Professional Learning Leader (January 2018)

Microsoft Innovative Educator - Expert 2017 - 2018

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Google Certified Educator

ABSTRACT

This qualitative phenomenological study examines the experiences of six successful educational technology leaders in co-creating value among various district stakeholders to reduce the contradictions encountered in teacher adoption of technology enhanced learning. The primary data collection method was through semi-structured interviews. The data was analyzed using a hybrid approach, first examining the interview data for emergent themes, and then an a priori analysis was conducted based upon a value framework, motivational values, and relative advantage. Contradictions were identified and mapped on activity system diagrams for each participant. The value propositions were also identified that addressed contradictions. The primary stakeholders and their salience characteristics were also identified. This research revealed that although value co-creation was not explicitly mentioned by the study participants, the most successful implementers involved teachers and other stakeholders early and often in their implementation, used flipped, job-embedded, and collaborative professional learning to increase teacher capacity, and worked to establish community partnerships and student showcases that illustrated the modern, relevant, education from which students were benefiting in the educational technology leader's district. The compatibility of the emergent and a priori analysis in this study suggests value co-creation and value propositions are principal factors in the adoption of technology enhanced learning. An important implication of this study is that a more in-depth understanding of value co-creation and value-propositions could work to improve implementation and adoption of technology enhanced learning. The study also revealed that analysis through activity theory is a useful means of examining teacher context and effectively empathizing with teachers, the end-user of most educational initiatives.

Chapter 1: Introduction

The proliferation of information and communications technology (ICT) has produced significant pressures on education systems in the United States (Laurillard, 2008) and continues to drive the metamorphosis of the world's social and economic landscape. The ubiquity of this technology has redefined what it means to work in society, supporting a global value chain in which several different countries participate in a product's production and marketing cycle (OECD, 2017b). The likelihood of industries thriving under these conditions is highly contingent upon "the ability of various stakeholders to manage change" (World Economic Forum, 2016). Schools are no exception, and to prepare students for this changing landscape, technology, communication, collaboration, creativity, and cultural competence are essential skills that must be developed (Grand-Clement et al., 2017).

Unlike previous decades, jobs with the most projected growth do not include jobs in the manufacturing sector. Instead, the U. S. government projects information-technology related jobs will continue to be the fastest growing and highest paying professions in the U. S., and even a cursory examination of the projected jobs through 2024 with a current median annual salary of over $50,000 indicates that these jobs will require significant technical, problem-solving, and communications skills (U.S. Department of Labor, Bureau of Labor Statistics, 2016). Service industry jobs will continue to grow, but none of these are projected to have a median salary over $25,000 per year. Furthermore, the jobs of tomorrow, many of which do not exist today (Darling-Hammond et al., 2015), will also require creativity and the ability to use technology as a cognitive tool to extend thinking and improve productivity (Ertmer & Ottenbreit-Leftwich, 2013; Mayes, Natividad, & Spector, 2015).

Unfortunately, despite these economic trends and the need to prepare students to work in a converging world economy (Darling-Hammond, 2014; U.S. Department of Education, 2010), many California teachers demonstrate limited value for technology use in the classroom. Without a heightened appreciation for the value of technology in the classroom, it is unlikely that teachers will adopt the practices of technology enhanced learning (Grand-Clement, 2017). In addition, transforming California schools will require "implementation of an entire system of technological and organizational innovation, not just a single stand-alone invention" (Pierce & Cleary, 2016, p. 865).

A model that holds great promise for guiding school transformation is the coherence model (Fullan & Quinn, 2016). In this model, Fullan and Quinn suggest that school systems need a focusing direction, collaborative cultures, internal accountability structures that are reinforced by external accountability structures, and a process for deepening student learning. Fullan and Quinn recognize that transforming teaching and learning in schools requires a systems approach, and their vast experience in examining school practice offers credible, practice-informed guidance for sustainable school transformation. Fullan himself, however, in a 2018 conference presentation stated that the problem with their coherence model is perhaps not the model itself, but "superficial implementation of the right drivers" (Fullan, 2018). Whether guided by Fullan's work or the plethora of books and models of school change available, a genuine commitment from stakeholders throughout the organization is essential to productive transformation of teaching and learning in California public schools.

In an effort to foster such commitment, this study uses stakeholder theory (Freeman, 1984; Freeman, Gilbert & Hartman, 1988; Mitchell, Agle, & Wood, 1997), service-dominant logic and value co-creation (Vargo & Lusch, 2016), motivational values (Schwartz, 1996), and

value creation from an individual, organizational, eco-systemic, and societal level (den Ouden, 2012) to examine the ways in which educational technology leaders have sought to foster technology enhanced learning among teachers in California public schools. Without genuine commitment to prioritizing and supporting the pedagogy necessary to deepen student learning, even with ready access to information and communications technology for teachers and students, the classroom is likely to revert to that state of rote learning and teacher-driven equilibrium that has dominated American school systems for more than a century. (Haynes, Margolin, Heppen, & Ruedel, 2016).

Statement of The Purpose

The purpose of this phenomenological study is to understand the experiences of district educational technology leaders in California public schools of creating or co-creating value for technology enhanced learning among the district's various stakeholders in order to foster adoption of technology enhanced learning in the state's public school classrooms.

Research Questions

The following are questions this study seeks to answer:

1. What have been the experiences of successful district educational technology leaders in identifying, prioritizing, and creating value for stakeholders in teacher adoption of technology enhanced learning in California public school districts?
2. In what ways, if any, does the co-creation of value with stakeholders affect the contradictions extant within the activity system?
3. In what ways, if any, do educational technology leaders consider stakeholder salience in addressing stakeholder value demands?

Statement of The Problem

A Nation at Risk: The Imperative of Educational Reform (United States, 1983) decried the condition of our nation's schools and labeled them as failing. Since then a wave of content standards, curriculum and scheduling requirements, and support for struggling students have been implemented. Now, nearly 35 years later, schools face another crisis in graduating students unprepared for the creative, collaborative, technical, and problem-solving demands of college and career largely because many who are charged to inspire the necessary learning, do not themselves model this learning for their students. Despite the ever-increasing availability of training and support, growing reliability and presence of information and communications technology tools, and credible empirical support for the learning gains to be achieved with technology enhanced learning, many teachers continue to hold on to pedagogy and tools that foster information transfer and passive, rote learning. This is often without considering that many of their students have the technology, tools, and information in their hands and in their homes to solve the well-defined problems students are assigned at school in the name of learning (Brown, Collins, & Duguid, 1989; Schrum & Levin, 2016).

Many researchers and leaders realize that the problem is more complex than "staled" teachers entrenched in old habits. They acknowledge that school culture and systems are often fostering the pedagogy of information and process transfer due to standardized testing, profitable sales of books and supplies, distrustful unions, and the lack of a collaborative culture and a shared, transformative vision that helps to break down educational silos. These "silos and sacred cows," often inadvertently, maintain the status quo (Grand-Clement et al., 2017; Levin & Fullan, 2008; Usher, 2009).

Overcoming the status quo has proven to be a formidable task because even with a shared vision, readily available and reliable information and communications technology tools, willing students, and a small brigade of innovators and early adopters, effective technology use in public education is still the exception (Hew & Brush, 2007). Technology has affected work practice far less in public education than it has in other sectors of the U.S. economy (Hixon & Buckenmeyer, 2009). The failure to exploit the rich potential of information and communications technology to deepen and extend student communication, creativity, cognition, and collaboration creates another digital divide between those who know how to use technology to achieve these goals and those who do not (OECD Publishing & Centre for Educational Research and Innovation, 2010). As such, many California public schools are failing to prepare students for college and career due to the unwillingness of many teachers to shift from largely instructionist practices that do not foster the skills demanded by the modern workplace; furthermore, their failure to incorporate the principles of technology enhanced learning or 21st century pedagogy threatens teacher relevancy in the minds of our students (Lemke & Couglin, 2009). Many studies have sought to understand the barriers to teacher adoption of technology enhanced learning. Many studies have investigated the role of the school principal in technology leadership and teacher adoption of information and communications technology. Many scholars have advocated for a systems approach to change, but few if any have sought to understand the role of the educational technology leader in the co-creation of value for a broad range of stakeholders to align school and district systems to hasten teacher adoption of technology enhanced learning, pedagogical practices California students desperately need. This study seeks to address this perceived gap in the literature.

Significance of This Study

By and large, California teachers hold to a pedagogy characterized by teacher-centered practices that embrace an epistemology hailing knowledge transfer, standardization, and efficiency –pedagogy arguably fit for an era long past where the assembly line was king (Darling-Hammond, 2010; Davies & West, 2014). In a national survey of public schools with approximately 2,686 respondents, the National Center for Education Statistics (NCES, 2009) reported that 94 percent of teachers have access to networked computers in the classroom for attendance, yet only 40 percent said they or their students used computers often for instruction in the classroom. A more recent national survey of eighth grade students for Technology and Engineering Literacy conducted by the National Assessment of Educational Progress (NAEP) indicated that only 50 percent of students reported using a computer "to create, edit, or organize digital media at least once a month in school" (National Assessment of Educational Progress, 2014). According to the 2016 Speak Up survey, over 70% of California teachers report that their classrooms are characterized by traditional pedagogy (Project Tomorrow, 2016). This is despite the fact that many California public school districts are amid the process of implementing technology enhanced learning. Some are just beginning implementations of one-to-one initiatives, bring-your-own-device (BYOD), blended learning, virtual schools, and other hybrid approaches. Others have been involved in such processes longer. Access to technology and robust internet access for teachers and students is steadily increasing, yet technology use in public education is not even approaching the U.S. goal of technology as "an integral and foundational component of our education system" (U.S. National Educational Technology Plan, 2016, p. 81).

To address this problem, this study adds insight into the ways the educational technology leaders foster adoption of technology enhanced learning. It examines the experience of successful educational technology leaders in creating and co-creating value, in using value propositions to address the problems incurred with teacher adoption of technology enhanced learning, and in identifying and prioritizing value claims based upon the salience characteristics of the stakeholder. The study is intended to inform the practice of change management especially as it relates to the adoption of technology enhanced learning.

Theoretical significance. This study takes a somewhat novel approach to change management in that it uses activity theory to examine the cultural-historical context of the teacher and to locate the tensions and contradictions that hinder teacher adoption of technology enhanced learning. It also examines the value propositions that were made to address those contradictions. The construct of value co-creation in service dominant logic (Vargo & Lusch, 2016) was used to better understand the role of the stakeholder and the cultural-historical context in value co-creation.

Definition of Key Conceptual Terms

The following terms are useful in understanding this study.

1. Stakeholder: “Any group or individual who can affect or is affected by the achievement of the organization’s objectives” (Freeman, 1984, p. 46).
2. Stakeholder salience: A construct used to determine "the degree to which managers give priority to competing stakeholder claims" (Mitchell, Agle, & Wood, 1997, p. 854). This is based upon the power of the stakeholder, the legitimacy of the claim, and the immediate consequence of failing to address the claim.

3. Value: The objective or subjective worth of something. This worth can be objective or subjective, conscious, or subconscious. In this paper, it is meant to describe the reason for personal beliefs or social behavior. It usually involves the following categories: religion (belief systems), behavior (moral and ethics), economics (exchange), value-in-use (utility), culture (meaning and sign), or perceptions (experiences) (Jensen, 2005).
4. Technology enhanced learning: Because the form and application of information and communications is ever-changing, a precise and universal definition of technology enhanced learning is elusive. Its use in this dissertation, however, is meant to describe pedagogy in and around a formal educational setting that makes use of the unique affordances of available information and communications technology to enhance personalization, real-world application, creativity, knowledge construction, motivation, communication, collaboration, and/or applied cognition, thus deepening student learning. This usually involves teaching practices informed by the learning sciences (Roschelle, Grover, & Bakia, 2016), and it is meant to exclude prolonged, passive learning practices (even with the use of information and communications technology) where the student is a mere recipient, cataloger, or reciter of information or processes (Future Ready Schools, 2017).
5. Contradiction: “Activity theory uses the term *contradiction* to indicate a misfit within elements [of an activity system], between them, between different activities, or between different developmental phases of a single activity. Contradictions manifest themselves as problems, ruptures, breakdowns, [and] clashes” (Kuutti, 1995, p. 34).

Delimitations of The Study

This study is focused on the specific role of educational technology leader as the co-creator of value. This is because there is a wealth of research on change management and the barriers to teacher technology integration and increasing research of the role of technology leader. Despite its rather obvious benefit, the creation of value for technology enhanced learning among stakeholders, decision-makers, and peers has not been fully addressed in the literature. Interviews of educational technology leaders will be conducted to glean valuable data pertaining to their process, their intent, and their priority in creating value for district stakeholders.

Limitations of The Study

This study is focused on one population in the state of California. While it is intended to examine some of the deeper, human processes (i.e. value and values), the economic, political, and social climate of California may be unique, and the conclusion may not generalize to persons in all contexts. Furthermore, while efforts were made to ensure scholarly rigor in the interview process, the process is subject to the researcher's biases and experience as an educational technology leader. Furthermore, the semi-structured interviews are designed to pursue saturation, not necessarily generalizability.

Organization of The Study

This is the first of five chapters in this research study. In it was an introduction to provide the context for the proposed study. It also included a statement of purpose that identified the perceived gap in the literature this study intends to fill and the research questions the study intends to address. The chapter also explained the significance and persistence of the lack of teacher adoption of technology enhanced learning (TEL) and provided definitions for important theoretical concepts contained in this study. Finally, the chapter included the delimitations and

limitations of the study that identified the specific population and concepts intended to be studied, the rationale for doing so, and the perceived limitations of the study. Chapter 2 examines concepts relevant to technology enhanced learning in California public schools. It also examines activity theory, stakeholder theory, change leadership, and value literature in more detail, providing examples of how these theories and frameworks have been used to examine or induce organizational change in industries both inside and outside of education. Chapter 3 discusses the proposed methodology for this phenomenological study. The chapter also explains the rationale for using online, synchronous, semi-structured interviews of district educational technology leaders and the procedures for data collection and analysis. In addition, it identifies the measures to be taken to ensure validity of the interview protocol, the authenticity of the study, and the protection of human subjects. Chapter 4 shares results from each of the six semi-structured interviews including a brief description for each of the six participants, the primary stakeholders on whom they focused, the value propositions described, the contradictions that were experienced, and the value propositions made to address described contradictions, if any. It also presents the top results from the a priori analysis of each interview. Finally, Chapter 5 provides the findings from this study as they pertain to the research questions from both the emergent thematic analysis and a priori coding scheme. It relates those finds to the literature, describes the limitations of the research, suggests the implications of the study, makes recommendations for further study, and concludes with closing thoughts.

Chapter 2: Review of the Literature

The problem under examination in this study is the low rate of teacher adoption of technology enhanced learning in California public schools. The wealth of studies published in the last decade that have examined the barriers, beliefs, conditions, and skills of teachers and principals as they relate to the integration of technology in instruction indicate that the reasons teachers have not widely adopted technology enhanced learning are both personal and systemic (Aldunate & Nussbaum, 2013; Bai & Ertmer, 2008; Davies & West, 2014; Ertmer & Ottenbreit-Leftwich, 2013; Ottenbreit-Leftwich, Glazewski, Newby, & Ertmer, 2010). This study seeks to address these personal and systemic factors by examining the role of district educational technology leaders in facilitating teacher adoption of technology enhanced learning by creating or co-creating value amongst the broad range of stakeholders that influence and benefit from the operations of a school district. Activity theory is a theoretical model from which these personal, interpersonal, and systemic features can be examined, and problems or contradictions can be located. Under certain conditions contradictions can be a catalyst for change, but they can also be a hindrance to achieving the goal of teacher adoption of technology enhanced learning in schools. This study seeks to understand the experiences of educational technology leaders in creating value among district stakeholders. The hope is that a systematic pursuit of value can foster a more widespread teacher adoption of technology enhanced learning in California public classrooms by shaping stakeholder acceptance and aligning stakeholder actions and influence toward teacher adoption of technology enhanced learning. The intent of this review of literature is to examine in greater detail what is meant by technology enhanced learning and some of the factors that impede as well as facilitate its adoption by teachers. The chapter will also examine the role and types of leadership that foster teacher adoption of technology enhanced learning.

The propriety of activity theory as a lens for examining the problem of technology enhanced learning adoption will also be discussed. Finally, the relevance of stakeholder theory, stakeholder salience, and value in addressing the problem statement and questions included in this study will be illustrated.

Technology Enhanced Learning

Before elaborating upon what is meant by technology enhanced learning, it may prove beneficial to discuss some of the historical, technical, and social factors that have contributed to its rise in importance. Tamim, Bernard, Borokhovski, Abrami, and Schmid (2011) conducted a second-order meta-analysis of effect sizes of studies since 1985 that compared instruction with and without computers. This was the year they maintain that computers began to increase in popularity in U.S. public schools. They found that technology whether used for direct instruction or to support instruction was shown to produce significant and promising increases in student achievement. This promise was multiplied around 2004 when O'Reilly and Dougherty helped to popularize Web 2.0 as the call sign for online computing (O'Reilly, 2007). Internet usage in the United States was at 64% of the population and broadband usage hovered around 25%. This is compared to 88% internet usage and 77% broadband usage in 2016 (Pew Research Center, 2017). Since 1985, the initial year of the Tamim et al. (2011) study, information and communications technology has become ubiquitous, more user-friendly, and much more powerful. The advent and acceptance of the internet, the proliferation of online applications, the integration of cloud computing, the advent of the learning sciences to inform effective instruction, and the widespread availability of low-cost devices have made technology enhanced learning a viable and advantageous option for teaching and learning in California classrooms.

Fu (2013), in her review of literature of information and communications technology research in education found several significant benefits to information and communications technology. She asserted that it was helpful in providing efficient access to digital information, facilitating a more student-centered and self-directed learning environment, increasing creative problem-solving, promoting collaboration, and facilitating higher order thinking skills. These characteristics can be developed when information and communications technology is paired with constructivist learning approaches (Culp, Honey, & Mandinach, 2003; Glennan & Melmed, 1996; Greer, Koran, & White, 2016; Kim & Reeves, 2007). This includes problem-based learning and project-based learning, as well as other pedagogical strategies that use relevant, real-world problem solving that students might encounter in their lives and in the workplace.

While technology enhanced learning is the term used in this dissertation, there are similar practices that are identified by many other names. Those names include e-learning, digital learning, cyberlearning, 21st century learning design, technology enhanced learning and teaching, technology enhanced teaching, digital pedagogy (Maor, 2013). Technology enhanced learning is an appropriate term for the pedagogy called for in this study because it does not bind teachers to a particular information and communications technology tool or approach to pedagogy (Goodyear & Retalis, 2010). What is meant by the term is that teachers use available information and communications technology in ways in which "the technology is essential to successful performance outcomes (i.e., student learning)" (Ertmer & Ottenbreit-Leftwich, 2010, p. 256). This, of course, does not mean that information and communications technology must be used in every learning activity, but, when available, a teacher should be willing and able to integrate regular student use of technology into lesson-design to create "powerful learning environments - that help everyone use their innate learning abilities to come to understand things which are not

otherwise directly available to the senses" (Goodyear & Retalis, 2010, p. 2). This includes using technology to create authentic, student-centered, relevant, collaborative, creative, and standards-based learning activities (Cradler, McNabb, Freeman, & Burchett, 2002).

TPACK and technology enhanced learning. Mishra and Koehler (2006) argued that a focus on theory will help to build a flexible and well-organized schema for teachers to frame learning tasks that make the content conducive to student knowledge construction. Teachers not only need an understanding of the affordances and constraints of the classroom setting (Kennewell, 2001), they also need to understand how technology influences these classroom and community elements. Technological, pedagogical, and content knowledge (TPACK) is a theoretical framework that allows for examining knowledge of the relationships between pedagogy and content (PCK), technology and content (TCK), technology and pedagogy (TPK), and technology, pedagogy, and content (TPACK; see Figure 1). Built upon Shulman's (1986) pedagogical content knowledge, Mishra and Koehler posited that technology, pedagogy, and content individually place dynamic constraints on the others. When teachers understand the effect of introducing technological tools into their own instruction and the effect of placing it in the hands of students for knowledge construction, they are much more likely to make the moves necessary to maximize the affordances of information and communications technology and ease the tensions created. Likewise, Messina and Tabone (2012) asserted that TPACK provides a theoretical and cognitive framework for reflection on developing competent teacher practice. Mishra and Koehler argued that design-based professional learning, where teachers are presented with authentic learning problems that engender prolonged inquiry and revision, will help teachers to understand these relationships. Fortunately, these constructivist and constructionist

principles used with teachers are the same types of learning activities that will help students to build the 21st century skills that are so often promoted in public education.

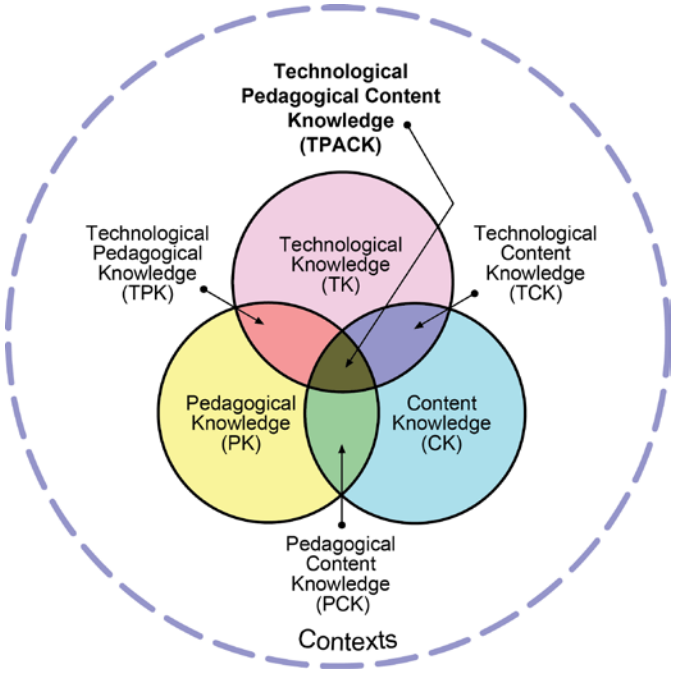

Figure 1: TPACK image (Mishra & Koehler, 2006). Reproduced by permission of the publisher, © 2012 by tpack.org

Learning by designing technology enhanced lessons in collaborative groups is another effective means of developing TPACK. (Koehler & Mishra, 2005; Koehler, Mishra, & Yayha, 2007). For example, Koh and Chai (2014) examined the perceptions of TPACK of 266 Singapore elementary teachers after engagement in a total of 24 hours of professional learning on information and communications technology lesson design (over three days for in-service teachers and 12 days for pre-service teachers). The teachers were provided opportunities for independent computer-based instruction, modeled instructional techniques, independent exploration of information and communications technology tools, independent design of an information and communications technology lesson, and peer feedback and critique. The researchers found that the professional learning improved teacher self-reported confidence in employing technology in the classroom. These finding suggest that professional learning

modeled in this way could increase the adoption of technology enhanced learning especially among teachers who are reluctant because of inexperience.

TPACK can also be increased by understanding the effect technology can have on collaboration both at work and school. One way this effect is illustrated is in the distinction between “taskwork” [sic] and teamwork. Fiore and Wiltshire (2016) asserted that teamwork is supported by cultural artifacts such as information and communications technology through externalization of workflow and plans. They regard information and communications technology as another teammate, “offloading and scaffolding cognition” (p.1). It can facilitate communication, sharing, and coordination among team members. Taskwork is supported by information and communications technology with tools for data analysis, data interpretation, decision making, and problem solving. Fiore and Wiltshire asserted that information and communications technology provides a form of externalized cognition that is critical to effective collaboration and problem solving in the workplace. If one of the goals of public education is to prepare students for college and career, it follows that technology enhanced learning and teaching should include this support of teamwork and taskwork inside and outside of the classroom.

Fiore & Wiltshire’s (2016) work also speaks to the importance of effective collaboration for knowledge construction as opposed to knowledge reproduction (Scardamalia & Bereiter, 1993; 1994). An essential characteristic of technology enhanced learning is that students learn with the technology and not solely from the technology. Scardamalia & Bereiter (1994) coined the term knowledge building discourse to describe the effective ways in which students build new knowledge through collaboration. Understanding the role of technology in this type of collaboration is important both inside and outside of the classroom. Inside the classroom,

students have the opportunity to reflect on the collaboration completed online in text-based and video discussions. This reflection accompanied by guided questions and discussion frames can help to improve the quality of online collaboration as well as face-to-face collaboration over time (Borge, Ong, & Rose, 2018). In addition, information and communication technology facilitates collaboration through shared filed folders and documents that provide a synchronous means of communicating and ensuring that all students have access to all shared information at the same time regardless of proximity to one another. Automatic referencing of information and contributions maintain not only the integrity of the collaborative process, but also decreases distraction during the collaborative process since accountability is built into the work and students are not required to label their contributions. Technology also connects students to outside sources of information, broadening the field of potential collaborators. Scardamalia & Bereiter (1993) argued that learning is a social activity in that new information is shared and discussed in communities with shared goals "trying to deal with puzzling facts in ways that lead to more powerful explanations" (p.38).

Similarly, Kim and Reeves (2007) regard information and communications technology as a "cognitive partner that interacts with learners to construct knowledge, bringing its expertise to activities" (p. 228). These researchers argue that higher-order thinking (i.e., tasks such as decision-making, interpretation, and application) should be left for the student:

> Adopting the view from expertise theory about [the] relationship between person and technology, technology can only have roles that can empower and augment higher-order cognitive functions (p. 228).

Empowering teachers with this view of information and communications technology provides an opportunity to enhance collaboration and teamwork (Fiore & Wiltshire, 2016) and to inspire students to more cognitively demanding tasks that require the use of information and communications technology as a cognitive tool to deepen an extend thinking and to solve

extraordinary and relevant problems in students' lives (Brown, Collins, & Duguid, 1989; Kim & Reeves, 2007; Ottenbreit-Leftwich, Glazewski, Newby, & Ertmer, 2010).

Another way that TPACK contributes to technology enhanced learning is in the personalization of learning activities. Lemke and Couglin (2009) argue that online tools should facilitate a level of participatory learning in which learning activities are individualized and where each student's prior knowledge is welcomed and responded to with appropriate lesson design. This lesson design includes authentic, relevant, learning experiences that have meaning and consequence for the student beyond grades and compliance. Learning artifacts should represent a synthesis of the lesson objectives and approximate real-world activities that include meaningful collaboration and multimodal communication (Darling-Hammond, 2008).

Perhaps some of the most fruitful attributes of TPACK, technology enhanced learning, and the mindset a teacher should have in designing technology enhanced learning lies in having a clear definition of student learning and realizing the teacher's own role in fostering learning with information and communications technology. Kennewell (2001) described student learning as a didactical activity designed to foster a change in the students' abilities. Abilities are a student's "potential for action in a setting provided by their knowledge, skills, understanding and disposition" (p. 105). Kennewell utilized Gibson's view of affordances which held that perception and action are dependent upon the environment and that constraints are not the opposite of affordances (Greeno, 1994). Instead, constraints are the structures teachers create to exploit the cognitive effort and abilities of the student to maximize the affordances available in the student's environment and reach the learning goal:

> The teacher's role is to orchestrate the supporting features – the visual cues, the prompts, the questions, the explanations, the demonstrations, the collaborations, the tools, the information sources available, and so forth – in an attempt to make it possible, but not trivial, for learners to bridge the learning gap (p. 106).

In a technology rich environment, these “supporting features” abound in information and communications technology, if the teacher has developed the technical, pedagogical, and content knowledge to exploit the potential of the tool and the effort of the student (Zhang, Yang, Chang, & Chang, 2016)

Barriers to technology enhanced learning. There is a wealth of research on the barriers to instructional technology integration in schools. The research findings indicate the need for ongoing professional support and reliable infrastructure (Davies & West, 2014). Researchers have also called for changes in teacher epistemological beliefs, changes in school cultures, increases in teacher technical, pedagogical, and content knowledge, and increases in related curriculum materials to reduce barriers to technology enhanced learning (Ertmer, 1999; Ertmer & Ottenbreit-Leftwich, 2013; Fleming & Hynes, 2014; Mayes, Natividad, & Spector, 2015; Mishra & Koehler, 2006).

Hur, Shannon, and Wolf (2016) studied the technology use of 223 K-12 teachers in the southeast United States in order to examine how internal and external barriers affect the frequency of technology use. Internal barriers are factors such as attitudes, beliefs, and skills. External barriers are outside of the teacher such as training, support, and resources (Ertmer, 1999; Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur, & Sendurur, 2012). In their study, Hur et al. (2016) used six scales to measure the effect of principal support, professional development, appropriate budget, perceived benefit, perceived self-efficacy, and technology use. They found that budgeting and perceived benefits had significant direct effects on technology use. Although there is considerable difference between technology use and technology enhanced learning, the latter does encompass the former.

Beliefs also play a significant role in the adoption of technology enhanced learning (Becker, 1994; Ertmer et al., 2012; Ottenbreit-Leftwich et al., 2010). Karaagaç & Threlfall (2004) found in their study of teacher beliefs and practices that context and shared objectives can be a strong motivator for teacher actions, causing teachers to appropriate new tools in pursuit of the shared objective even when the prescribed practice might conflict with teacher beliefs about effective pedagogy. Although this study described the actions of just one Turkish teacher, the study demonstrates how discomfort over the adoption of new tools can be ameliorated by a community's shared objectives, student expectations, and the promise of status and financial reward for the teacher. Leaders seeking to institute technology enhanced learning in their schools should seek to create such a shared object rallying community support and recognizing teacher efforts. Nationally, both students and teachers want more technology use in lesson designs (Project Tomorrow, 2016), and status and recognition (if not financial reward) could motivate the adoption of the desired pedagogy.

Franklin, Turner, Kariuki, and Duran (2001) placed eight educational technology doctoral students in a mentoring role with eight K-6 teachers in order to improve technology integration in the elementary school teachers' instruction. In their analysis of fields notes, focus group data from teachers and mentors, and journals of teachers and mentors, they found several keys to overcoming barriers to technology integration: Modeling helped teachers to see the potential of technology integration. Support and training on troubleshooting and facilitating basic computer functions increased teacher access to the technology. In-class mentoring provided opportunities within the school day. Mentoring also helped teachers to assess their own technology skills in desirable, perhaps non-threatening ways. Although the technological tools were few and

primitive by current standards, Franklin et al. (2001) demonstrated that job embedded technology support and learning can have a significant effect on teacher integration of technology.

Educational Technology Leadership

Technology leadership standards and support. The role of the educational technology leader is gaining clarity due to the increasing body of research, applied change management theories, and the work of organizations such as the International Society of Technology in Education (ISTE), Digital Promise, the U.S. Department of Education, Future Ready Schools, and vendors such as Microsoft, Google, and Apple. To provide "a roadmap for bold, innovative educators and education leaders to re-engineer their schools and classrooms for digital age learning no matter where they fall on the journey to meaningful, effective ed tech integration," ISTE has published technology standards for educators, students, administrators, technology coaches, and computer science educators (ISTE, 2018). The standards for educational technology coaches and standards for administrators are especially relevant to this study of educational technology leaders. The standards for coaches emphasize the following elements of technology enhanced learning: (a) visionary leadership (b) teaching, learning, and assessments, (c) digital age learning environments, (d) professional development and program evaluation, (e) digital citizenship, and (f) content knowledge and professional growth. Similarly, the standards for administrators emphasize (a) visionary leadership, (b) digital age learning culture, (c) excellence in professional practice, (d) systemic improvement, and (e) digital citizenship. While the various ISTE standards provide credible guidance on what should be accomplished by technology-related stakeholders, they do little to establish how to accomplish these goals (Richardson, Bathon, Flora, & Lewis, 2012; Wiebe & Taylor, 1997). Richardson et al. (2012) asserted that this

guidance is left to scholars in their published research, and this remains true even with the revised 2017 standards.

Future Ready Schools is a partnership established in November 2014 between the U.S. Department of Education, the Alliance for Excellent Education, and several other agencies. They espouse a vision for transformative, technology enhanced, and personalized learning and provide support and tools to build the "infrastructure and human capacity necessary to fully implement this vision" (Office of Educational Technology, 2016). Beginning with a pledge from the district Superintendent and creating a team composed of relevant district leaders, the Future Ready Schools framework provides the leadership team with an online assessment tool to determine their level of readiness for technology enhanced, personalized learning. Future Ready Schools provides guidance in the form of additional assessment tools for stakeholders, research, and experience-based practices to help education leaders in the key areas of collaborative leadership, personalized student learning, robust infrastructure, personalized professional learning, curriculum, instruction, and assessment, data and privacy, budget and resources, and community partnerships. Each of these areas represent *gears* in the Future Ready framework that work to align district systems to provide technology enhanced learning that prepares students to be ready for college and career and productive citizenship (Future Ready Schools, 2015).

Microsoft offers educational technology leaders the Education Transformation Framework, a collection of best practices based upon current research. The framework consists of four guides: (a) leadership and policy, (b) modern teaching and learning, (c) intelligent environments, and (d) technology blueprint. These guides offer insights and processes for effective systems management to foster student learning in technology-rich environments (Microsoft, 2018).

Distributed leadership. From a theoretical perspective, the concept of distributed leadership manifests itself in diverse ways; among them, concertive control (Barker, 1993), conjoint agency (Gronn, 2002), internal accountability (Fullan, Rincón-Gallardo, & Hargreaves, 2015) and distributed leadership (Spillane, 2008). Barker used the term concertive control to describe the move away from bureaucratic control which he described as an "iron cage," to, ironically, the even more restrictive concertive control. Because concertive control is based upon an agreed upon set of values, instead of external forms that often create resistance, persons are more willing to submit to its dictates and even hold one another accountable for doing so without the intervention of management. Gronn described conjoint agency as organizational behavior that is heavily reliant on trust. "Conjoint agency means that agents synchronise their actions by having regard to their own plans, those of their peers, and their sense of unit membership" (p. 431; *sic*). This conjoint agency has both synergistic and reciprocal effects that foster growth of latent potential in the organization and a sense of mutual accountability and positive influence. Internal accountability exists when there is a collaborative culture as a result of "combined individual responsibility, collective expectations, and corrective action" (Fullan et al., 2015, p. 4). Fullan et al. (2015) argued that external accountability is attempts of system leaders to "reassure the public through transparency, monitoring and selective intervention that their system is performing in line with societal expectations and requirements." (p. 4). This was not necessarily a critique of system leaders as much as it was to say that leaders would be much more effective if they prioritized internal accountability. Finally, Spillane (2008) stated that distributed leadership is the result of the interaction between leaders, followers, and the situation. Spillane argued that the situation does not merely influence leadership behavior, it defines it. The situation both enables leadership practice and constrains it. Practice, however, can transform

situation. Since leadership, like learning, is contextually bound, leaders must account for the influence of both the people and the situation and must respond appropriately to foster the desired results (Brown, Collins, & Duguid, 1989).

Harris, Jones, and Baba (2013) also recognized that distributed leadership can be a powerful catalyst for innovation and change and that it requires trust, social capital, and a coherent co-performance of leadership roles. The researchers described their experience in two higher education online communities based in Australia. One was designed for professional learning communities and to support between-school collaboration. The other was for a specific collaborative project designed to support teacher inquiry, collaboration, and the co-construction of knowledge. The researchers determined that digital collaboration required a focus on learning instead of teaching, active experimentation with various collaboration strategies, sharing leadership among the team, and open and trusting relationships. They also found that online collaboration requires a skilled facilitator able to broaden the perspectives of the participants and connect participants to specialists in order to increase the usefulness of the online collaboration. The lack of such foci and facilitation can become a barrier to effective online collaboration. They concluded:

> In the wake of new technologies it is unlikely that traditional patterns of leadership will prove adequate to meet the new challenges; hence, it is imperative that leadership is conceptualized and understood as generating and transferring knowledge, trust and shared purpose in a distributed way (p. 934).

A study on informal distributed leadership in higher education has application in the public K-12 systems as well. Using a case study methodology, Rambe and Dzansi (2016) examined the diffusion of technology enhanced pedagogy in a South African higher education institution. The subjects were a small group consisting of an educational technologist and a teaching team from an “elite university” (p. 159). Data were collected through interviews and

focus group discussions on the goals of the technology integration, leadership roles, and implementation issues. The researchers used a distributed leadership model espoused by Jones et al., (2013) that involved six tenets: engagement, enablement, enactment, evaluation, encouragement and emergent issues. These constructs provided the lens by which the data was viewed and analyzed (see Appendix A). The researchers concluded that informal distributed leadership is most effective when stakeholders have a clear understanding of the following: (a) the technology adopter's locus of control, (b) the influence and power of academics in student-controlled online spaces, (c) how technology aligns with pedagogical goals, and (d) a shared purpose between informal opinion leaders. The researchers concede that study participants and other design considerations have produced tentative conclusions about their "middle-of-the-road" leadership approach, but their findings are consistent with much of the diffusion and change literature (Fullan, 2008; Kotter, 1996; Rogers, 2010).

The findings of Ng (2008) also appear to support distributed learning even though the theoretical basis for her study was different. In her field test of the Perceived Influence of Transformational Leadership on Information and Communications Technology Integration into Teaching Questionnaire (PITLICTQ), a survey adapted from the Leithwood (1994) Nature of School Leadership Survey (NSLS). The PITLICTQ was designed to test whether the qualities of transformational leadership by the school principal had a positive effect on the integration of information and communications technology in teaching and learning. The eight dimensions of transformational leadership were (a) identifying and articulating a vision (b) fostering acceptance of group goals, (c) providing individual support, (d) offering intellectual stimulation, (e) providing an appropriate model (f) creating high performance expectations, (g) strengthening school culture, and (h) building collaborative structures. The survey asked participants to rate

their level of agreement on a 6-point Likert scale that leadership practices indicative of these dimensions contribute to their information and communications technology integration in Singapore secondary schools. The overall reliability of the PITLICTQ to measure transformational leadership was .96, with each subscale falling within an acceptable range. The 50-item survey was given to a random sample of 80 teachers from Singapore secondary schools in 2005. The results of this study indicated that all eight factors of transformational leadership had a positive influence on information and communication technology integration, accounting for 88.7% of the variance. Factors 1 and 2 (identifying and articulating a vision and fostering acceptance of group goals) had the strongest influence, accounting for 46.2% of the variance. As with distributed leadership, the ISTE standards, and Future Ready Schools, a shared vision is essential to information and communications technology integration.

Similarly, in their study of educational technology leadership quality, Chua & Chua (2017) examined the practices of technology leaders in the implementation of an e-learning platform in Malaysia to construct a “grounded model of technology leadership practices” (p. 74). They conducted semi-structured interviews with stakeholders such as school leaders (n = 5) teachers (n = 5), students (n = 5), and parents (n = 5) who were involved in the use and implementation of the system. The themes garnered from that qualitative research were used to create a survey that was completed by 209 secondary school leaders in Malaysia. Using a non-parametric model testing analysis of the quantitative data, they identified seven constructs that contributed to technology leadership quality. They were culture, readiness, practices, strategies, support, needs, and hindrances. Of these, culture, support, and strategies directly contributed to 76.2% of the construct of technology leadership quality. Leaders should recognize the

contribution and interplay of these factors if they expect to provide quality technology leadership.

Quality technology leadership also involves the ability to coordinate implementation across multiple sites. Berrett, Murphy, and Sullivan (2012) conducted a case study of a laptop computing curriculum designed to score and assess student writing. The program was funded by the Enhancing Education through Technology (EETT) grant project among four California middle schools. The participants were the district's technology specialist and four principals from four of the schools within the district that were chosen to participate in the grant. The researchers collected qualitative data through observations and semi-structured interviews and concluded the following: (a) while all school leaders and the technology specialist saw themselves as members of a larger community and saw value in the goals of the project, the researchers observed no cross-district communication regarding the implementation. This left each school to fend for itself in the execution of the program; (b) the two successful implementations had change agents promoting the implementation and were essential to the sustainability of the school technology program. In the case of the two successful implementations, the change agents were not the principals, but teacher mentors who provided the energy, guidance, and support necessary to foster a successful implementation. Although the grant funded this role in all schools, the unsuccessful schools selected mentors who were not able to quickly identify and resolve problems with the technology integration. Instead, they deferred the problem-solving to the administrators and district technology specialist thereby enabling the technology integration to be perceived as disruptive by the end users. (c) The district technology specialist, although an integral part in the problem solving and communication process, contributed to the isolated execution of the program between school sites by not fostering

discussion and sharing between the school sites. Overall, the researchers concluded that shared leadership and a culture of open communication between the principals and mentors and between the principals and technology specialist contributed significantly to the successful implementations.

When leadership responsibilities are not shared, leaders can easily become overwhelmed. Fullan (1998) discussed the problem of dependency of school leaders in trying to prepare students for a 21st century education. He argued that dependency was caused by principals being overloaded by the multitude of demands by a school's stakeholders and the vain search for an external solution, but "there is no external answer that will substitute for the complex work of changing one's own situation" (p. 2). Fullan argued that when principals (a) demonstrate a willingness to listen to those who resist change, (b) reach out to and get ahead of the various stakeholders in order to control the dialogue and meet their demands, and (c) aim for reculturation instead of restructuring by (d) demonstrating a hopefulness that inspires cooperation, support, and mutual accountability that can "guide their actions toward greater success, [by] mobilizing resources for teaching and learning with children as the beneficiaries" (p. 2). Fullan argued that scaling change efforts requires leaders to break from the expectations of previous decades and the social and organizational constraints that foster practices that are incongruent with elements of change.

Change leadership. As noted previously, effective leadership is distributed not only to followers, but also to the context. As a result, the role of the change leader requires compassion, situational awareness, and strategy. For educational technology leaders, three ways that they may be able to foster acceptance of change are to provide a rationale for the change, listen with empathy regarding the negative feelings of those implementing the change, and to give teachers

a choice on how the change is implemented by incorporating them in the planning process (Gagné, Koestner, & Zuckerman, 2000). These three actions were shown in a Gagné et al. (2000) longitudinal study of change in a communications company as facilitators of autonomy and internalization, factors essential to accepting change and working to achieve that change even when not closely supervised.

Kotter (1996) elaborates on a list of mistakes that leaders make in their attempts to foster organizational change. Those mistakes include (a) allowing too much complacency (b) failing to create a powerful guiding coalition, (c) underestimating the power of vision, (d) undercommunicating the vision (e) permitting obstacles to obscure the vision (f) failing to create short-term wins, (g) declaring victory too early, and (h) neglecting to anchor changes in the organizational culture. The result of these failures are poor implementations, lack of synergy, costly turn-arounds, lay-offs with reducing costs, and change without the expected results.

Rogers (2010) offers five stages in the organizational innovation process. Recognizing where districts are in this process could aid educational technology leaders in its facilitation. The first two stages are grouped as “initiation.” The first in this group is agenda setting, which is revealed when a need for change and innovation is recognized. The second in the initiation stage is matching. This occurs when the innovation is seen as a fitting solution to the organization’s problem. After this point, a decision to adopt or reject the innovation is made. The next three stages are grouped as “implementation,” which consist of redefining/restructuring, clarifying, and routinizing. Redefining/restructuring occurs when the innovation is adopted, but through use, it is changed to fit the organization and the organization changes to fit the innovation. In clarifying, the fit between the innovation and organization is made clearer through use.

Routinization occurs when the innovation has faded into the background of the organization and is no longer seen as an innovation.

In addition to the stages of innovation, Rogers (2010) provides a way of describing a person's or unit's innovativeness or their propensity for adopting new innovations relative to others. Any population, can be divided into these five segments according to their innovativeness: Innovators, early adopters, early majority, late majority, and laggards. Rogers maintains that those in each category will generally have more in common with one another than not and that the rate of adoption will follow an s-shaped curve. The slope of that curve will vary according to and is influenced by the social system as well as the perceived advantage the innovation offers (relative advantage) and the compatibility of the innovation with existing practices. Rogers defines the social system "as a set of interrelated units that are engaged in joint problem solving to accomplish a common goal" (p. 24).

Centralized and decentralized diffusion describe the degree of power and control leaders and experts have over the diffusion process. When there is a high degree of control, the decisions are made from the top down and innovation is typically fueled by experts, not necessarily among those responsible for implementing the innovation. When there is a sharing of power and control, diffusion occurs more spontaneously and is spread throughout the organization through experimentation and informal processes. A decentralized system is more akin to the notion of distributed leadership described above.

Roger's (2010) constructs surrounding diffusion of innovations have been applied in many sectors including educational technology. Pierce and Cleary (2016) sought to establish how cloud computing adds to the value chain of deploying current apps to students and teachers more efficiently than non-cloud based methods. They argued that cloud delivery facilitated trialability,

the ability to try the innovations without long-term commitment. Cloud delivery of apps also fostered compatibility since cloud delivered apps often do not require learning a new interface. They can be used with the browser educators are already using.

Choi (2007) proposed that both individual and aggregate perceptions of workplace context influence an employee's change-oriented organizational citizenship behavior (OCB). Building upon the work of Van Dyne and LePine (1998) and Bettencourt (2004) who found that two types of OCB exist, affiliative and challenging, Choi asserted that affiliative behavior is characterized by helpfulness and compliance, and it tends to support the status quo. Challenging behavior, however, characterized by voice and making suggestions illustrates change-oriented OCB. Through his qualitative analysis, Choi validated his model of change-oriented OCB that showed how individual and group perceptions of the strength of an organization's vision, the innovativeness of its climate, and the supportiveness of its leadership are mediated by an employee's feelings of responsibility for change and sense of psychological empowerment. Although the context of Choi's study differs from the educational context, the findings highlight important considerations for leaders attempting to inspire changes such as those required in California's public schools. These findings as well as those in the other studies and resources mentioned reinforce the significance of a strong vision. School and district leaders should consider how their integration of technology supports the district's mission and vision for instruction (Armstrong, 2014).

Owston (2007) in his review of 59 cases from a multinational study of sustained pedagogical change fostered by the integration of technology found that the essential conditions for sustained classroom innovation with technology were support from teachers and students, the perceived value of the innovation by teachers, teacher professional learning, and at least tacit

support from the principal. Owston also found that at least 50% of the cases had contributing conditions such as supportive plans and policies, adequate funding, champions of innovation (usually teachers) and internal and external support. Owston's conclusions were consistent with Rogers (2010), and the factors that Rogers asserted were essential to diffusion of innovation such as relative advantage (the innovation is better than what was done in the past), compatibility (the innovation is compatible with existing practices), and complexity (the innovation is not too difficult to understand).

Fullan (2008) stressed the importance of having a using theory to guide change efforts. He espoused the following six ideas that should be implemented to positively influence change efforts: (a) love your employees and other stakeholders, (b) connect peers with a higher purpose (c) build individual and collaborative capacity, (d) learn in context, (e) be transparent, and (f) use synergy to allow the system to learn. Fullan argued that a good theory can serve as a screening tool for management advice, a monitor for organizational leadership, and a guard against habits that can thwart the change effort. Finally, theory provides an all-important foundation for action throughout a change effort. Concerning change and culture in an educational setting, Fullan argued that so-called "children first" policies that govern school district actions and mandates are misguided because they fail to recognize the impact the teacher has on the student. He stated when leaders build teacher capacity and create conditions for teacher success, simultaneously pursuing teacher satisfaction and the organizational goal of children's success, then, and only then, will the children receive the greatest benefit from the organization.

Activity Theory

The adoption or failure to adopt technology enhanced learning is a result of the systems that districts and schools have instituted and the motives, actions, and beliefs of the people

implementing these systems. Activity theory provides a model for examining the system surrounding teacher adoption of technology enhanced learning. Activity is goal-directed behavior that occurs as humans take specific, intentional, productive action upon their environment (Sannino, Daniels, & Gutiérrez, 2009). Activity theory is a theoretical model that provides "a systematic formation with which specific components [of an activity] and their relations can be identified and examined in detail" (Engeström, 2016, p. vii). While activity theory has had many contributors, including Vygotsky (1978; 1986), Leont'ev (1978), and Luria (1976) the social focus of activity theory found voice in the English-speaking world largely through Engeström (1987). In his publication of *Learning by Expanding: An Activity Theoretical Approach to Developmental Research*, Engeström helped to change the focus of activity theory from the development of the individual and the reciprocal effect of changing one's environment (Roth, 2004) to its cultural-historical foundations introduced by thinkers such as Hegel and Vygotsky. In this seminal work, he completed the third phase of activity theory and the representational framework widely used today that connects the central activity to neighboring activity systems. He asserted first that activity "must be pictured in its simplest, genetically original structural form, as the smallest unit that still preserves the essential unity and quality behind any complex activity" (p. 61). Secondly, the dynamics of activity must be analyzable. He rejected the notion of a static model used to examine activity such as stimulus-response theory where the influence goes in one direction and ignores the world surrounding the behavior examined (Roth, 2014). Thirdly, activity would have to be analyzed "as a contextual or ecological phenomenon," (Engeström, 1987, p. 61) emphasizing the systemic relationship between the individual and the world by which the individual is surrounded. Finally, human

activity must be viewed as culturally mediated, as it is through the use of cultural and psychological tools that one's object is achieved.

An activity system is represented by a triangular shape (Figure 2) with tools or artifacts at the apex of the triangle. This is to show the mediating effect of the tools between the subject and object of the activity. Tools can be both technical and psychological (Engeström, 1999; Kaptelinin & Nardi, 2006). Vygotsky (1978) described how tools mediate changes in the subject's external environment in accomplishing an activity (e.g., using a shovel to dig or a hammer to drive a nail), psychological tools mediate changes in one's thinking and behavior such as language and other signs (e.g., taking notes as a form of external memory).

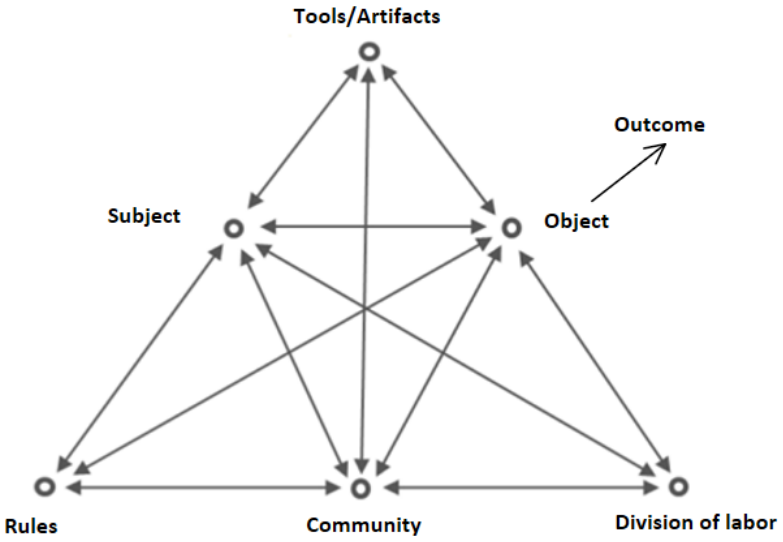

Figure 2. Second generation activity system diagram

The object of an activity is heterogeneous and internally contradictory yet enduring. It is the constantly reproduced purpose of a collective activity system that motivates and defines the horizon of possible goals and actions (Engeström, 2001; Leont'ev, 1978). From the object is an arrow leading to the outcome intended to follow from the activity. At the bottom of the triangle are the community aspects of the activity, the rules, the community itself, and the division of

labor. Between each element of the activity system are lines with arrowheads at each end, indicating the two-way interaction that occurs between the elements of the activity system. Because activity theory accounts for the social, cognitive, structural, and motivational aspects of education, it is an ideal lens through which we can view the classroom and the many networks or neighbor activities surrounding it (Barab, Schatz, & Scheckler, 2004; Engeström, 1987).

Public school through the lens of activity theory. Because of its complex, ill-structured nature and its many stakeholders, components, and interactions, education is one of the most common uses for activity theory (Nussbaumer, 2012). In general, activity manifests and improves human consciousness (Kaptelinin & Nardi, 2009). In the classroom, teachers and students are involved in the activity of schooling, but the public school system is laden with cultural and historical factors that influence not only the goal of student learning, but also the manner in which learning can be achieved. Teachers, students, and technology are but few of the factors interacting in the classroom. Activity theory can provide a basis for recognizing the affordances and contradictions introduced within a public school system by its many stakeholders and their beliefs, policies, and demands (Anthony, 2012).

An activity system identifies the subject, object, tools, rules, community, and division of labor involved in achieving the object of an activity. Technology enhanced learning fits well within Engeström's (1987) characteristics of a valid activity in that (a) the small unit that represents the whole of classroom activity can be the teacher designing lessons that make the best use of available technology for learning, (b) the affordances and second level contradictions that lie between and within elements of the system are more easily analyzed (c) classroom activity is but one activity system within a mass of other activities in the K-12 system and at home, and (d) the tools and their effectiveness in mediating learning must be carefully curated

and skillfully used in order to facilitate goal achievement. Indeed, examining technology enhanced learning from this ecological perspective using activity theory can illustrate the situated nature of classroom activity and provide great opportunity to improve teacher practice, instructional design, and student learning (Engeström, 1987; Zhao & Frank, 2003).

Theory of expansive learning. Engeström (2004) describes organizational learning as movement from an old object and activity to a new object and activity. He asserts that dichotomies exist between existing knowledge and new knowledge and between exploitation of existing knowledge and exploration of new knowledge. He terms the attempt to apply existing knowledge to new activities and objects as transferable exploitation. Adjustable exploitation occurs when existing organizational knowledge is gradually acquired through a certain activity. This type of learning is characterized by apprenticeships and student teaching, where neither acculturation nor organizational change is the object of the learning. There is also incremental exploration, where a new technology inspires gradual learning through experimentation and trial and error. No new object, however, is achieved. Finally, there is radical exploration; a cyclical process which characterizes expansive learning. Engeström (2005) stated:

> Radical exploration is learning what is not yet there. It is creation of new knowledge and new practices for a newly emerging activity, that is, learning embedded in and constitutive of qualitative transformation of the entire activity system (p. 442).

Contradictions and tensions and their role in change management. Contradictions in activity theory are not to be confused with contradictions in formal logic in which a true proposition cannot validly be denied. Contradictions in activity theory are concerned with systems and their movement through time and are realized in the cultural-historical tension created as the element in the activity system exists in its cultural-historical or intended purpose. Neglecting this cultural-historical origin, failing to provide a clear distinction from other

problems described in organizational literature such as conflict, paradox, or dilemma, or merely confusing contradictions with priorities that may appear to conflict can seriously cloud the use of contradictions as a theoretical construct (Engeström & Sanino, 2011)

Engeström (1987, 2001) recognized that productive activities occur within the context of larger society. He asserted, therefore, that activity is both independent of and subordinated to the larger context in which the activity occurs—the neighboring activity systems. This duality of human activity produces four levels of contradictions which Engeström identified as primary, secondary, tertiary, and quaternary. Bonneau (2013) offered an excellent illustration of how neighboring activity systems contribute to the central activity and the contradictions that occur as a result (Figure 3).

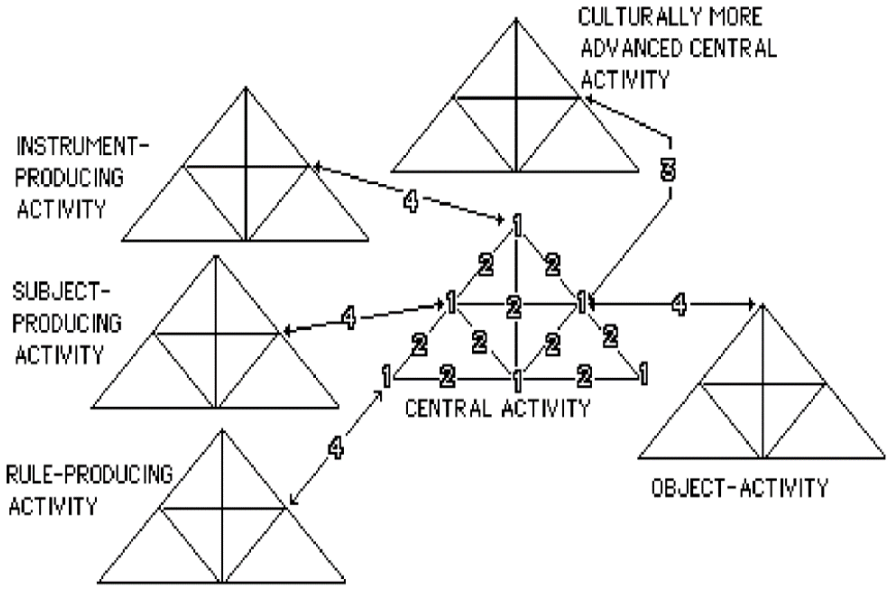

Figure 3. Engeström's (1987) four levels of contradiction. Bonneau, C. (2013). Contradictions and their Concrete Manifestations: An Activity-Theoretical Analysis of the Intra-Organizational co-Configuration of Open Source Software. 29th EGOS Colloquium, Sub-theme 50: Activity Theory and Organizations, Montréal, Canada. Reprinted with permission.

Coming from the Marxist point of view, primary contradictions are present in all activities and are identified as those that come as the result of "the dual nature of commodity" (Engeström,

1987, p.100). This duality is the contradiction between the use value (work products to be used by self) and exchange value (work products to be sold) (Bonneau, 2013 Engeström, 1987). Activity theorists maintain that primary contradictions are present in each element of an activity system: subject, object, tools, rules, community and division of labor because each are manifested through activity. Public education is no exception to the primary contradiction because even though the public school system does not operate from the profit motive, it is attended and sustained through activities that come largely as a result of capitalistic concerns. Those stakeholders who control and profit from the money spent in public education exert tremendous influence on the activities within a school system (Molnar, 2006).

Secondary contradictions, however, are visible and are created when elements from other activity systems are inserted into an existing system. An example of this could be information and communications technology. Secondary contradictions are tensions between existing elements of the system. Engeström and Sanino (2011) maintained that when secondary contradictions occur, reconciliation occurs through some mediating influence:

> Inner contradictions need to be creatively and often painfully resolved by working out a qualitatively new "thirdness", something qualitatively different from a mere combination or compromise between two competing forces (p. 371).

They can be reconciled through innovation and changes in practice. For teachers to allow such disruption into existing work production, they must see value in the innovation (e.g., improved learning outcome, reduced workload, recognition, decreased stress; Rogers, 2010). Creating this perception of value is an essential role of district leaders in charge of the technology integration.

Tertiary and quaternary contradictions can also influence innovation. Tertiary contradictions are the conflicts with old activity because of the new "more culturally advanced object." As an example, schools that adopt a one-to-one student to device program may find that

teachers have a difficult time adjusting to the affordances of the availability of the technology and may consider the devices a distraction because students might prefer writing and reading on their screen rather than with paper and books. This might prompt the teacher to abandon past practices and attempt to engage the students through the use of their devices. Finally, quaternary contradictions are those that arise with neighbor activity systems due to reconfiguring an existing activity system. For example, a teacher decides to adopt a new color laser printer for her classroom only to find that the school district does not have a system in place for purchasing color toner cartridges because it only ordered color inkjet cartridges in the past. This will likely result in further innovation in the neighboring purchasing activity or possibly a rejection of the laser printer innovation.

Activity theory applied in school. The following studies exemplify the use of activity theory to examine school systems. Lim and Hang (2002) used activity theory in a study similar to the present study to examine the contradictions extant in Singapore's implementation of technology in order to advance higher order thinking skills in a Singapore elementary school. Using a case study methodology, they conducted classroom observations, inventoried and mapped out locations of computer labs in the school and computer stations in the classrooms; they examined lesson plans and school and policy documents, and conducted focus groups with teachers, administrators, and students. Participants reported early in the implementation that information and communications technology was merely added on to existing teacher practices that were characterized by passive learning with teacher-as-expert and content delivery. After the first year, however, the teachers were able to shift their practice to more student centered, collaborative, and personalized learning. Still, the researchers found that contradictions existed in the object of the school and the object of the classroom teacher due to pressures to improve

national test scores. They also found that the inflexibility of bell schedules (rules) and the necessity to schedule time in labs tended to drive instructional decisions instead of specific lesson objectives.

Amiel, Kubota, and Wives (2016) used cultural-historical activity theory in their case study examination of the systemic conditions pertinent to technology integration in two private schools and two public schools in Brazil. The private schools were selected because of their open advocation of educational technology use in their schools, and the public schools were selected from a list of six offered by Brazil's State Education Secretariat. Through interviews with principals, technology coordinators, and teachers, the researchers used Engeström's (1987; 1999) activity system chart to plot out the tensions identified in the collected qualitative data. This provided a means of comparing the unique context of each of these Brazilian schools and the contradictions the schools experienced in the efforts to integrate technology into the curriculum. While they made no attempt to categorize the type of contradictions encountered, they take note of where the contradictions occurred in the individual activity systems. Through their examination of these contradictions, Amiel et al. (2016) concluded that administrative planning and leadership creates an environment conducive to technology integration and avoids isolation of teachers who may be more innovative in their technology integration efforts. They found that teacher autonomy (more prevalent in public schools) produced a "frail sustainability" (p. 12) of technology integration efforts when there was a lack of systemic support. Contextual elements such as centralized curricula and external testing such as college entrance exams made experimentation and planning more difficult.

Overall, Amiel et al. (2016) determined that the availability of technology in schools does not by itself determine teacher pedagogy nor the purposes for which such tools are used. While

technology-rich programs such as robotics were significantly more student centered, this feature of technology enhanced learning was attributed largely to external affordances such as robotics competitions. The researchers determined that fostering such self-directedness in students was not likely to be adopted by other teachers more biased toward using technology for extracurricular activity and teacher-centered activities.

In a study of the proposed implementation of computer supported collaborative learning (CSCL) among 51 Greek elementary teachers, Karasavvidis (2009) used activity theory to analyze the lack of adoption of this pedagogical technique that was designed to make "learning more active, more collaborative, more reflective, and more meaningful" (p.442). After a twelve-week course in blended learning where CSCL was featured and modeled, the teachers were surveyed on the likelihood of using CSCL in their daily instruction. Analysis of those data revealed contradictions in the following areas of the activity system: (a) within the object of the activity in that student learning was subsumed by the need to cover curriculum, (b) between the current and proposed object in that teachers where held accountable for the breadth of the curriculum covered and were concerned how CSCL would fit within the curricula; (c) between the mediating tool and the object in that the length of time required to implement CSCL was as much as ten times more than traditional expository methods. Karasavvidis concluded that contextual or structural features and perceived incompatibility with existing practices would hinder adoption of this innovation.

Stakeholder Theory

In business, corporate social responsibility (CSR), has become the norm with over 90% of the top 250 corporation publishing CSR report cards (Nelson, 2014). These corporations realize the necessity of creating value beyond the products they sell. California public schools

are expected to have value for communities they serve, as well. To expect that this value be altruistic and sacrificial, however, is neither realistic nor sustainable. This may be the reason Fullan (2008) calls student first policies misguided. They fail to consider the very people most responsible for providing the school's primary value proposition, the education of California's children. For the education system to flourish, the myriad who provide the services, should also benefit from the service. Indeed, "Thou shalt not muzzle the ox when he treadeth out the corn" (Deuteronomy 25:4).

This is the principle behind stakeholder theory. A theory concerned with strategy and ethics within an organization (Phillips, Freeman & Wicks, 2003), stakeholder theory addresses the priority and methodology for creating value for all stakeholders (Freeman, 2007). In contrast to the *modus operandi* of business driven by competition and the needs of the shareholder (i.e. stockholders), Freeman argued that shareholder interests must not be considered in isolation from other stakeholders within an organization. This perspective on business operation produces a more ethical and ultimately more effective organization. Stakeholder theory does not, however, espouse a wholly egalitarian point of view where all profits are distributed equally. Instead, it stresses fairness, respect, and distribution of the benefits of a business based upon the contribution, risks, and costs to stakeholders (Phillips, Freeman, & Wick, 2003).

Freeman (2007) stated that the current bureaucratic, managerial, and hierarchical structure of big business evolved because of the separation of the ownership of a business from its operation and the need to produce orderly and predictable results for shareholders. He noted, however, that scandals such as those at Tyco, Enron, and Arthur Anderson illustrate the predictability of a shareholder driven model can no longer be assured. Furthermore, in a shareholder driven system, change is not likely to occur when the shareholders are satisfied even

when other stakeholders may not be satisfied. Such shareholder-driven decision making may cause organizations to become unresponsive to the needs of customers, workers, and others who have a stake in the business; that is until this disgruntlement affects the firm's bottom line. By then it may be too late to enact the changes necessary for the business to flourish.

Freeman (2007) also argued that legal and ethical considerations also mitigate the force of shareholder driven decision making. U.S. and foreign laws governing salaries, discrimination, working conditions, etc. demand a degree of balance between shareholders and other stakeholders; for those decisions unaffected by legal dictates, ethical considerations must be considered. Business ethics is not an oxymoron, according to Freeman, because all business decisions have ethical considerations. Corporate strategy is strongly influenced by the values of senior management and that understanding requires an understanding of "their cultures, their symbol systems, their myths, heroes, and rituals, and their environments rather than their strategic management processes and postures" (Freeman, Gilbert, & Hartman, 1988, p. 822). Business cannot be devoid of ethical considerations nor be exempt from its obligation toward any of its stakeholders and still operate with maximum effectiveness. Unlike many organizational theories, this moral principle is made explicit in stakeholder theory (Phillips, Freeman, & Wicks, 2003).

Freeman (2007) defines stakeholders in two ways. Primary or normative stakeholders are those whom without their contribution or support, the business would no longer be sustainable. The relative importance of these stakeholders, however, can shift based upon the stage and circumstance of the business, but the stakes for each are "inherently connected to each other" (Freeman, 2007, p. 13). Secondary or derivative stakeholders are those that affect the primary

stakeholders or influence the organization in such a way that their claims should be accounted for when making decisions (Phillips, Freeman, & Wick, 2003).

Essential to the idea of managing for stakeholders is an uncompromising faith and relentless pursuit of organizational justice (Greenberg, 1987). Meeting the needs of shareholders is not an either-or proposition. Businesses can create value for shareholders and workers and the community and all other stakeholders involved with the business. One way this is accomplished is by giving pertinent stakeholders input in the decision making as well as a share of the outputs of the organization (Phillips, Freeman, & Wick, 2003). Leaders who embrace this perspective value procedural justice and distributive justice. Procedural justice refers to the perceived fairness of the procedures used for making decisions pertaining to the distribution of goods within an organization. Distributive justice describes the perception of a fair distribution of the goods of an organization. Organizations perceived as just by their stakeholders are also perceived as trustworthy. This characteristic makes stakeholders more receptive to change (Colquitt, Greenberg & Zapata-Phelon, 2005; Jasso, 1980).

Leaders charged with fostering a cohesive and just workforce must reject the notion that people are only self-interested. Those who fulfill this calling offer a vision and a purpose that extends beyond the needs of individuals or groups within the organization while still acknowledging the needs of the individual. Managing this “complex psychology” (Freeman, 2007, p. 15) of shareholders is of paramount importance in an organization sustained by creating value for all stakeholders.

Freeman (2007) asserted that the ethical basis of leading a business has its roots in the following four arguments: (a) an argument from consequences which asserts that each person seeking his or her self-interest produces good for all, an ethical perspective that excuses

managing only for shareholders; (b) an argument from rights which asserts that all persons have rights to the benefits of a business. Parsing out that right is difficult and multifaceted, as it involves procedural fairness, sharing of information, and fair distribution of financial gains, but acknowledging the reality and presence of that right and distributing the fruits in a manner that is perceived as fair (Phillips, Freeman, & Wick, 2003) is essential to managing for stakeholders; (c) an argument from character that appeals to the kind of company stakeholders want to build. The character argument creates an aspiration for all stakeholders to pursue regardless of their position, one that is best achieved if the business flourishes; (d) the pragmatist argument combines what is best about the previous three positions and considers how all stakeholders can best live together. Freeman (2007) asserted:

> By building into the very conceptual framework we use to think about business a concern with freedom, equality, consequences, decency, shared purpose, and paying attention to all of the effects of how we create value for each other, we can make business a human institution, and perhaps remake it in a way that sustains us (p. 19)

Phillips, Freeman, and Wicks (2003) stated that the method of distribution should correspond to the goals of the distribution. To improve performance, benefit dispersal should be based upon equity. The greater the risk, contribution, or costs, the greater share of the benefit. If the goal is harmony, then equality has been shown to be the better form of dispersal (Deutsch, 1985).

In discussing the importance of the stakeholder, Sisodia, Wolfe, and Sheth (2003) introduced the term *firms of endearment* (FoEs). This term described 28 businesses that objectively demonstrated that essentially no stakeholder was more important than another. Fullan (2008) argued that FoEs create value emotionally, experientially, socially, and financially. In a study of FoEs over a ten-year span ending in 2006, Sisodia et al. found that the 28 FoEs financially outperformed other businesses at a ratio of 8:1 in terms of return of investment on

these publicly held firms. Sisodia found that “FoEs engender such loyalty and a sense of common cause with their stakeholders that they seem far better able to withstand market downturns than their competitors” (p. 16).

Stakeholder salience. Mitchell, Agle, and Wood (1997) in an attempt to provide clarity and practical application for stakeholder theory have examined the various definitions of stakeholders in terms of the legitimacy of their stakes, their power to influence the organization, and the urgency of their claims. Legitimacy concerns the assumption of risk in the achievement of organizational goals in terms of capital, time, effort, or reputation. Power is a consideration of “agency, resource dependence, and transaction cost” (p. 863). Agency concerns the ability to influence persons or groups to act in an interest other than their own. Resource dependence is a consideration of who controls the resources necessary for the organization. Transaction costs is a consideration of stakeholders external to the organization that are able to influence the costs associated with achieving organizational goals. Mitchell et al. assert that these considerations concerning power, make it an essential factor in determining the salience of a stakeholder and its claims. Urgency concerns the speed in which managers must attend to a stakeholder’s claim. Two factors contribute to this consideration: the degree to which delay in responding to the claims of the stakeholder are acceptable or unacceptable and the importance of the relationship or claim to the stakeholder. Managers can use the construct of stakeholder salience to narrow and prioritize the field of constituents for whom they direct their time and effort.

Managers must also be aware of their position within a network of stakeholders and the relationship between stakeholders (Rowley, 1997). Rowley applied social network theory to demonstrate that alliances between stakeholders such as employees and unions (Lewis, 2011) or between different suppliers can strengthen the claims of stakeholders. In addition, Rowley

proposed that the greater the density of stakeholders, characterized by shared norms and values, easy exchange of information, an ability to monitor the focal organizations actions, and the ability to form coalitions make it difficult for focal organizations or managers to resist the "coordinating pressure" (Rowley, 1997, p. 898) of these stakeholders. When, however, the focal organization or manager is able to control information flow between a more loosely organized set of stakeholders, the power to resist stakeholder claims and influence stakeholder behavior increases. In an organization committed to creating value for all stakeholders, this is the *tertius gaudens* (one who benefits) orientation and should be avoided. This concept will be discussed more fully in the value discussion below.

While a large body of research on stakeholder salience in K-12 schools is yet to emerge, an OECD (2017a) study on school accountability has applied the notion of stakeholder salience in advocating for a multiple accountability system. They argued that solely vertical accountability structures tend only to enforce laws, force compliance, and impose external standards of quality, value, and equity (Fullan, 2007). A more horizontal structure that involves a wider array of stakeholders, builds their capacity in areas they may be lacking, and educates all stakeholders on the standards of quality used by schools would increase transparency, trust, and support for schools (Hooge, Burns, & Wilkoszewski, 2012). This principle has been implemented to some degree in California's local control accountability plans (LCAP) and the requirement that the plan include stakeholder feedback. It is unclear, however the degree to which California schools seek out a wide variety of stakeholders, and the emphasis in the multiple accountability approach is that all voices are heard, not simply the more salient voices, those with power, urgency, and legitimacy (Mitchell, Agle, & Wood, 1997). In a multiple

stakeholder approach, schools are more likely to listen and seek to co-create value for less salient stakeholder groups whose needs are perhaps most unique.

Stakeholder theory and change. While the early application of stakeholder theory was concerned primarily with business, researchers have demonstrated its usefulness in the change efforts in nonprofits, churches, universities, information systems, and enterprise systems in emerging European economies (Soja, 2015). Sayogo et al. (2012) used stakeholder theory as one of the theoretical foundations for an IT project at the Center for Technology in government (CTG). The goal of the project was to facilitate online data exchange between producers and consumers and to provide reliable product information to help consumers make informed purchases of coffee products from Mexico, purchases that reflect the consumers' social and environmental values. The researchers gathered a focus group representing potential stakeholders and provided exemplars of the coffee procurement process and the product's Fairtrade certification process. After examining this information, the groups were divided randomly to mitigate bias and asked questions regarding their own concerns, the concerns of the various stakeholders, and their perceived importance of those stakeholder concerns. In two rounds of questioning, the researchers developed a catalog of the group's concerns and the characteristics of potential stakeholders. They were also able to identify major themes of the stakeholders' concerns and to prioritize the needs and concerns of stakeholders in the development of the data exchange system for CTG. This examination of the stakeholders and their needs was designed to predict the challenges that would emerge in the project so that they could be addressed in the development of the data exchange system and improve the system's rate of adoption after implementation.

Troshani & Doolin (2007) used stakeholder theory along with social network theories to examine institutional stakeholders in Australia and their roles in the diffusion of eXtensible Business Reporting Language (XBRL), a markup language like XML used to describe business data and facilitate business information and knowledge sharing. The researchers argued that their approach could identify stakeholders in "more or less favorable adoption positions" (p. 177). In this qualitative, exploratory study Troshani & Doolin conducted interviews of 11 experts, each representing one of 27 XBRL organizations in the Australian XBRL community. Collectively they represented the variety of perspectives in the XBRL community. They found that a lack of urgent claims by stakeholders in the business and accounting community contributed significantly to the slow adoption of XBRL despite the benefits of the markup language. This lack of urgency was caused in some cases by beliefs that there were alternative or competing solutions; there were other priorities that consumed much of the stakeholders' energies; or there were those who believed that XBRL did not solve a significant problem. Some felt that the pressure to adopt XBRL was not great enough because larger world economies had not adopted it and international accounting standards had not been fully implemented. Once that happened, it would "facilitate the creation of an Australia-wide taxonomy, and subsequently encourage XBRL adoption" (p. 188). Also, since accounting firms and the business community in Australia in general were not particularly known for their leadership in innovation, preferring instead to be a "fast follower," the innovation would not likely be widely adopted until it has been shown to work well in another major economy. Others felt that XBRL was not stable enough and presented compatibility problems with software tools relying on previous standards.

Troshani & Doolin (2007) recommended six instrumental actions necessary to aid in the diffusion of innovation in information technology: (a) knowledge building, having resources for

the creation of accurate knowledge about the innovation; (b) knowledge deployment, distributing knowledge to potential adopters and building awareness of the innovation. This can be through both formal and informal channels. (c) Subsidy, offering financial support or incentives, especially when there are significant barriers to adoption of the innovation; (d) mobilization, encouraging favorable stories about the innovation; (e) standard setting, ensuring agreed upon standards in the community of potential adopters or striving to make the innovation the standards for the community; and (f) innovation directive, encouraging the mandate of the innovation be from entities with regulatory or legislative power.

Stakeholder approaches to change and technology integration have also been applied in higher education. Cook, Holley, and Andrew (2007) found in the analysis of their efforts to embed an e-learning project into the instructional practices of a London university that support from key stakeholders, especially top management, students, and middle management were integral to their efforts to reach a critical mass where the change effort would become self-sustaining. They concluded that coordinating existing systems and extending informal change processes were essential to fostering the cultural changes necessary to an effective integration of technology.

Kujala, Lehtimäki, & Myllykangas (2017) conducted a case study of the transformation of a medium size industrial service company. The researchers interviewed key stakeholders such as management, customers, personnel, and owners and found that the relationship necessary for the co-creation of value was fostered by (a) the relationship history, (b) the objectives of the stakeholders, (c) the interaction within the relationships, (d) learning and sharing information, (e) trust, and (f) willingness of stakeholders to learn. Other factors that positively influenced cooperation and the co-creation of value in this case study were having a shared vision or goal or

at least finding the “lowest common denominator” (p. 26), having shared experiences, and sharing information among a wide variety of stakeholders. This sharing of information was especially important since the organization was amid transition. New business partners were entering the business and value propositions were changing. Information exchange between management and personnel was revealed in management’s willingness to include the non-management staff in decision making and problem solving and provided monthly information sessions to all employees. This understanding and participation in crafting the goals and vision of the emerging company worked to transform the mindset of personnel from that of an anonymous employee of a large company to that of service provider commanding a premium for one’s own work.

Trust and stakeholder salience were also addressed. They found that trust enabled creative problem solving and cooperation, while distrust created barriers to the same. The researchers maintained that “trust is always present when value-creating relationships are discussed” (p. 2). Concerning stakeholder salience, they found the “salience of stakeholder relationships” varied throughout the company transformation and these relationships required varying levels of attention throughout the transition to understand the value claims they made at different times.

This collection of studies revealed that the desire to create value for all stakeholders, that is those who benefit and are effected by the organization’s operation (Freeman, 1984), is an effective means of creating value for the entire organization. A stakeholder approach is marked by actively recruiting a representative body of stakeholders, educating them on the plans, goals, and processes of the organization, listening to their feedback, and involving them in the decision

making of the organization. Such actions improved trust, cooperation, and overall effectiveness of the organization in achieving its mission.

Value

The concept of value has been explored in many disciplines including philosophy, ethics, religion, marketing, management, and economics (Jensen, 2005; Lusch, 2007; Stanford Encyclopedia of Philosophy, 2008). Exchange and use value are the prevailing foci in most economic thought, but other types of value exist as well. Use value considers utility and includes intangible assets such as knowledge, capabilities, brands (Teece, 2003). Essential to organizational change is the construct of value in use (VIU) which examines the possible worth of a product (or process) when substituted for a product already in use (Lee, 1978). This concept is certainly akin to the concept of relative advantage in Rogers (2010) where an innovation's adoption is strongly influenced by the perceived advantage an innovation has over existing practices.

The labor theory of value measures the value of a commodity by the number of hours and amount of rent and profit required to bring the item to market (Smith, 1963). This perspective on value played a significant role in Karl Marx's economic theory, and although Marx's communist ideals have fallen out of favor in the Western world, Marx's focus on labor was very influential in the development of activity theory and the concept of object-oriented activity (Center for Activity Theory and Developmental Work Research, 2003). Marx and Engels (1967) argued that all capital is the result of social labor and therefore should be produced to sustain the laborer, not the capitalist. These Marxist concepts may appear to lack relevance in Western, capitalist societies, but California public schools do not function as do most organizations in a capitalist society. Teachers and staff proceed on a fixed and uniform pay scale with relatively high job

security regardless of the quality of the "product" or student learning produced. This causes some to question whether California public schools are truly serving the needs of all children, especially those of minority and low-income households (Lindquist, 2016). If, indeed, the correlate to profit in the realm of public education is student learning, educational technology leaders should make a concerted effort to identify the unique learning gains to be achieved through technology enhanced learning. If this is not clear, the amount of teacher labor including learning new skills and adopting new practices could be a deterrent to adoption of technology enhanced learning. The construct of practicality supports this point.

Practicality is another essential aspect of making value propositions for teachers. With very influential unions and the system of benevolent cooperation (Bridoux, Régis, & Durand, 2011) commonplace in public schools, mandating teacher practices in public schools is not likely to be an effective change strategy. For teachers to see value in technology enhanced learning, it must be perceived as practical. The three factors that comprise the perceived practicality of an educational innovation are instrumentality, congruence, and cost (Doyle & Ponder, 1977). Instrumentality refers to the explicit procedures communicated in the innovation. Congruence refers to the conditions in which the innovation is expected to be implemented and the teacher's perceptions of self. When an innovation does not appear to match the existing conditions in the teacher's classroom, it was created for another type or class of students (e.g. a mismatch in socioeconomics, class level, literacy level, etc.) or it does not fit with the teacher's self-image or the type of relationship desired with students, the innovation may be perceived as incongruent and therefore impractical. Cost refers to return on investment to teacher time and effort. The cost of implementing an innovation can be reduced when it can be broken down into smaller processes and implemented on a trial basis. Rogers (2010) labeled this phenomenon trialability.

Doyle and Ponder (1977) argued that the school's reward structure that is contingent upon the innovation can spur the effort necessary to implement an innovation. This reward can be recognition, desired materials, or even student engagement.

Morimoto (1973), long before the influx in information and communications technology in education, argued that "Change, or the idea of change, can be frightening—threatening to rob us of the safety and legitimacy of our own, often cherished, position, especially since maintaining this position has helped us to survive," so recognizing the context of teacher-student relationship and honoring the experience and acumen of the teacher are essential in reducing resistance to the changes in pedagogy that information and communications technology fosters. Richardson (1998) stated that professional learning opportunities must not approach the teacher from a deficit perspective but offer a supplement to the teacher's valid and useful knowledge.

Concerning the creation of collective value in the workplace, Bridoux, Régis and Durand (2011) in their review of resource-based value (RBV) research observed that the creation of collective value within a firm is influenced by the motivational system employed by the firm and the mix of employee motivation types within the firm. These two factors affect both the general level of cooperation within the firm and the eventual composition of the workforce in terms of those who choose to remain and those who are invited to join. The researchers identify three motivational systems: (a) benevolent cooperation, (b) disciplined cooperation, and (c) individual monetary incentives. They also identify two primary motive classifications: (a) strong reciprocators and (b) self-regarding. The third motivational system is rarely (if ever) present in California public schools at the teacher or site administrator level because it relies on performance bonuses and other financial incentives. Indirectly, however, opportunities for advancement can incentivize cooperation. The second motivational system has been shown

effective in environments where there is a high degree of observability of individual contributions to the collective value and a high presence of sanctions (positive or negative rewards). These conditions, however, are not often present in public schools due to the high teacher to administrator ratio, the complex employee discipline system of California public schools, and the lack of supplemental financial incentive. Benevolent cooperation, however, is evident in California public schools. It is characterized by persons who are motivated by equality and fairness both vertically and horizontally.

Value co-creation. Though most often applied in the marketing and service science literature focused on constructs such as branding, customer satisfaction, and service-dominant logic (S-D logic), value co-creation has also been applied in healthcare to improve patient satisfaction and care, in higher education to improve student learning and collaboration, in selection of knowledge intensive services, and in tourism to improve travel experiences (Aarikka-Stenroos & Jaakkola, 2012, Navarro-García, Peris-Ortiz, & Rueda-Armengot, 2015; Shaw, Bailey, & Williams, 2011; Zhang, Jiang, Shabbir, & Du, 2015). Though not a new construct, interest in value co-creation increased significantly with the framework proposed by Vargo and Lusch (2004) in which they asserted that goods and money were not the primary source of exchange and reiterated the Bastiat (1848) assertion that services-for-services was the basis for exchange (As cited in Vargo and Lusch, 2017). They also asserted that value was co-created rather than produced and delivered by one actor to another. This seminal work began with five foundational premises which became the basis for what is now termed service-dominant logic and has been refined and elaborated upon to include 11 foundational premises now condensed into five axioms related to service-dominant logic. Table 1 identifies those axioms. The American Marketing Association (2013) defines marketing as “the activity, set of

institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large." The implication here is that marketing extends far beyond the sale of goods and services into relationships within organizations of all types including those within California school districts.

Table 1

The Axioms of S-D logic (Vargo & Lusch, 2016)

	Axiom
Axiom 1/FP1	Service is the fundamental basis of exchange
Axiom 2/FP6	Value is co-created by multiple actors, always including the beneficiary
Axiom 3/FP9	All social and economic actors are resource integrators
Axiom 4/FP10	Value is always uniquely and phenomenologically determined by the beneficiary
Axiom 5/FP11	Value cocreation is coordinated through actor-generated institutions and institutional arrangements

Each of these axioms have application in the adoption of technology enhanced learning. Of particular interest, however, are axioms, 2, 4, and 5, not only because of their explicit mention of essential elements of value, but because they emphasize that value is both individual and contextual and must be understood in that light.

From over thirty years of qualitative and quantitative research, Almquist, Senior, and Bloch (2017) identified 30 elements of value and arranged them in an elements of value pyramid. The pyramid is modeled after Maslow's hierarchy of needs (1943) and offers four levels of value propositions, functional, emotional, life-changing, and social impact, presented from the base of the pyramid to the pinnacle respectively. The functional level contained 14 value propositions such as saving time, informing, or organizing. The emotional level contained 10 value propositions such as reduces anxiety, attractiveness, or nostalgia. The life-changing level contained 5 value propositions such as providing hope and motivation, and the top level, social impact, contained only one value proposition, self-transcendence. The researchers argued that

companies should not look at their value pyramid as do many see Maslow's hierarchy of needs. "Lower" value propositions do not need to be achieved before one can be motivated by "higher" value propositions. Instead, companies should examine the value recognized by their customers and seek to strategically add more value to existing offerings or create new offerings. In testing their model with over 10,000 U. S. consumers, they found that the more value elements offered by companies, the better the performance of the company in terms of revenue growth, customer loyalty, and market share. Almquist et al. argued that companies with leadership that recognize these elements of value and make them a priority or at least hail them as important as other business priorities such as pricing, costs, and customer loyalty are more likely to reap the substantial benefits of this approach. Applying this approach to California public schools, viewing teachers as consumers and designing the ideal "menu" of value propositions concerning technology enhanced learning could work to influence teacher behavior as it has been shown to do with consumers in the private sector.

Value frameworks. The application of stakeholder theory and the co-creation of value was comprehensively applied in den Ouden (2012) in his work *Innovation Design Creating Value for People, Organizations and Society.* Beyond Rogers' (2010) insistence on relative advantage in the adoption of an innovation, den Ouden takes an expansive and systemic approach to innovation and argues that a value proposition "enables alignment of all the different people who are working on the project by capturing the core elements in a coherent description that can also be used in reflection with the different stakeholders" (p. 117). That alignment and reflection brought about by fulfilling the value proposition is essential to sustaining and expanding adoption of the service or product. Den Ouden identified five main elements to the value proposition (Table 2). The answers prompted by these questions will offer insight into the

users, buyers, and influencers, and their needs, goals, and values. These answers also facilitate investigation of options in place and available to the targeted groups and the unique affordances offered by the innovative product or service.

Table 2

Main Elements of a Value Proposition (den Ouden, 2012)

Element
1. For whom is value created? a. Who are the primary users? Who are the buyers (and if applicable the influencers)? 2. What are the needs or aspirations? a. What are the insights on the target group? What specific needs or aspirations do they have that are currently not (sufficiently) met? What is the deep truth about what customers really value? 3. What is offered as a solution? a. What product, service or combination of those is offered? How will it seduce the users and satisfy their needs? 4. What alternatives are available? a. What other options are available (including accepting the situation as it is)? 5. What are the differentiators? a. Why would they choose this solution over alternatives? What are the benefits? How is the offering superior?

Den Ouden (2012) also presented a model for creating value propositions for meaningful innovation that was both personal and expansive in that it addressed the creation of a value proposition at four levels (user, organization, ecosystem, and society) and with four areas of value (economy, psychology, sociology, and ecology). He identified the basic value proposition for each level and each area (see Table 3). At the user level the value proposition entails creating an experience that prompts a behavior change or continuing with the service or product to improve the user's quality of life. At an organizational level, the value proposition is that the organization is doing well enough to continue and thrive as an organization providing services and benefits to all its stakeholders. In responding to the demands of the market, the needs of its customers, and the requirements of other stakeholders, a responsive ecosystem develops for

continuing to do the good of the organization. Through that continuance of doing good a transformation occurs for society as a whole, caring for people and the planet.

Table 3

Four Levels and Four Areas of Value Propositions. Adapted from den Ouden (2012)

Level (Value Proposition)	User (Experience)	Organization (Doing well)	Ecosystem (Doing Good)	Society (Transformation)
Economy	Value for Money	Profit	Stability	Wealth
Psychology	Happiness	Core Values	Shared Drivers	Wellbeing
Sociology	Belonging	Social Responsibility	Reciprocity	Meaningful Life
Ecology	Eco-footprint	Eco-Effectiveness	Sustainability	Livability of the environment

Den Ouden (2012) offers a model for a project level ecosystem that is characterized by several loosely interdependent stakeholder groups, companies, government and non-profit organizations with strategic, tactical, and operational relationships with other stakeholders within and around an organization. Den Ouden argues that this ecosystem, however, is not built around a specific organization, but around a particular value proposition. In the case of public education, the value proposition for society is offered by the California Department of Education vision statement:

> All California students of the 21st century will attain the highest level of academic knowledge, applied learning and performance skills to ensure fulfilling personal lives and careers and contribute to civic and economic progress in our diverse and changing democratic society.

Motivational values. Values work to "explain, coordinate, and rationalize behavior" (Schwartz, 1996, p. 2) in both individuals and groups. Schwartz (1996) sampled cultures from 41 different countries and delineated ten distinct value types. These are derived from three human universal needs which can be summarized as individual biological needs, individual social needs,

and the needs of the group to survive and thrive. The ten basic motivational values are power, achievement, hedonism, stimulation, self-direction, universalism, benevolence, tradition, conformity, and security. Table 4 offers a brief explanation of the goals of each of these values.

Schwartz asserted that values may not play a role in attitudes and behaviors until the situation brings those values into conflict. Schwartz also found in separate studies of cooperative behavior among students, in political party affiliations, and in the willingness of dominant groups to associate with minority groups in Israel that certain value sets tend to work in concert toward certain behaviors. For example, benevolence and universalism tend to foster behaviors that transcend self-interest, while power, achievement, and hedonism tend to foster behaviors related to self-enhancement. Openness to change is supported by the values hedonism, stimulation, and self-direction, while conservation is supported by security, tradition, and conformity. Based on his research, Schwartz contended that when change efforts requiring behaviors characterized by self-enhancement, self-transcendence, openness to change, or conservation, persons will be positively or negatively affected by the value sets of the individual and that these value sets are generally a more reliable predictor of behavior than individual values alone. Considering this research, educational technology leaders seeking to foster teacher adoption of new practices might fare well in considering the value sets of affected stakeholders and how these sets might influence the behaviors associated with technology enhanced learning.

Table 4

Motivational Values and Their Goals and Representative Values (Schwartz, 1996)

Motivational Value	Goals and Primary Value
Power	Seeks social status, prestige, dominance or control over others in order to foster a public image or achieve recognition.
Achievement	Seeks personal success according to social standards by demonstrating competence

(continued)

Motivational Value	Goals and Primary Value
Hedonism	Seeks physical gratification and pleasure for self
Stimulation	Seeks challenges, excitements, and novelty
Self-Direction	Seeks independence through, actions, exploration, and creating
Universalism	Seeks the welfare of all through understanding, protection, appreciation, and tolerance
Benevolence	Seeks the welfare of those in close and frequent contact
Tradition	Seeks to preserve customs, traditions, culture, or religion through humility and devotion
Conformity	Seeks to constrain inclinations and actions that disrupt social norms
Security	Seeks to ensure safety and stability of society, relationships, and self.

Value as boundary object. Kubiak et al. (2015) provides examples of brokering in which change agents create boundary encounters to reduce friction or misunderstandings between communities of practice when a new practice is introduced into the community (Engeström, 2001; Kubiak et al., 2010). Boundary objects are standard forms of communication that help to align activities across landscapes and facilitate collaborative efforts within organizations that may have overlapping, even incongruent practices. Boundary objects, however, while supporting communication and alignment, still allow for variation in perception and meaning of the goal activity.

Kimble, Grenier, and Goglio-Primard (2013) demonstrated that there are at least two distinct ways that brokers can utilize boundary objects. In their comparison of two case studies, one from the medical field, the other from information technology, they found that boundary objects can be used to achieve balance among groups and a more widespread sharing of information or they can be used to restrict information and thereby control the direction of the community effort. Kimble et al. identified these two forms of brokering as *tertius iungens* (one who joins) and t*ertius gaudens* (one who benefits). Obstfeld (2005) found in his study of innovation in the engineering department of an auto manufacturer that a broker with a *tertius iungens* orientation characterized by dense social networks with diversity of social knowledge

was better able to influence innovation within the organization. These findings suggest that one of the most significant predictors of innovation is the sharing of knowledge between communities. In the context of California public schools, educational technology leaders that work to build structures that facilitate communication and sharing among district stakeholders are more likely to foster the innovation necessary to achieve California's stated mission of achieving the highest levels of academic knowledge, applied learning, and performance skills to ensure fulfilling lives for California students.

Summary

Technology enhanced learning describes an effective use of technology in lesson design that is student-centered and collaborative. It prepares students for college and career by fostering creativity, diverse communication skills, problem-solving, and self-directedness in the student. Effective use of technology in student learning often employs constructivist principles in efforts such as problem-based learning and inquiry learning, activities that foster student choice and utilize ill-defined and relevant problems to engage student and sustain interest and engagement. Similarly, when teachers are provided sustained opportunities to build their technological, pedagogical, and content knowledge (TPACK. Mishra & Koehler, 2006) through modeling, guided practice, collaboration, and peer feedback, they are more likely to use these technology enhanced practices in their classroom. In addition to these professional learning opportunities, teachers must find ways to overcome beliefs about technology that have been shown to hinder its use in the classroom such as lack of training, reliability of infrastructure, availability of curated curriculum, and concerns about the time technology might take away from preparation for standardized tests (Ertmer & Ottenbreit-Leftwich, 2013).

Many of these concerns and training opportunities fall under the influence of district educational technology leaders. This individual is often positioned as a convener amid the school district's many stakeholders such as IT departments, board members, curriculum and instruction departments, principals, teachers, union leaders, vendors, parents, and communities. Encouraging models of distributed leadership that include a shared and transformative vision and heeding the guidance of existing standards, guidelines, and change leadership theories are essential elements to fostering teacher adoption of technology enhanced learning.

The theoretical constructs that guide this research, include activity theory (Engestrom, 1987, 2001, 2007; Sannino, Daniels, & Gutierrez, 2009) and stakeholder theory (Freeman, 1984; Mitchell et al., 1997). While activity theory as a means of fostering change has been explored in the change literature (Engeström & Sannino, 2011), the concept of value as a catalyst for reducing contradictions within and surrounding the primary activity system has not been widely investigated. The five axioms of service-dominant logic (Vargo & Lusch, 2016) provide a useful perspective on the importance of context and individual perspective on the co-creation of value. So too does the Elements of Value Pyramid (Almquist, Senior, & Bloch, 2017). Den Ouden (2012) provides a useful framework for creating value propositions that are designed to spur innovation among stakeholders in an organization. Schwartz (1996) identifies value sets and motivational values and their role in organizational change. Stakeholder theory (Freeman, 1984) deals explicitly with the creation of value among stakeholders to maximize the operations of a firm, but Mitchell et al. (1997) argued that for stakeholder theory to be a useful construct for an organizational leader, there must be a way of prioritizing stakeholder claims (or value propositions). Stakeholder salience, prioritizing stakeholders in terms of their power, the legitimacy of their claims, and the urgency of their claims, has become a guiding construct for

addressing the claims of stakeholders, those who benefit from or are affected by the firm's operation (Freeman, 1984).

Educational technology leadership, distributed leadership, and change management were also discussed to gain perspective on the role of the educational technology leader and the ways and resources through which this person can influence teacher adoption of technology enhanced learning.

Chapter 3: Methodology

Overview

This phenomenological study seeks to understand the experiences of district educational technology leaders in creating conditions that foster technology enhanced learning in California public schools. The focus of the study is the work done among district educational technology leaders in the co-creation of value for technology enhanced learning among the various district stakeholders to minimize factors, programs, attitudes, and other conditions that might interfere with teacher adoption of technology enhanced learning. The study is also concerned with how educational technology leaders prioritize the value claims (stakeholder salience) of district stakeholders. To analyze how this activity is occurring, activity theory (AT) will be used to understand the social conditions, relationships, and other structures surrounding the teacher adoption of technology enhanced learning. AT also offers a means of locating the contradictions that might interfere with the goal of technology enhanced learning. For example, Figure 4 is a proposed model of an activity system of technology enhanced learning in a school setting. If the hindrance or contradiction to teacher adoption of technology enhanced learning lies with the teachers themselves then the contradiction would lie between the teacher and the object (Point A). If the hindrance or contradiction lies with infrastructure of the school district then the contradiction might lie between the tools and the object (Point B). The educational technology leader should work to identify and influence the resolution of these contradictions, so this study seeks to understand if and/or how the educational technology leader uses value propositions to bring about that resolution. The teacher is the subject of this system. The interviews are of district leaders, but the teacher is the main point of contact for students and thus they are considered as the subject in this proposed model.

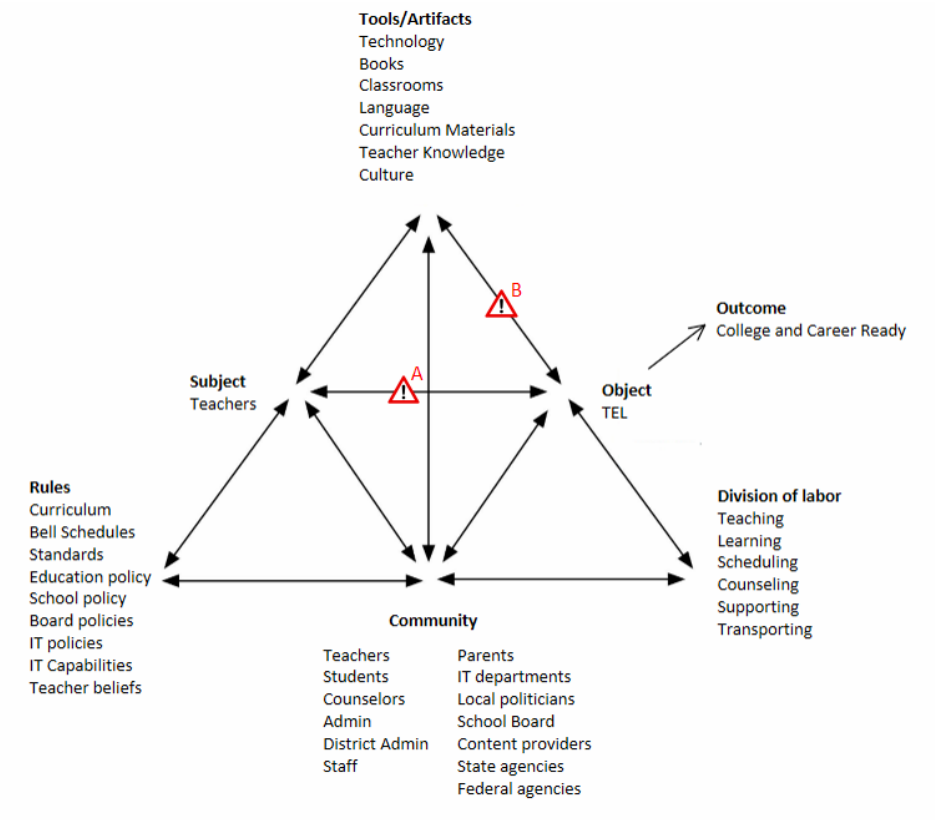

Figure 4. Proposed model of the activity system and illustration of contradictions in the teacher adoption of technology enhanced learning

This chapter first examines the rationale for pursuing a phenomenological approach and for using semi-structured interviews as the vehicle for data collection pertaining to the research questions. The chapter also discusses the bracketing strategies the researcher used to mitigate personal bias and preconceptions throughout the research process. It then discusses the strategy used to select interview participants, the procedures used for conducting the interviews and data analysis. It also addresses the validity and reliability of both the data collection and data analysis procedures and provides an explanation of the efforts to protect human subjects through the IRB process. Finally, a summary of the chapter will be provided.

Restatement of the research questions. This phenomenological study seeks to address the following questions:

1. What have been the experiences of successful district educational technology leaders in identifying, prioritizing, and creating value for stakeholders in teacher adoption of technology enhanced learning in California public school districts?
2. In what ways, if any, does the co-creation of value with stakeholders affect the contradictions extant within the activity system?
3. In what ways, if any, do educational technology leaders consider stakeholder salience in addressing stakeholder value demands?

Rationale for a phenomenological study. A phenomenological study seeks to understand the lived experience of subjects usually within the subject's given context. Such studies offer insight into our intellectual and practical capacity and emphasize the human side of professional activities such as ethics, interpretive talents, tact, and thoughtfulness (Van Manen, 2016). Because the individual or group and their motives and actions cannot be fully understood apart from the context in which they occur (Maykut & Morehouse, 1994), activity theory was used to provide a wholistic perspective on the context of teacher adoption of technology enhanced learning and a model through which the district educational technology leaders' influence on teacher adoption of technology enhanced learning was examined. Romanyshyn and Whalen (1978) asserted:

> … if one adopts the view that human action is like a text to be read, then it is clear that the context of the "words" of this text is all important to the meaning because the meaning of the word can not be divorced from the context within which it occurs (p. 24).

This notion supports the use the phenomenological perspective and activity theory as the model to examine the experiences of educational technology leaders.

This study fits the phenomenological paradigm because it is designed to solicit the point of view of the educational leader and his or her description of the actions, beliefs, and knowledge used to achieve a particular purpose (Gray, 2013; Smith, 2016). This concept of awareness of purpose or intentionality is central to phenomenology and activity theory (McIntyre & Smith,

1989; Nardi, 1996), and using both an inductive and deductive coding reflect the phenomenological perspective that "even contradictory and contested philosophical distinctions can contribute to our understanding and general intent of phenomenology as an enormously rich, always creative, and often compelling and powerful form of inquiry and thinking about lived meaning of phenomena and events of human existence" (Van Manen, 2016, p. 74)

Philosophical assumptions and epoche or bracketing. The researcher has also reviewed literature on philosophical assumptions and beliefs of the researcher (Creswell, 2014; Creswell & Poth, 2018; Duffy & Chenail, 2009; Maykut & Moorehouse, 1994; Snape & Spencer, 2003; Valle & King, 1978) and considers himself a social constructivist in that he believes that realities are constructed from the lived experiences and the interaction one has with others (Creswell & Poth, 2018; Ritchie, Lewis, Nicholls, & Ormston, 2003). This includes the researcher's own constructions regarding implementing technology enhanced learning and the realities constructed by the researcher with interview participants regarding the participants' lived experiences in creating value for technology enhanced learning in California public schools. These facts, constructions, and perceptions necessitate concerted efforts to bracket the researcher's beliefs and preconceptions to avoid exerting undue influence on data collection and analysis.

Through epoche or bracketing, the researcher forms a new relationship with the world during those moments. The relationship is not different in content, but one without the typical analysis, interpretation, and judgment that often accompanies experience, thus allowing the phenomena to reveal itself (Tufford & Newman, 2010). Moustakas (1994) stated that epoche allows the researcher to "see with new eyes in a naïve and completely open manner" (p. 86). This bracketing process began in the research planning phase in examining literature on leadership,

change management, stakeholder theory, and value creation. The research questions emerged from the researcher's understanding of these theories and constructs. The decision to examine value creation through the widely accepted theoretical model of activity theory allowed the researcher to take a more objective view of the research problem and to craft interview questions that yielded relevant data on the research problem and the constructs in focus without leading participants or curtailing exploration of the participants' experience (Tufford & Newman, 2010). The decision to utilize purposive sampling, establishing specific criteria for participant selection (Creswell, 2014), also helped to avoid bias and preconceptions that might occur if the researcher were to use convenience sampling.

Because the intent of this phenomenological study is to rely as much as possible on the interview data to reach conclusions regarding the research questions (Creswell, 2014; Creswell & Poth, 2018), the researcher has sought feedback on those questions from peers who are doctoral students and from professionals in the field of educational technology. He solicited their feedback on clarity, appropriateness, and the type of answers or data the questions might yield regarding the research questions. In addition, the researcher conducted a pilot interview and reviewed the pilot interview and analysis to revise questions, if necessary. He also discussed the pilot interview and analysis with his committee chair so that she could act as the "other" in the bracketing process that might help to unearth the subconscious biases not revealed in other attempts at epoche (Ahern, 1999). During the interviews, the researcher used his skills as a Cognitive Coach in which he has been trained in mediating the thinking of others using techniques such as pauses, asking open-ended questions, offering positive presuppositions, employing listening set-asides, and using tentative language to invite discussion (Costa, Garmston, Hayes, & Ellison, 2016). Unlike the tenets of cognitive coaching, the researcher

avoided extensive paraphrasing of the participant's ideas in order to avoid leading the participant (DiCicco-Bloom & Crabtree, 2006). Instead, the researcher either repeated or asked for clarification of the words and phrases the participant uses. These skills along with the researcher's familiarity with the subject matter allowed the interview to move forward, exploring the participant's ideas and beliefs, without guiding the conversation in ways the participant did not intend based on the questions asked. The semi-structured interviews yielded a candid description of the participants' experience in fostering adoption of technology enhanced learning in California public schools.

The researcher also utilized reflexive journals (Moustakas, 1994; Tufford & Newman, 2010) as a strategy for bracketing. Before and during the research process, the researcher surfaced his preconceptions about the process, topic, and other issues that might cloud the researcher's objectivity and focus as the instrument of data collection. Tufford and Newman (2010) argued that "Maintaining a reflexive journal may raise the researcher's awareness of the topic in daily life and bring it to a level of consciousness prior to undertaking the research endeavor" (p. 87). This awareness allowed the researcher to more easily set aside preconceptions as he extracted and prioritized the emergent coding scheme from each interview data set.

Qualitative research design. Morgan and Kreuger (1993) stated that qualitative research is useful when the goal is to develop theories or explain phenomena, specifically answering the "how-and-why" questions. In the case of this study, the exploration of how district educational technology leaders foster the teacher adoption of technology enhanced learning and the conditions that influence the teacher's choice to do so is a concern of great interest to educational technology leaders. Analysis through the lens of activity theory illustrated the influence of factors in an around the subject's (teacher's) environment and the effect of these factors on a

subject's pursuit of an object (in this case, the teacher's pursuit of technology enhanced learning). The co-creation of value in organizations has been shown to foster innovation and consumer loyalty (den Ouden, 2012, Zhang et al., 2015) and is strongly influenced by exchange and combination of unit resources and social capital (Tsai & Ghoshal, 1998). For education stakeholders, the co-creation of value in technology enhanced learning could create purposeful and enthusiastic support or at least the avoidance of conflicts as various stakeholders pursue their own goals within the public education system. The stakeholders make up the community, supply the tools, create the rules, and perform the labor that contribute to the primary activity of teaching and learning. Many researchers have used qualitative and quantitative methods to collect data from teachers regarding the barriers they experience and the value they see in technology enhanced learning (Bauer & Kenton, 2005; Davies, 2011; Davies & West, 2014; Ertmer & Ottenbreit-Leftwich, 2010; Ertmer & Ottenbreit-Leftwich, 2013; Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur, & Sendurur, 2012), but few have collected data from educational technology leaders to examine their experiences in the co-creation of value among public school district stakeholders to facilitate teacher adoption of technology enhanced learning. Interviewing educational technology professionals in a convenient, online environment provided a rich data source that served to address this perceived gap in the literature.

Researcher's role. The researcher himself is an educational technology professional with his own constructed reality regarding educational technology and best practices for implementation. He began his career in retail management. After several years, he decided to pursue a career in education and became a secondary language arts teacher. After 14 years in the classroom, he became an Instructional Coach for educational technology. He later took a role as coordinator of educational technology at a county office of education. In his experience as a

retail manager, teacher, technology coach, and educational technology leader, the researcher noted similarities between consumer behavior and teacher behavior, especially in their adoption of products and practices. Both consumers and teachers have a great deal of autonomy in the practices and products they adopt. Autonomy is an essential characteristic of teaching as a profession (Pearson & Moomaw, 2006). This caused the researcher in his role as teacher leader, coach, and coordinator to consider more democratic means of motivating changes in teacher behavior in the adoption of technology in instruction. Modeling, training, and coaching teachers were among the means of creating value for technology enhanced learning, but the researcher saw no explicit or formalized effort to create this value in technology enhanced learning, nor was value recognized in all levels of the school district, especially among decision makers that exerted considerable influence over teacher materials, scheduling, and technology infrastructure.

Along with these observations, constructs and theories such as relative advantage (Rogers, 2010), stakeholder theory (Freeman, 1984) and activity theory (Engeström, 1987, 2000) that were introduced in his doctoral studies caused the researcher to investigate the constructs of value and object-oriented behavior more thoroughly. Although he thought these constructs had useful application in educational settings concerning technology enhanced learning, he found scant research in this area and made the decision to pursue this line of research in his dissertation studies.

Plan for Data Collection

Participants. The participants in this study were educational technology leaders from public school districts in California. While the demographics of the state vary greatly, the structure of California public school districts are quite comparable due to California's Local Control Funding Formula (LCFF) and the similar political and organizational structure of public

schools in terms of stakeholders, budgeting, union influence, and California standards. The capacities of these districts do vary, however (Knudson, 2014; Strunk & Grissom, 2010). Within their districts, these educational technology leaders have as a primary responsibility to prepare and encourage teachers to use information and communications technology effectively as an instructional tool. The educational leaders had at least twelve months of experience in their current or a similar leadership position within their district.

Sampling strategy. The criteria for purposeful sampling in this study was that the six participants worked in districts that were recognized by reputable educational technology organizations as a district that made productive and widespread use of educational technology among its teachers. Some of the organizations that offer such recognition are Common Sense Education, Microsoft Showcase Schools, Future Ready Schools, Google Reference District, Apple Distinguished schools, and Digital Promise League of Innovative Schools. Each of these organizations promote safe and student-centered use of technology as a tool to foster critical thinking and problem solving, creativity, communication, and collaboration among students. As part of the interview protocol, the participants were asked to recommend other California district educational technology leaders who have led successful and widespread adoptions of technology enhanced learning who might be able to contribute to the exploration of creating value for district stakeholders in technology enhanced learning. This “snowball” technique was intended to help increase the variation of study participants (Maykut & Morehouse, 1994). A satisfactory degree of saturation, however, was reached before it became necessary to solicit participation by these additional candidates.

Interview procedures. The researcher conducted six semi-structured interviews. The prospective participants were sent an email to invite them into the study. The invitation identified

the reasons they were selected for the study, included an overview of the study, and listed the potential benefits of participation (see Appendix B). For the convenience of the participants, the online interviews were scheduled during the work day at a time when both the researcher and interviewer were available. This enabled participants to take advantage of the high-speed internet access available in most California school districts. The participants were also informed that as a token of the researcher's appreciation for participating in the interviews they would receive a $25 Amazon or Starbucks gift card.

Each person who agreed to participate in the study was provided with informed consent (see Appendix C) notifying them of the purpose of the study, the fact that the interview would be recorded using the Zoom conferencing software, and the participant's confidentiality would be maintained. Those who agreed were also asked to complete a Qualtrics online survey (see Appendix D) that solicited the following demographic information: First name, best contact phone (preferably cell phone), name of school district, location of school district, type of school district, (e.g. K-12, K-8, Elementary), number of schools in the district, type of technology initiative in the district for which they are at least partly responsible (e.g. one-to-one, bring your own device, online learning, blended learning, other: _____), time in position, size of staff (including full-time management, full-time certificated, number of stipends for educational technology). This information was helpful in interpreting the qualitative data received in the interviews. It was stored separately from the interview data on a password protected computer. The demographic information will be destroyed within six months after the dissertation defense.

Before the scheduled interview, participants were sent a reminder along with a topic guide (See Appendix E) designed to foster thinking about the study topic and a URL and password to access the online conferencing site. To avoid overly prepared responses, the topic

guide provided general guidelines and did not have the specific questions to be used during the interview.

Interview protocol. The researcher utilized an interview protocol (see Appendix F) to standardize the basic structure of the interview process. The protocol was used to inform participants of the reasons they were selected, establish norms, reassure them of their privacy, and let them know that they were free to end the interview at any time and request that their interview data not be used. The researcher also solicited a verbal agreement to be recorded using the Zoom recording feature. This yielded a video file (.mp4 format) and an audio only file that was saved to the researcher's password protected computer at the end of the interview session. In most cases, the audio file was sent securely to a transcription service. In one case, the video file was sent.

Once the recording was started the researcher solicited another verbal agreement that the participant agrees to be recorded. The researcher shared that he would be using an interview protocol that will list the main questions, but the researcher may ask follow-up questions to ensure clarity and explore the participant's ideas more fully. The researcher then explained that he would be using the term "technology enhanced learning" to describe the participant's technology integration efforts that go beyond teachers using the technology merely as a tool to do things that can be done without the technology such as deliver content and conduct drills, tests, and basic research.

The interview sessions were free-flowing conversations stemming from the protocol questions (Burgess, 1984) and the participants' own words (DiCicco-Bloom & Crabtree, 2006); During the conversation, some protocol questions were addressed out of the order, but participants added more when the protocol questions were asked directly. Since time was never

an issue, there was no need to utilize the check boxes (see Appendix G) *addressed* and *fully addressed* to indicate that a planned topic was addressed earlier in the conversation. These check boxes were included in case the interview ran short on time and the researcher had to decide which questions could be skipped because some data was already collected on the topic.

Table 5 identifies the theoretical construct and research question each question from the interview protocol (see Appendix G) is designed to inform.

Table 5.

Questions and theoretical constructs

Question	Research Question	Theoretical Construct
1. Describe your path to your current position and the motivations that brought you to this point in your career?	1	Identity & historical context (Wenger-Trayner & Wenger-Trayner, 2015)
2. As you examine your role and your goals within your district, please explain how you see your role in the organization and some of the things you are trying to accomplish in the organization?	1	Identity (Wenger-Trayner & Wenger-Trayner, 2015) Object-oriented behavior (Engeström, 1987, 2000) Intentionality (McIntyre & Smith, 1989; Nardi, 1996)
3. Please walk me through the ways in which you influence stakeholders to actively support the goals you have for technology use and student learning in your district.	1 2	Leadership (Leithwood, 1994; Fullan, 2008; Gronn, 2002, Spillane, 2008) Technology enhanced learning (Davies & West, 2014; Goodyear & Retalis, 2010) Stakeholder theory (Freeman, 1984; Freeman, 2007) Value (den Ouden, 2012; Vargo & Lusch, 2016)
4. Describe some examples of teaching and learning with technology that you have observed from exemplary to ineffective. a. What were some of your reactions? b. In what ways could the teaching and learning have been improved?	1	Technology enhanced learning (Davies & West, 2014; Goodyear & Retalis, 2010) Leadership (Leithwood, 1994; Fullan, 2008; Gronn, 2002, Spillane, 2008)

(continued)

Question	Research Question	Theoretical Construct
5. Describe the people and their roles that were most essential to your efforts to implement or sustain technology enhanced learning in the classroom? a. What are some qualities that made these stakeholders so important?	1 2 3	Stakeholder theory (Freeman, 1984; Freeman, 2007) Stakeholder salience (Mitchell, Agle, & Wood, 1997)
6. In what ways have you listened to the needs of stakeholders as pertaining to technology enhanced learning? a. What did you find out?	1 2 3	Value (den Ouden, 2012; Vargo & Lusch, 2016) Leadership Stakeholder salience
7. What conflicts have you encountered in trying to achieve your district's goals concerning technology, pedagogy, and student learning. a. In what ways did you try to reconcile those conflicts?	1 2	Technology enhanced learning Activity theory (Engeström, 1987, 2000 Contradictions (Bonneau, 2014; Engeström, 1987, 2000) Stakeholder salience (Mitchell, Agle, & Wood, 1997)
8. Given your experience in dealing with stakeholders in the public school system, what two pieces of advice might you offer district educational technology leaders wanting to implement technology enhanced learning?	1 2	Stakeholder theory (Freeman, 1984; Freeman, 2007) Leadership (Leithwood, 1994; Fullan, 2008; Gronn, 2002, Spillane, 2008)
9. In the interest of accuracy and validity, once I've analyzed the interview data, I'd like to share with you how I've categorized the data and discuss the themes that emerged from our conversation. Is that something you would interested in?		Reliability and validity (Creswell, 2014)
10. Can you think of other California educational technology leaders who have been recognized by educational technology organizations that might be interested in exploring the topic of creating value for technology enhanced learning? a. If you're comfortable doing so, please share with me their district and contact information. b. You can also email me that information using the Pepperdine email address through which I have been contacting you.		Snowball sampling (Creswell, 2014)

To respect the time of the participants and improve the chances of recruiting the educational technology leaders, the participants were asked to block out 90 minutes for the interview. The interviews, however, lasted from 39 to 62 minutes, lasting an average of 53 minutes. Rabiee (2004) suggested that forewarning participants about the time commitment is a good practice to follow.

Validity and reliability of the interview protocol. To ensure the clarity, validity, and authenticity of the interview protocol, the researcher sought feedback on the interview protocol with two other educational technology professionals as well as other doctoral students and revised as necessary. Both educational technology professionals, having recently completed their doctorate, are very familiar with the research process and the need for specificity and clarity in the interview protocol. In addition, the researcher sought the feedback of persons familiar with activity theory on how likely the questions will produce usable data on the themes to be explored in the interviews. The researcher conducted one pilot interview to hone his interviewing skills, clarify and rephrase the questions as necessary, refine the timing of the interview session, and ensure the questions will generate credible data (Rowley, 2012). The pilot resulted in revising two questions on the interview protocol. The researcher also shared the pilot interview and practice data analysis with his dissertation chair to ensure the researcher has effectively bracketed his own beliefs and preconceptions. The same basic interview protocol was used for each interview. This reduced what Gray (2013) termed the interviewer effect, where the interviewer places undue influence on the interview process. Although the researcher allowed for the possibility of revising the interview questions due to responses that fostered themes unanticipated by the researcher, this variation in the interview procedure did not become necessary; such flexibility, however, is one of the strengths of qualitative research and is

consistent with the need to foster “deep engagement with participants to achieve authentic accounts of how they [the participants] construct their social reality” (Gray, 2013, p. 163). Finally, before conducting the interview sessions, the researcher refined his role as interviewer by practicing the interview protocol with his Dissertation Chair. The researcher also utilized his reflexive journal to uncover any biases and preconceptions about the interviews, participants, and the topics that may not have been identified in previous journal entries.

Procedures for Data Analysis

Pure qualitative phenomenological research is inductive, allowing the participant’s subjective experience to emerge from the data collection (Gray, 2013). To ensure the study reflected the lived experiences of educational technology leaders and to properly bracket the researcher’s preconceptions, the researcher first analyzed the data using the emergent coding system adapted from the Van Kaam method by Moustakas (1994). This process allowed the researcher to extract the essential and relevant themes and describe each participant’s experience with the phenomenon under investigation.

Table 6 identifies the specific steps of the data analysis. Step After completing the analysis of emergent themes, the researcher conducted an analysis using the a priori codebook based upon the research questions and the theoretical framework identified in Chapter 2. Since the interview questions were a product of the theoretical framework, there was considerable overlap in the codes and themes derived from both analyses. This hybrid approach of both inductive and deductive coding was used similarly by Fereday and Muir-Cochrane (2006) and worked to support the reliability of the interview protocol. It also reflected the experiences of the educational technology leaders more accurately and, through thematic analysis, made the study more useful for further research (Boyatzis, 1998).

Table 6

Steps for Analysis of Emergent Themes. Adapted from Moustakas (1994) Procedures for Phenomenological Analysis (p. 120)

Goal	Steps and Description
1. Listing and Preliminary Grouping	List every expression relevant to the experience.
2. Reduction and Elimination: To determine the Invariant Constituents:	Test each expression for two requirements: a. Does it contain a moment of the experience that is a necessary and sufficient constituent for understanding it? b. Is it possible to abstract and label it? If so, it is a horizon of the experience. Expressions not meeting the above requirements are eliminated. Overlapping, repetitive, and vague expressions are also eliminated or presented in more exact descriptive terms. The horizons that remain are the invariant constituents of the experience.
3. Clustering and Thematizing the Invariant Constituents:	Cluster the invariant constituents of the experience that are related into a thematic label. The clustered and labeled constituents are the core themes of the experience.
4. Final Identification of the Invariant Constituents and Themes by Application: Validation	Check the invariant constituents and their accompanying theme against the complete record of the research participant. 1. Are they expressed explicitly in the complete transcription? 2. Are they compatible if not explicitly expressed? 3. If they are not explicit or compatible, they are not relevant to the co-researcher's experience and should be deleted.
5. Construct an *Individual Textural Description* of the experience. Include verbatim examples from the transcribed interview.	Describe the participant's experience incorporating quotes from the participant that illustrate the invariant constituents of themes.
6. Construct an Individual *Structural Description* of the experience based on the Individual Textural Description and Imaginative Variation.	Account for the "underlying dynamics of the experience" (Moustakas, 1994, p. 135) 1. Utilize the activity theory model to illustrate the structural relations involved in the adoption of technology enhanced learning.

(continued)

Goal	Steps and Description
7. Construct for each research participant a *Textural Structural Description*	Explain how the phenomenon is experienced by the participant and the conditions that provoke it. Aim at the essence of the experience (Moustakas, 1994).
8. Develop *a Composite Description of the meanings and essences of the experience*	Use the Individual Textural-Structural Descriptions to compose a description representing the whole group of participants.

Through the steps adapted from Moustakas (1994), emergent themes or invariant constituents were identified. Those unique themes regarding value propositions are described in Appendix H.

The study used cultural historical activity theory, and stakeholder theory, as well as the constructs of stakeholder salience, and value to help the researcher understand the experiences of educational technology leaders in reducing the tensions and contradictions in teacher adoption of technology enhanced learning. Therefore, after extracting the emergent themes, the researcher employed a deductive approach, using the a priori coding template to categorize the interview data according to the theoretical constructs already described in the literature review. These a priori codes and their association with the theories and constructs upon which this study is designed are listed in Table 7. Because the emergent themes were largely based upon the words the participants used, the codes themselves were often different than the a priori codes, but there was a great deal of overlap in the themes. This could be an indicator of the reliability of the interview protocol and the theoretical constructs involved in the study. An activity theory diagram was used to model the context of the teacher in his or her goal of implementing technology enhanced learning. The researcher identified the contradictions described in each participant's experience and noted the location of the contradiction in the activity system and charted the value propositions used to address those contradictions. This addressed the second research question. The researcher also reviewed the video of the interview to take note of the

emotional responses to the interview questions, but the researcher found no significant data to code that addressed the research questions or added to the data from the transcript analysis.

Table 7

A Priori Coding Template

Theory	Element	Code
Stakeholder Theory (Freeman, 1984; Mitchell, Agle, & Wood, 1997)	Salience	Power
		Legitimacy
		Urgency
Activity Theory (Engeström, 1987)	Contradictions	Level 1
		Level 2
		Level 3
		Level 4
	Elements	Community
		Division of Labor
		Object
		Outcome
		Rules
		Subject
		Tools
Value (den Ouden, 2012; Teece, 2003)	Types of Value	User/ Experience
		Value in Use
		Exchange
		Identity
Rogers (2010)	Relative Advantage	Relative advantage
Value Propositions (den Ouden, 2012)	Ecosystem	Ecosystem/Doing good
		Ecosystem/Ecology/Sustainability
		Ecosystem/Economy/Stability
		Ecosystem/Psychology/Shared Drivers
		Ecosystem/Sociology/Reciprocity
	Organization	Organization/Doing well
		Organization/Ecology/Eco-Effectiveness
		Organization/Economy/Profit
		Organization/Psychology/Core Values
		Organization/Sociology/Social Responsibility
	Society	Society/Transformation
		Society/Ecology/Livability of the Environment

(continued)

Theory	Element	Code
		Society/Economy/Wealth
		Society/Psychology/Well-being
		Society/Sociology/Meaningful Life
	User	User/Experience
		User/Ecology/Ecological Footprint
		User/Economy/Value for Money-Investment
		User/Psychology/Happiness
		User/Sociology/Belonging
Motivational Values (Schwartz, 1996)	Motivational Values	Power
		Achievement
		Hedonism
		Stimulation
		Self-Direction
		Universalism
		Benevolence
		Tradition
		Conformity
		Security

Figure 2 (above) is a proposed representation of a public school's activity system. In the data analysis, the researcher located the elements in which contradictions occur, identified the type of contradiction, and used the interview data as well as his own knowledge to determine the stakeholders that were responsible for those elements, issues, or beliefs that caused the contradiction. Where possible, the researcher also identified the value propositions the educational technology leader used to overcome such contradictions. This yielded valuable data that could be used to increase teacher adoption of technology enhanced learning in California public schools.

For the a priori analysis, the researcher used HyperResearch, a trusted software tool for qualitative data analysis. This tool allowed the researcher to create, retain, alter, and group codes and to conveniently match the interview transcript data to the appropriate code. The software also allowed data to be assigned to multiple codes.

Validity and reliability of data gathering instruments. Qualitative research is reflexive by nature (Gray, 2013; Mauthner & Doucet, 2003), and the process of data analysis and interpretation involves making, not finding meaning (Mauthner, Parry, & Backett-Milburn, 1998). This study, therefore, does not pretend to impose positivist precepts of generalizability, but accepts the historical, contextual, and linguistic grounds upon which meaning is constituted (Mauthner & Doucet, 2003). This includes an awareness of the influence of the researcher on the meanings constructed and the need to be aware and critical of such influences in the research process. The study design, however, was an effective effort to create an authentic and trustworthy (Guba & Lincoln, 1994) investigation of the research questions.

The data collection and analysis methods had several design features that contributed to the study's validity and reliability. The design and data analysis methods were adapted from established procedures for phenomenological studies (Boyatzis, 1998; Conklin, 2007; Fereday & Muir-Cochrane, 2006; Moustakas, 1994; Van Manen, 2016). The use of the reflexive journal to bracket the researcher's presuppositions and conclusions and emergent analysis to create textual and structural descriptions of the participant's experience largely through the participant's own words left an evidence trail that enhanced the reliability of the research (Koch, 1994; Patton, 2002). The theoretical framework was appropriate for a phenomenological study in this context and therefore provided a good foundation for the study (Arminio & Hultgren, 2002 as cited in Tobin & Begley, 2004), and the hybrid approach to coding added a degree of rigor which served to validate the theoretical framework and interview protocol. In addition, member checks were solicited during the interview process and the researcher was able to conduct these checks with three of the participants to ensure that the themes derived from the interview data accurately reflected the participant's experience. Armino and Hutgren espoused six characteristics of good

interpretive studies: Grounding the logic and criteria of the study, explicit procedures for data collection and management, representation of the participant's voice, making meaning with data and methodology, and the implications of professional practice. This study and its data collection and analysis exhibited these features.

Protection of Human Subjects and Ethical Considerations (IRB).

To ensure participants are free from exploitation and coercion, to ensure confidentiality among the study participants, and to ensure the security and confidentiality of the research data, an application to the Pepperdine University IRB was submitted. The researcher applied for exempt status with Pepperdine's IRB because the research conducted occurred in commonly accepted educational settings and involved examination of normal educational practices. Also, no minors were involved in the research process. The researcher took the following steps to minimize the possibility of harm to participants:

During the interview sessions, to maintain the privacy and confidentiality of participants, they were asked to enter a pseudonym in the Zoom software. All names included in the transcript were changed and any statistics that might be uniquely identifiable to a specific school district were not disclosed. Participants were free to withdraw from the interview sessions at any time and without consequence to the researcher's commitment to their privacy or confidentiality. Any publication of the research findings will be made available to the participants and such publications will not contain any personally identifiable information. This study was approved by Pepperdine IRB for exempt status (see Appendix I).

Summary

This study sought to understand the experience of educational technology professionals in California public school districts of creating value for the many stakeholders involved in

teacher adoption of technology enhanced learning. It also sought to understand the ways in which educational technology leaders prioritize these stakeholder value claims. Online synchronous interviews afforded collection of qualitative interview data in a convenient, efficient, and valid manner, and due to its popularity among educational technology leaders and ease of use, the Zoom conferencing platform had minimal effect on the data collection efforts. Tutorial information was accessible to all participants and mentioned in the topic guide (see Appendix E). The researcher used an interview protocol that was assessed by educational technology professionals to be a clear and valid means of fostering responses pertinent to the goals of the research. The semi-structured format allowed for some flexibility in exploring themes not anticipated in creating the interview protocol.

The study was also submitted for IRB approval to ensure the benefits of understanding how this perspective on teacher adoption of technology enhanced learning outweighed the potential harm participation in this study might bring. The data collected was analyzed and coded both inductively through an emergent coding system and deductively through an a priori code book based upon the theoretical framework. Efforts to maintain participant privacy and confidentiality included removing any personally identifiable information, keeping personal participant data separate from the data transcripts, and ensuring the security of the devices used to maintain and analyze the data secured.

Chapter 4: Results

The researcher used semi-structured interviews with six participants to collect data to address the research questions. The participants were educational technology leaders in districts with student populations that are small, medium, and large relative to the state average of 6640 students. The largest public school district in California has approximately 640,000 students. Furthermore, the educational technology leaders represent southern, central, and northern areas of the state. For the sake of confidentiality, detailed demographic information was not provided except to describe the district as small, medium, or large. Table 8 describes these rankings in terms of student population. The only other descriptors are locale and type of school. The locales were labeled as southern California, central California, or northern California, and the type of district was either K-12 or K-8. Though some were invited, no elementary school district educational technology leaders elected to participate in this study. All names listed in this study are pseudonyms. Table 9 provides this limited demographic information for each participant.

Table 8

District Size Descriptions

Size	Population
Small	1500 to 10,000 students
Medium	10,001 to 25,000 students
Large	Greater than 25,000 students

Table 9

Participant Context Information

#	Name (pseudonym)	Size	Type	Locale
P1	Herbie H.	Small	K-12	northern
P2	Oscar P.	Small	K-8	southern
P3	Charlie P.	Medium	K-12	southern
P4	Ella F.	Large	K-12	southern
P5	Dinah W.	Large	K-12	northern
P6	John C.	Large	K-12	central

Research questions. This study sought to address the following three questions:

1. What have been the experiences of successful district educational technology leaders in identifying, prioritizing, and creating value for stakeholders in teacher adoption of technology enhanced learning in California public school districts?
2. In what ways, if any, does the co-creation of value with stakeholders affect the contradictions extant within the activity system?
3. In what ways, if any, do educational technology leaders consider stakeholder salience in addressing stakeholder value demands?

Locating contradictions. To examine the effect of value propositions on the contradictions within the activity system (Research Question 2), an activity system diagram was used to locate the main contradictions revealed in the interviews. To assist the reader in following the analysis while reading, the following method will be used. The description of each contradiction will be followed by an upper-case letter that will serve as an identifier for the contradiction (e.g., X). Following this identifier will be a description of the location in the activity system diagram. For example, "(X. Community - Object)." Table 10 indicates the proposed elements of a classroom activity system. It is important to note that the proposed activity system diagram describes the classroom teacher's orientation and those elements affecting the teacher's adoption of technology enhanced learning; therefore, the educational technology leader is part of the community. It is also important to note that in this high-level view of the classroom, not all actions listed here that affect the teacher's pursuit of technology enhanced learning are necessarily visible to the teacher. (This will be discussed further in Chapter 5.)

Table 10

Proposed Components of the Activity System for Teacher Adoption of Technology Enhanced Learning.

Activity System Element	Thing, Action, or Persons Represented
Subject	Teachers
Object	Adoption of technology enhanced learning
Tools	Information and communications technology, books, classrooms, language, curriculum, materials, teacher knowledge
Rules	Curriculum, bell schedules, standards, education policy, school policy, board policies, IT policies, IT capabilities, teacher beliefs
Community	Teachers, educational technology leader, parents, students, counselors, site admin, district admin, classified staff, school board, IT departments, librarians, local politicians, content providers, state agencies, federal agencies, teacher professional organizations, teacher informal learning networks, unions
Division of labor	Teaching, learning, scheduling, counseling, supporting, transporting students, coordinating activities, problem-solving, communicating

Herbie (P1)

Description of participant. Herbie was a secondary teacher and site administrator before leading the technology efforts of a small northern California district. He is active in the educational technology community at both a local and state level. He said:

> I've got to tell you, I view my role in education as one of an advocate and one as a relationship builder for people so that people can get what people need to support our teachers and students. I mean, at the end of the day, my job is to connect people with the things they need for effective teaching and learning both in my role in the organization and then my greater role in education. And if that means that I have to fight for the rights of students in Sacramento or in DC, I'll do it. If that means that I have to go to the council meetings and advocate for our students to have appropriate access to materials, I'll do it.

Herbie's current district has a high concentration of students receiving free and reduced lunch. Because of the district's size, he is "both CTO, desktop support, network administrator, systems

administrator, and all of the various roles that [comprise] IT departments." Still, however, his district was recognized for their efforts to improve teaching and learning using technology. Perhaps this is because of Herbie's passion about helping students and families:

> We're really going up against cultural factors and navigational capital and systems of oppression…. And I believe that technology and specifically technology in education can empower our students to overcome some of those barriers by giving parents and families and students access to capital to engage with those systems.

Emergent themes. The emergent analysis process described in Table 6 revealed four basic invariant constituents or horizons, which in this dissertation will be referred to as themes. The primary theme was building trust. Supporting that theme were relationship building, customer support, and reliability. These themes largely represent Herbie's description of his experience in fostering technology enhanced learning. What follows is more detail on those themes and how those they were also revealed in the a priori analysis in terms of value propositions for stakeholders and their salience characteristics.

Primary stakeholders. When asked about how Herbie influenced stakeholders to actively support goals for technology use and student learning (Q4), Herbie emphasized the wide range of stakeholders affected by technology:

> When I say that we're a service provider, I mean that we're a service provider. And I can't overstate that enough.... We're always, always, always, keeping a mindset that everybody from the board all the way down to the custodian or crossing guard is our customer. It's not about what we're trying to do as IT. It's about how we are supporting the mission and vision of the school district as a whole.

From an organizational perspective, this emphasis on the shared values contained in the district mission and vision, creates value for district stakeholders. Among those stakeholders are teachers, principals, and the district leadership team. With teachers, Herbie demonstrated his understanding of the teaching profession and the empathy through which he approaches change. He said:

> Teaching is an intensely personal profession. Teachers invest a lot of time, heart, and soul into every lesson. It's why teachers, by and large, have a really hard time when people are critical of the work they do.

With principals, Herbie communicates "so that they feel like there's a vested interest" in the programs and changes under consideration. Herbie provided the example of the implementation of a guest network at the school sites and the discussions they had before implementing the tool. He asserted that a primary consideration is not blindsiding stakeholders closest to or affected by the implementation: "How are we helping them feel a part of the process? How are we helping them feel engaged? How are we helping them feel empowered to be good decision makers? And how are we including them on the proper things?"

Principals and teachers were not the only important stakeholder relationships. Herbie described the relationship with the Superintendent as a "no-brainer," and said, "I feel very fortunate to have a superintendent that absolutely, unequivocally supports the mission of technology in our district." In fact, a key piece of advice offered to educational technology leaders (Q9) was "first attach yourself to a district with a mission and vision that matches up with your passion. You know, oftentimes, people chase titles and salaries without realizing that at this level, at this leadership level, it's much more about who you are and who the organization is rather than can you perform a job function." Herbie's technology mission is built upon the district mission, the rest of the leadership team including the school board also play an important role. "How are they talking about technology in your district?" Herbie asked rhetorically, reinforcing the role of messaging at all leadership levels and connecting technology enhanced learning to the core values of the district. Herbie described his relationship with the leadership team in this manner:

> If you want to be a part of the decisions that happen at your superintendent's table, the superintendent has to believe that you're going to be a valuable contributor to that. Otherwise, you'll get what we've historically had which is,

> ‘hey we voted to adopt this thing and it’s going to be your job to install it.’ And that’s not because superintendents and other Ed Services directors are mean people. It’s because up until recently, IT was the obstructionist in many ways. And we need to move past that to be a service-oriented industry. And so, I view my role in the organization as service first. And I view my role in education proper as also encouraging others to be service first. And I think we’re starting to see that change.

Value propositions. The primary value proposition Herbie offered regarding fostering adoption of technology enhanced learning was trust. This issue was broached explicitly several times during the interview. For example, when sharing Herbie’s role and goals for the district, Herbie referred to the small size of the district and said, “my primary responsibility was to provide a stable environment where teachers can experiment.” This stability was a manifestation of the trust he tries to build because unreliable tools and unreliable networks would be a distraction for teachers and impede the freedom to try new things. He said, “And I would say that we’ve crossed a significant hurdle where teachers feel like [the] technology’s reliable enough that they can begin to restructure their curriculum around it.” Herbie provided another example of the importance of trust:

> What our teachers really value is... when I turn it on every day, is it going to work? And if it doesn’t work, how long does it take to fix? And how often do I have to fix it?

Herbie argued, however, that “the bigger question is [about] being a good caretaker of the sentiment around technology in the district as a whole,” further reinforcing the importance of trust and a technology leader’s actions within the district to maintain it. Part of protecting the sentiment around technology was realizing that despite the district’s small size, “you have to have enough IT support. Meaning that before you endeavor to do anything in technology, you need to have enough IT support to be able to address issues that may arise.” Having achieved this level of stability and support, he said, “the challenges that we’re facing are no longer IT related but much more edtech related. Which was the right problems to have to address in my position.”

Another value proposition that Herbie offers is his expertise as an IT professional and an educator. When requests were made for new software tools, Herbie was quick to engage stakeholders in discussion about their expressed needs and lend his expertise where appropriate:

> And if you have an idea of what you want, let's look at it together, but don't tell me you want this specific voice-to-notes application. Tell me, 'I really need a good application that can do voice-to-notes.' And then let's have a robust conversation. So, getting back to what [are] our educational objectives and not just what's the flashy, sexy app of the day.

Another illustration of Herbie's knowledge and expertise occurred after witnessing the potential of the district email system, stakeholders requested that Herbie "block off two days of training to properly training people." Herbie, however, knew this was too much:

> If you try to train people two days straight without context, which is really what we're talking about in that kind of experience. It's all going to be just a tidal wave of information that rolls over, especially when you're doing technology training.

This insight into the pacing of professional learning and the importance of context and hands-on experience was valuable in this example. He used that same expertise in resisting the implementation of too many technology initiatives at once. He said, "We didn't go we want to buy an online curriculum… [and] buy [devices] because that's too much at once. And I think that that would have been a failure."

When asked how Herbie listens to needs to stakeholders pertaining to technology enhanced learning (Q6), he described how principals are given the opportunity to make emergency service requests:

> And here's what we tell the principal. If you call... we will drop whatever we're doing (and again, within reason, right?) and come over there and fix that. If you're saying that it's that important, it's that important, and we want to respect the fact that you feel it's that important.

Herbie also listens by simply being present and accessible to all stakeholders. As part of the advice he would give to educational technology leaders (Q9), he said:

> Absolutely listen to and engage with all of your, I'm going to use the word, constituents, and that's everybody. And that's the custodian, that's the teachers, that's the principal, that's the directors, that's the superintendent, that's the school board. That's everybody. We serve everybody in the district.

One benefit Herbie identified in interacting frequently with a wide range of stakeholders is "spending a lot of time engaging in non-technology problems... (They call it the social lubrication) .... [It] facilitates how we react to crisis."

On this topic of listening and other communication strategies, Herbie said that "one of the things I've found very valuable in learning how to communicate with administration and supervisory and even business office [personnel] is taking the time to listen between emergencies." He also said an element of maintaining relationships is "hitting that sweet spot" in communication with various district stakeholders. With district leadership, the challenge is finding the "level of specificity" needed to assuage their concerns. Herbie recalled a widespread issue in the district when many of their student devices went down due to a change implemented by the vendor. The goal in communicating with leadership in that situation was to build confidence and to respect the busy schedules of other district leaders. This summary of Herbie's proactive communication about the issue shows how Herbie builds trust within the district:

> We're on it. [The vendor] broke your [devices]. We'll let you know when we have a fix…. Hey guys, here's the fix. Here's the one, two, three things I need you to do, and then we'll get you back on rocking and rolling.

Herbie's awareness of the legitimacy of the claims of teachers, principals, and district leaders accompanied by his commitment to anticipating and meeting the expressed needs of his "customers" works well to establish his goal of building trust. With teachers and other technology users, he uses his expertise to provide "enough context and background to be able to make good decisions and know what they want." Knowing what they want provides the impetus to "have faith and take risks." This is evidenced by the stability in the network he was able to

achieve and the tools that he was able to provide that sparked a wave of excitement and experimentation with technology enhanced learning.

Primary contradictions. Although technology use in Herbie's district was increasing, he mentioned several contradictions to teacher adoption of technology enhanced learning. He described some teachers as "fearful" of technology and some as "resistors" (A. Subject - Object). Even when these teachers use technology, they use it to mirror traditional practices that could have been done without the technology (See Figure 5 for a model of the contradictions Herbie described). Previous negative experiences with technology initiatives such as insufficient bandwidth and insufficient devices heightened the level of distrust (B. Tools - Object) and caused some to question whether there was adequate infrastructure for innovative technology initiatives. Having overcome many of the persistent concerns, he still finds it difficult to remain focused on improving teacher pedagogy. He said in response to Q8:

> I would say the last thing that continues to be a challenge for me is living in the quadrant of important but not urgent, as Steven Covey would say. Because that's the challenge. How do you get out of being a firefighter? And how do you set a vision and set priorities so that you can be out of the business of being emergency only and get into the business of proactive production?

Maintaining the stability of the network and other tools competes with the ability to show teachers how to use technology in ways that, he says, empowers students to overcome social and economic barriers (C. Division of labor - Object).

Herbie also found that the tools and curriculum provided by major providers in the industry fell short (D. Tools - Object) of his expectations:

> I feel that we pay a top dollar, or premium, for outdated content in the form of textbooks. Where those textbooks are written for the schools of the 1950s, we need content that is relevant for our kids today. And yes, they will say we have online content. Well, congratulations, so does Wikipedia, and McDonald's had it in 1993. We need dynamic, engaging learning environments.

Herbie also finds communication a consistent challenge. He said, “the number one thing I think people get blindsided by a lot is not communicating effectively with the people that you’re implementing [for].” This “personal challenge” (E. Community - Object) means including appropriate stakeholders in the decision-making process, keeping them informed of upcoming changes, and delivering the right amount of information that respects the time of these busy professionals. It also includes instilling confidence in the value he provides to the organization and in the reliability of the tools.

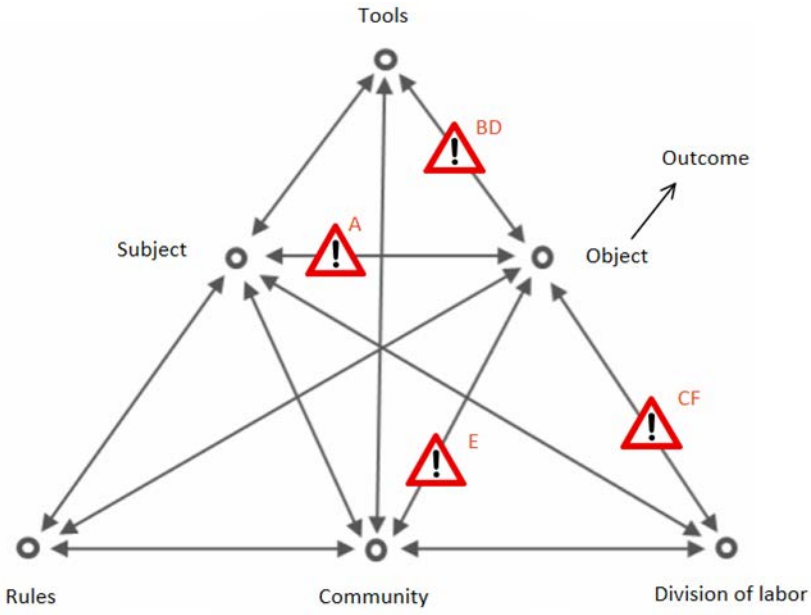

Figure 5. Contradictions to TEL adoption experienced by Herbie (P1).

Finally, Herbie made this observation about teacher reactions and support for students who are systemically and economically disadvantaged:

> We often fail kids, especially kids of color, because we say they don’t fit the model of a good student. When I say, we as teachers often did not fit the model of good instructors. And even if you wanted to take that over the last decade, the role of a teacher has really moved far away from the role of a knowledge repository to that of a facilitator of learning experiences.

Herbie felt that some teachers by their insistence on delivering information and knowledge are fulfilling the wrong role in the classroom. They should be using information and

communications technology to facilitate personalization of learning activities that meet the needs of individual students (F. Division of labor - Object). Figure 5 illustrates these contradictions in the activity system.

Value propositions that addressed contradictions. For Herbie, helping teachers to become that facilitator of learning experiences is challenging when resistors and fear are present in the teaching landscape. Value propositions that Herbie offers to overcome these contradictions are professional learning and effective tools (see Table 11). He said:

> I can't just go, 'Hey guys, let me show you all this cool stuff' with the purpose of hitting every teacher at every level. It's got to be, let's take time with one another. Let's find out what you need and let's provide for those needs.

This emphasis on tailoring to the needs of the learner is a way of co-creating value for technology enhanced learning and modeling the personalized learning that should be offered to students. Herbie said, "we have to be ready and equipped to support teachers at a variety of levels.... We have to be able to support the spectrum." With Herbie's small staff, "being flexible enough to meet the needs of teachers" is one of his biggest challenges." He works to design stakeholder professional learning so that it is timely and appropriate for the various levels of technology proficiency within the district. These practices work to enhance the user experience with technology (in the description of value propositions, "user/experience," "use value," and "value-in-use" are labels for the same construct offered by different authors. They will be used interchangeably in the discussion of value propositions from this point forward).

While Herbie expressed his dissatisfaction with many of the vendor curriculum offerings that are purported to support technology enhanced learning, he was instrumental in bringing a product that produced "a complete mind-shift for teachers." He said:

> [Teachers are] leveraging this new learning platform to individualize instruction and engage students with content and scale and provide better lessons and better interventions [and make teachers better] able to work with their ELL students.

> That's what technology is about. It's about putting teachers in the proper role of facilitator and leveraging their talent of instruction more effectively versus just saying, here is what I've always done, let me do that, but in this [technology rich] environment.

In discussing the role Herbie plays in the organization (Q2), he admitted that IT can be viewed as "obstructionist," and he works to be more service oriented. That approach to his responsibilities as a technology and educational technology leader affects all other aspects of his job. He focuses on relationships with individuals and communicates with empathy and an appropriate level of detail. This builds confidence and a sense of togetherness so that stakeholders do not feel alone, and they have someone to turn to when and if assistance is needed.

Table 11

Herbie's (P1) Actions and Value Propositions to Address Contradictions

ID	Action to Address Contradiction	Value Propositions	Salience Characteristic
A	Professional learning/ Tools	Value-in-use	Legitimacy
B	Tools	Value-in-use	Legitimacy
C	Set vision and priorities for himself and others	Core values, sustainability	Urgency
D	Located digital-first curriculum	Value-in-use, Shared drivers	Legitimacy
E	Be concise and clear	Happiness	Power Legitimacy
F	Professional learning	Core values, social responsibility	Legitimacy

A priori analysis. Herbie said trust is an invaluable asset in his role as an educational technology leader. This trust was made more difficult to achieve by previous failed technology initiatives, the lack of an IT background, curriculum tools that might undermine the efficacy and relative advantage of technology enhanced learning. Herbie was also challenged by having a small staff to address many of the same technical, security, privacy, and professional learning concerns of much larger districts.

Trust was not a value proposition from the frameworks used to code the interview data, but this effort to build trust was revealed in the experiences he tried to foster for teachers (Table 12). Value-in-use was shown to be the value proposition offered most. Herbie stated that some were distrustful, even fearful, of how technology could be used to create more engaging lessons, especially when, in traditional classroom instruction, technology is often viewed as a distraction. The new digital first curriculum his district adopted was a vivid example of Herbie's efforts to support technology enhanced learning and provide a user experience that encourages further participation of teachers in the district. The reliable infrastructure also allowed users to have positive experiences with technology. Herbie's passion for the affordances of technology in education was augmented by the district's mission, vision, as well as powerful stakeholders in the district. These provided the motivation and support for Herbie to overcome his own knowledge gaps, implement innovative tools and support structures, and become a leader within the educational technology community. The motivational value of achievement was used to encourage teachers to move beyond their comfort zone. Herbie worked consistently to build relationships with district stakeholders and the educational technology community. This fostered a sense of belonging and even happiness within the district. This happiness along with positive user experiences were produced by thoughtful professional learning designed to meet the expressed and anticipated needs of district stakeholders.

Table 12.

Top Six A Priori Value Propositions Coded for Herbie (P1)

Value Proposition	Total	Percentage
User/Experience	22	29.3%
Organization/Psychology/Core Values	15	20.0%
User/Sociology/Belonging	9	12.0%
Motivational values/Achievement	6	8.0%

(continued)

Value Proposition	Total	Percentage
Motivational values/Benevolence	3	4.0%
User/Psychology/Happiness	3	4.0%

Oscar P. (P2)

Description of participant. Oscar (P2) began his career in educational technology from high school as an apprentice-level technician in a work study program. He worked his way up the information technology hierarchy in a few different districts to chief technology officer in a small district (less than 10,000 students). Because of the district's size, he has the dual role of technology infrastructure and educational technology. Despite having never been a teacher, he said he is not "too focused on the minutia of the blinking lights and the technical things in the dollar signs." Instead, Oscar relies heavily on the advice and consent of teachers and cabinet to direct his actions regarding pedagogy, but influences those stakeholders using his own expertise and experience with the tools and infrastructure of educational technology.

Emergent themes. In the case of Oscar, the invariant constituents that characterize his experience were belonging and expertise. Oscar made concerted efforts to include stakeholders, especially teachers and executive leadership in the decision-making pertaining to their technology initiative. He listened to their concerns, recognized their efforts, and conducted himself with transparency to all stakeholders. As part of the shared decision-making, he lent his expertise when he thought the direction of the decisions might be running contrary to their agreed upon vision for student learning, their goals of sustainability of the technology enhanced learning initiative, and their desire for reliability in the infrastructure and support. What follows is more detail on those themes and how they were manifested in value propositions for stakeholders and the salience characteristics of those stakeholders.

Primary stakeholders. The interview data revealed that Oscar directed most value propositions toward teachers in his district. Clearly, this educational technology leader recognized the legitimacy of these stakeholders as he said the following of his role in the organization (Q2):

> my role in the organization is really to provide leadership and also I think some level of direction to the teachers and the staff in this district and enabling them to use technology to support students... and to use that technology in a way that is creative and innovative and... helps excite students about learning instead of just using it as a more efficient way of doing the same old thing.... [I'm] really trying to have a good understanding of what the needs of students are, what the needs of our teachers are and trying to meet those needs, but also trying to push our teachers out of their comfort zone to try new things that will benefit students.

Other primary stakeholders whose claims were a priority for Oscar were the district leadership team and board of education. This group possessed all three salience characteristics, power, legitimacy, and urgency, and provided clear expectations and a vision that they "wanted to see technology being more of a component of our instructional day":

> Our superintendent... also very much believed in the value that technology brings to instruction; and that was one of the things I was tasked with immediately when I came into the district; and having that… cabinet level team that all I think wanted the same thing, and understood the importance of it and were working together in our various roles to make it happen, was enormously important for making it happen in this district especially as quickly as it did.

Oscar admitted that having this coherent vision for technology facilitated implementation of the infrastructure for technology enhanced learning, but there were still some challenges in implementation and there remains challenges to changing pedagogy.

Value propositions. The primary value proposition directed toward teachers was that of belonging. Den Ouden (2012) described belonging as the way groups associate themselves with an item or brand such as Hell's Angels might associate themselves with Harley Davidson's or Apple iPod users at one time were associated with the long, white, earbuds. The belonging Oscar described, however, was not entirely symbolic because it had more to do with enriching the value

of technology in the district by soliciting teacher participation and input in the earliest stages of the platform adoption. This value proposition is more akin to the concept of belonging in self-determination theory (Ryan & Deci, 2000) that maintains self-regulation for extrinsically motivated behaviors is often motivated by the need to feel connected and belong to a group. The value proposition of belonging is also related to the construct of autonomy in that persons are more likely to adopt changes when they have a say in the planning process (Gagné, Koestner, & Zuckerman, 2000).

Early in Oscar's tenure as CTO, he was tasked with implementing a one-to-one student to device program. At the beginning of the planning process he convened an open meeting with teachers as well as and non-instructional staff, and some principals and parents. He said:

> My job in this whole planning process was to give people a space where they could share their opinions and their beliefs about why certain things were the right or the wrong decision, what were the things that they had seen work well in this district, what were the things that they had not seen work well....

These open meetings continued with waning participation, but the early meetings allowed them to clarify values and priorities and compare their actions and decisions to their shared values and priorities.

The value proposition of belonging was also evident in Oscar's response to Q4 in how he influences stakeholders:

> Really, where as much as possible, I'm just trying to be involved with my teachers to kind of connect with them on a more personal level and not just have them be the faceless email names that I interact with but to actually visit the school sites and interact with them in person and get an understanding of what it is that they're doing in their classrooms, what's working well for them, what's not working for them, what they would like to do, what their concerns are with the way certain things are set up or aren't set up. Then, take that back and have that inform the things that we're doing in order to address their concerns and therefore have them be more encouraged to use the technology and to maybe take some of those risks or try some of those things different.

Other ways Oscar includes teachers in the process of changing pedagogy is by encouraging principals to recognize teachers who are integrating technology effectively so that those teachers can become a resource for others who may be reluctant to try new methods. He also implemented a proprietary technology survey service to solicit feedback from teachers and other stakeholders. Finally, in his advice for educational technology leaders (Q9) he urged transparency:

> Make sure that you are communicating what you're doing. Make sure that you're communicating the reasons that you're doing it and why you've done it a certain way.... Hopefully that this is backed up by evidence that this is a well thought out plan that has intended outcomes and that that's being conveyed to stakeholder whether it's teachers, whether it's parents/guardians, whether it's students themselves, that these are the things you're doing and that these are the reasons why you're doing them and these are the reasons why you think that that's in the best interest of the kids because that's why we're all here at the end of the day.

The actions Oscar described in the interview fostered a sense of belonging, openness, and ownership of the decisions made in his district to foster technology enhanced learning, and displayed many characteristics of distributed leadership

Primary contradictions. Though Oscar's efforts to foster technology enhanced learning were recognized by more than one educational technology organization, he admitted that one of his primary concerns was underutilization (A. Subject - Object) of the technology in instruction (see Figure 6). Whether it was a failure to take advantage of the affordances of the technology such as a teacher having students print out essays at home to turn in to their teacher or going into classes and seeing "30 students all sitting at computers... doing the same thing," he clearly recognized there were still many opportunities to improve teacher adoption of technology enhanced learning. He attributed part of this underutilization to fear. Speaking for the teacher he said:

> I think that's really my frustration is that it's not so much that I don't know how to do this or that I'm just going to stubbornly keep doing things the same way that

> I've always been used to, but really more a bigger cultural thing of I'm afraid to take chances; I'm afraid to potentially look bad in front of my students instead of looking at the positive of that and how can I use this as an opportunity to teach my students. That it's okay to make mistakes, that that's how we learn.

Complacency (B. Subject - Object) was also a contributing factor: "For a lot of teachers... they don't see the value to putting in the investment to doing that [integrating technology]. They may see it as just more work."

Though the current site leadership seems to support technology integration, Oscar has also experienced site leaders (C. Community - Object) who were not very supportive of technology use:

> Just like teachers you have maybe principals and assistant principals who see the value that technology brings and you see others who don't necessarily see it as much of a priority. Without... having that school site administration embracing the technology and really pushing for that with their teachers, it makes it even harder for teachers to do that on their own.... It makes it harder to ask a teacher to embrace technology in their classroom if the principal who's coming through walking through their class and seeing their progress with their students is looking for different things....

In addition, some parents have had concerns (D. Community - Object):

> it's not something that has been a vocal issue in our district but every once in a while… we have an issue with a student who gets into things that they shouldn't be getting into, finds ways around the web filter or they're communicating with other kids at school and you're having sort of arguments or bullying situations, just things that happen and they blame the technology for those things instead of blaming the people involved in the situation to those things.

Stakeholder experiences with technology (E. Tools - Object) have also been a source of contradiction, especially in the implementation of student and teacher devices. There was a strong bias toward one manufacturer's devices, despite the difficulty they experienced in keeping the devices up to date and the lack of funding to refresh devices. He said the past program lacked a plan for the instructional value of the technology:

> Some people... had a very negative mindset when it came to technology which was informed by that program and by some of the I think implementation failures

> and I guess really just the some of the perceived motives behind that program at the time, and so they came into that just having a negative feeling in general about student technology anyway.

There were also contradictions involving the Superintendent and other contradictions involving the teacher's union. He said his superintendent (F. Community - Object) had created a technology adoption proposal for a previous district that involved a certain brand of devices. It was not adopted there, and the relatively new superintendent wanted to see the plan implemented. With the teacher's union (G. Community - Division of labor), district leadership wanted to offer more teacher professional development by adding non-student professional learning days to the calendar. Union representatives resisted: "That's not something that's well received because it's just seen as adding additional work based on the calendar and they value their time off…." The compromise was to make the professional learning voluntary. Figure 6 illustrates these contradictions in the activity system.

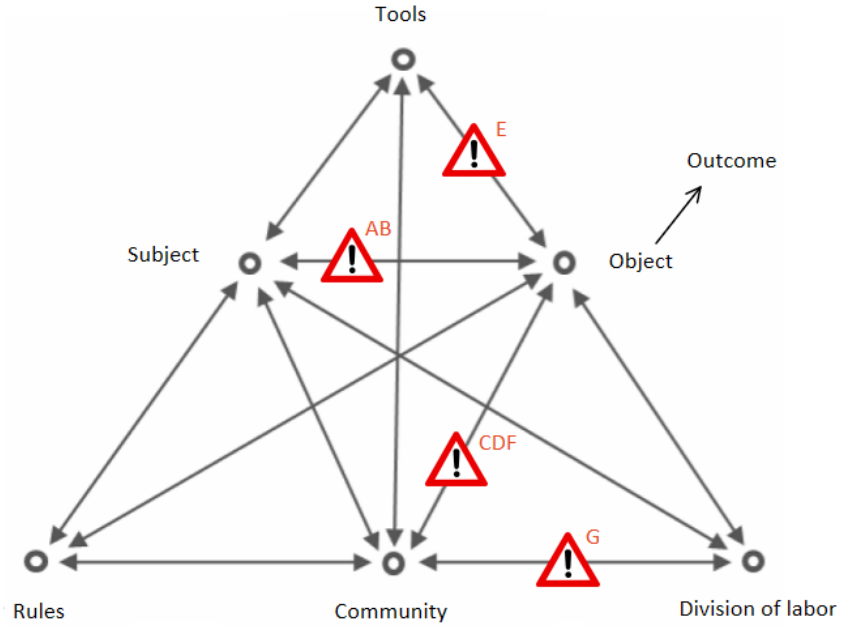

Figure 6. Contradictions to TEL experienced by Oscar (P2).

Value propositions that addressed contradictions. In the case of the superintendent, despite initial disagreement over the device the district would use to support their one-to-one

implementation, Oscar appealed to their shared values (see Table 13) to arrive at what they all came to agree was the correct device solution. He said:

> I disagreed based on my experience and so that was something that as we were going through this process, it wasn't that it was not a device that could meet the needs of our students, but that it was a device that had a lot of other potential challenges that we needed to consider as part of the overall plan.

To aid the superintendent and other stakeholders in their choice of a student device, Oscar, as in this example, offered his own experience and expertise with educational technology to help them make the choice:

> [I] really try to take my biases out of it and still be honest and so with [their preferred device], it was 'Hey we understand that there's a desire for [this device] and that is a great device, here are the potential problems to going that route though. With [another device], this is also a great device. We're using it now. Here are the problems that come along with that.' And as much as possible trying to let them come to their own conclusion that maybe the best device isn't the right device. Maybe the gold standard isn't what is in the best interest of our kids and our district.

It was clear that sustainability of the initiative and improved student learning were clear values shared in the district, so this type of inclusive decision making and validation of the various stakeholders in the organization was facilitated by these values at all levels.

Another value proposition to address underutilization was professional learning. Oscar said:

> We focus our efforts on having voluntary professional development that is really targeting the stated needs of our teachers who do have that self-motivation, and I think the hope that we have is that those teachers are taking that back to their classroom, that they're putting those things into practice and that the school is starting to see the results of that, and advanced progress of the students in those classrooms and… seeing better state test results for those kids and seeing better growth….

This emphasis on voluntary professional development, however, came about due to a compromise with union representatives. They were not willing to add more days to the calendar even for paid professional learning, while district leadership was not willing to take teachers

away from their students to offer professional learning opportunities. Both stakeholder groups could be seen as rightfully standing up for their core values, but such conflicts underscore the role of certificated and classified unions in the adoption of technology enhanced learning.

Oscar used his expertise and again referred to their core values to address parent concerns about student technology use:

> It's just a conversation with those parents and try to get them to understand that the technology isn't the problem…. Back to the whole sort of argument of yeah so kids are using email to bully each other, so we can shut down email, but for generations they've used paper and pencil to bully each other and we've never taken that away. We target the behaviors.… We're actually trying to prepare them for the future and not just trying to keep them in the past and they're I think for the most part understanding that with any kind of technology from whether it's the wheel to a computer, there is a potential for pain to come along with that and that it's worth the outcome.

In addressing these concerns, Oscar often offered up his experience and expertise as a technology leader as one of the main value propositions to foster teacher adoption of technology enhanced learning. He did not do so, however, in a dogmatic, top-down, or condescending manner, but as another perspective in the shared decision-making process pertaining to the hardware and software related to technology enhanced learning. As for the pedagogical aspects, he was a willing listener and sought to meet the needs expressed by teachers and executive cabinet. Each of these qualities are a characteristic of distributed leadership and appear to have contributed to the recognition his district has received from educational technology organizations. Oscar fostered acceptance of group goals and adhered to an articulated vision (Leng, 2005), engaged stakeholders in a shared purpose, built a culture of trust (Jones et al., 2013), and fostered a climate of concertive action (Gronn, 2002).

Table 13

Oscar's (P2) Actions and Value Propositions to Address Contradictions

Contradiction	Action to Address Contradiction	Value Proposition	Salience Characteristic
A	Matched device capabilities to goals	Shared drivers, sustainability, belonging, core values	Legitimacy
B	Professional learning	Value-in-use, happiness	Legitimacy
C	None described	None	Legitimacy
D	Shared district's reasoning and value of tools	Core values, value-in-use	Legitimacy
E	Shared expertise and experience	Shared values, sustainability	Legitimacy
F	Shared expertise and experience	Shared values, sustainability	Power Legitimacy
G	Compromise	Shared values, happiness	Power Legitimacy

A priori analysis. Oscar stated that that district leadership and parents saw technology use an essential aspect of education today. He also emphasized the collaborative manner in which they implemented their technology initiative. These are entirely consistent with the values and mission expressed on the district website. Table 14 shows that these value propositions were reflected in the a priori analysis as well. The most frequently identified value proposition was again use value that was directed toward teachers; so too, were the happiness and power value propositions in that Oscar and other district leaders sought to ensure the happiness of teachers and respect the power inherent in their position as implementers of technology enhanced learning and gave them a voice in how learning strategies were designed and implemented. Oscar worked to show teachers how technology should be used to deepen student learning, beyond what could be achieved with the use of information and communications technology.

Table 14

Top Six A Priori Value Propositions Coded for Oscar (P2)

Value Proposition	Total	Percentage
User/Experience	10	22.7%

(continued)

Value Proposition	Total	Percentage
Organization/Psychology/Core Values	9	20.5%
User/Sociology/Belonging	5	11.4%
Motivational values/Achievement	3	6.8%
User/Psychology/Happiness	3	6.8%
Motivational values/Power	2	4.5%

Charlie P. (P3)

Description of participant. Charlie began his career in education as an elementary school teacher. He drew the attention of district leaders because of the innovative projects in which he had involved his students and his early implementations of classroom technology. He said," I sometimes think I was early on the bridge, you know?" Indeed, he was, and he recognized early the affordances of technology even in the earliest days of email and the internet, especially in terms of student engagement, curiosity, and problem solving. He was moved to the district office to support district educational technology plans even before the district had an information technology department. Now he works as a part of the information technology department. He said, "I think originally my role was part, and it still is, advocate, the advocate for technology."

Emergent themes. Charlie's interview data was reduced to the following horizons or invariant constituents: technology enhanced learning and community. His enthusiasm for the affordances of technology caused him to put that technology on display in a variety of ways to foster greater support and influence from those who might not be inclined to embrace technology enhanced learning. The relationship of these themes to the a priori analysis as well as the contradictions identified are described below.

Primary stakeholders. For Charlie the primary stakeholders are the students and their families. He said:

> I always feel our most important customer is our student, but I think beyond the students, which is why we did a one to one, I think that's us thinking about our students and our families, and economically, raising the boat.

Working in an area where the students largely receive free and reduced lunch and in which technology may not be pervasive in homes, the student device that was issued for many students was "the first device in the household." He continued, "We've got to think in terms of, how do you raise up the community?" This awareness of the urgency and legitimacy of preparing these families for the modern economy seems to drive Charlie's actions.

This is also evident in the community events that Charlie and his team sponsors. He said the community, regardless of the economic status or ethnicity, "they want all the communication you can give them." They use established district community groups as well as traditional media, social media, and events to engage the community. A strategy that worked for Charlie's district is student-led events where parents and community members would come to a school site and students throughout the district could "show what they're doing with technology." They also have a speaker series where community members, teachers, and administrators come together to hear fresh and innovative ideas. Charlie said community events such as these meet the information needs of the community and fosters their support for technology initiatives and even bond measures. He said, "everybody's got a stake in our community…. It's like the Amish barn raising."

Another important stakeholder for Charlie is the classroom teacher. He recognizes the legitimacy of teacher claims in the moves he makes to foster technology enhanced learning. He said if a teacher doesn't like the device he or she has been issued, "I should be listening to [her]. I should be like a doctor listening to what my patient's saying." He understands that fostering the use of technology requires that the organization be responsive to the urgency of teacher claims:

> I'm also appalled… that a lot of school districts do not have a help line. We have a help line for our teachers, that they can call at any time and they will get somebody from the IT department. They will get a human voice or a human face that can help them and remote into their computer to help fix things.

Such an emotional reaction to the conditions that may exist in some districts illustrates Charlie's recognition of the legitimacy and urgency of teacher claims, especially as they work to support and foster student learning in their one-to-one environment.

Other important stakeholders in Charlie's experience are the superintendent and cabinet:

> The superintendent has to have a vision for the technology. It's important that the cabinet and the superintendent are all on the same page. That it's not just lip service, it's looked at from the curriculum and instruction perspective, looking at it in terms of, how do we support this?

Charlie recognized that without this group on board in more than just a superficial way, it will not be possible to achieve the level of district system support that teachers need to consistently implement technology enhanced learning. Charlie recognizes that technology touches nearly every aspect of district and school operations and sees it as his role to communicate the value of technology use in the many concerns under the superintendent's purview:

> Can it help us make our buses run on time? Can it make us better in fiscal? Can it help us know our data better so that we can see our interventions are actually working? There's got to be an ROI to it, you've got to make sure you have a return on investment across the board.... Technology enables superintendents to do all those things, increase communications.

Value propositions. The value proposition most clearly articulated by Charlie was technology enhanced learning itself. His experience with technology in the early years of the internet and networked computers gave him an appreciation for the value of the tools and the innovation information and communications can inspire, and he constantly seeks to take advantage of that for teachers, students, and parents. He described advances in web browsers and mobile computing as key innovations that have fostered technology enhanced learning:

> You know what I think was one of the big game changers? Yeah, there's what I call incremental changes, [but] better browsers…I think this has become a major tool nobody wants to talk about.

He also spoke of smartphones as "key to a lot of teacher communication, it's a silo breaker." All of these have brought on the "revolution…. It's seven days a week, 24 hours, anytime, you can plug in and learn something." This has caused Charlie to put a special emphasis on professional learning. He said:

> One of the things I've learned is we've got to get better in the PD model, I think PD's got to become more and more a one-to-one experience or a one-to-five experience…. I think PD on your time is important…. Quick, two-minute things: How do you do that? How do you do this? You know what, our younger teachers really love it that way. You can sit there and find out in a three-minute video, 'Oh wow, that's how I can do that. Oh, that's interesting, I'll try that.'

Charlie arranged for some teachers to receive a stipend for assisting with technology training and conducting low to medium level IT troubleshooting, He uses them to conduct job-embedded professional learning. He said, "you've got the actual laboratory right there. You've got the students right there with the teacher, and we're finding success with that."

Charlie also works to establish a sense of community centered on student learning and technology. One way he does this is by encouraging teachers to use social media to take advantage of collaboration and professional learning networks.

> Twitter has become our communications backbone. We have a lot of our teachers that are on Twitter and they're saying, 'Look at what the kids are doing today. Look at the amazing things my students are learning today.' Or they see a resource that they got… then they push it out, or they learn something that's going on in another school and said, 'Hey, that's a great idea, I'm going to do that tomorrow.'

He also said of collaboration and professional learning networks:

> Then, among themselves, when we get now into PLCs, and we get into where teachers are now not isolated silos, but they're sharing in a bigger community, ideas start to flourish. It becomes entrepreneurial. I think the teacher position has gone from a sage on a stage, in a silo, to now becoming a cooperative learning position, in a sense.

This community building has certainly worked to foster adoption of technology enhanced learning. He said of the few holdout teachers yet to adopt technology enhanced learning: “You can only get surrounded by technology in life so much that you can’t get away from it. I think those forces are going to force those people to change.”

Charlie also uses the power of networks to improve his own contributions to stakeholders. He mentioned three different local and statewide networks that operate in his area and rhetorically asked regarding decision making:

> ‘Hey, how can we make this work best for our buck? How can we make this work in our community?’ Was there a ground plan? Did you consult with the Teacher’s Union? Did you talk to the teachers themselves, ‘Hey, what kind of tech do you want to see?’

Charlie says that technology is “becoming so integrated, I don’t think you can escape it.” This reality only encourages Charlie to seek out new and creative ways to support teachers, students, and community.

Primary contradictions. One concern Charlie identified that hinders effective implementation and adoption of technology enhanced learning is the need for control (A. Subject - Object; Subject - Community) of how students are using technology (Figure 7 illustrates the contradictions in this activity system). This could be teachers who say students “can go anywhere they want to go. I want to have control where they’re at all the time,” or it could be network policy makers (B. Community - Tools; Rules - Object) that speciously restrict access to the internet in the name of student safety far beyond what is required by law. Charlie said, “You need to make the network usable. If you build the highway, gosh darn it, drive on it.” But according to Charlie, the network people say by their desire for control, “Why don’t I give you a Ford Edsel, not the Porsche.”

Another concern was in teacher use of the technology. Charlie decried technology-centered initiatives that only permit students to learn from the technology (C. Division of labor - Object). He said, “That, to me, is 1990’s, 1980’s, Apple 2E thinking. He cited positive models of technology use that he has witnessed such as the following:

> Students are using the power of the internet, the power of the tools, to do everything from figuring area of objects, to ... [another teacher]… having the kids design living modules on Mars. You had to figure out the weather on Mars, you had to figure out the challenges, ‘Well, how are we going to grow food? Are we going to use hydroponics? How are we going to design that?’ They were using Legos and they were also using some other design software to design the layouts, and then they were building the actual models.

Charlie admits that there is a great deal of “prep work that needs to be done, other thinking and discussion that needs to take place, but then you also have this powerful tool that’s in all the kids’ hands…” to help achieve the learning objectives.

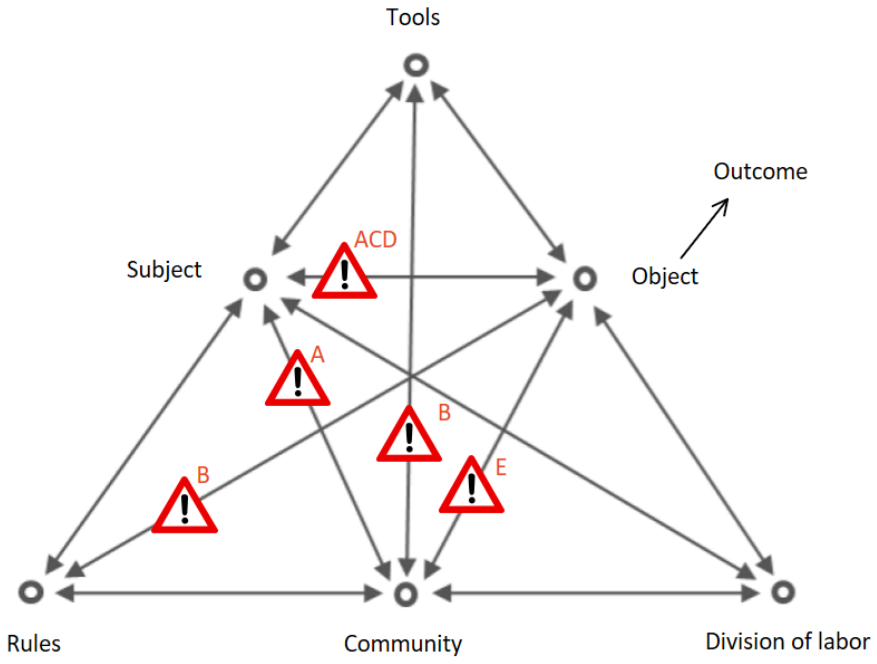

Figure 7. Contradictions to TEL adoption experienced by Charlie (P3).

Charlie was encouraged by the declining number of students and administrators that were reluctant to incorporate and support technology enhanced learning into teacher instruction, but

admitted that there was still the "20 percent [of teachers]…that are always going to be your naysayers (D. Subject - Object)" or the administrator (E. Community - Object) "who doesn't want to give the right support, send people to the right conferences, or they're scared of the technology themselves because they grew up in a time that they're not used to that." Stakeholders such as these, however, are a shrinking minority. He said:

> I remember when I looked over my shoulder, I had only maybe one or two teachers following me. Meaning that they were agreeing with me and willing to help me with the rest of the teaching staff. There were only a small handful. Today, I look over my shoulder and there's a giant army, including a giant army of students, behind me. That is just a change of time.

Value propositions that addressed contradictions. Charlie's district has many key stakeholders that are supportive of technology enhanced learning such as cabinet, the CTO, most of the teachers, the students, and the community. He described at least three ways to offer value and reduce tensions regarding teacher adoption of technology enhanced learning. The first was informal teacher leadership (see Table 15). He told the story of Mary, "she was like the sage on the stage, she was the one that could persuade the whole staff to jump off a cliff," and her introduction to a tool that is now commonplace in our society—email. After communicating with a family member living overseas, she stood up later in a staff meeting and exclaimed, "isn't this amazing? Isn't this powerful?" He said, "I never heard another word of dissent after that."

A more recent example was their adoption of a new teacher device. Instead of testing the devices himself and deciding which would be better for the teachers, he used his own expertise to narrow the field and did the following:

> We brought 20 very different teachers. I brought several of my techies, but also found 13 other teachers, including one of the most obstinate teachers in the district, onto the committee…. The point was… that we consulted with our teaching staff. We brought the buy-in. So, when we went to the board to spend some money, we could say, 'Hey, our test group looked at four different models and here's how we rated them, and here's how we reached a joint, unified decision.'

Involving a wide variety of teachers in this process lessened the tensions by making the teachers a meaningful part of the process and giving them a sense of control over decisions that directly affected their behavior in the classroom.

The second value proposition was effective tools, tools for which there was a great deal of use value. As in the case of Mary with email and with the teachers selecting the device they found to be best for their practice, Charlie asserted, “What I found with the teachers, to change them, I had to find things they would absolutely find necessary to use.” This has been a range of tools to pique teacher interest in technology enhanced learning, but introduction to effective tools has had a predictable effect:

> I believe that when you find commonality with what people will use, they will come with you a little bit more. As they start using the tools, they’ll say, ‘Hey…, what else can I do with that?

Another value proposition that serves to foster teacher adoption of technology enhanced learning is support and job embedded professional learning. “You’ve got to always have the right amount of support or people will not use the technology,” Charlie said. In the many years that he has been in position, he has actively pursued grants to fund tools and support technology enhanced learning. Though he lost track of the actual amount, he said it was more than “4.2 million.” Included in those grants is funding to support teachers. Today, Charlie has over 60 stipend teacher support positions where actual teachers work to support the information technology department and teacher pedagogy. He said:

> They used to be the eyes and ears of IT at the site, ‘Yeah, this is what’s down, this is what’s broke, this is what’s jammed,’ that’s evolved now to where they’re like, ‘Here, let me show you how to use Flipgrid in your classroom with your students to engage them in a certain subject area.’

He has also worked to personalize professional learning, turning away from the large group traditional professional learning to shorter, flipped learning opportunities that can be completed on the teacher's own time. He described them in this manner:

> Quick, two-minute things, how do you do that, how do you do this. You know what, our younger teachers really love it that way. You can sit there and find out in a three-minute video, 'Oh wow, that's how I can do that. Oh, that's interesting, I'll try that.'

They are also working to implement on a wider scale a more job-embedded model of professional learning:

> We actually go inside the classroom itself, but have the teacher do a bunch of teaching. It's not necessarily you standing up here saying, 'Click here, do this, look at this. Okay, now let's try to create something like that.' Instead, you've got the actual laboratory right there, you've got the students right there with the teacher, and we're finding success with that.

Charlie's extensive experience as an educational technology leader has helped him to appreciate the affordances of technology and how in the right hands it can be used to deepen student learning and prepare them for the workforce of tomorrow. He recognizes the value of technology enhanced learning and actively finds ways to put it on display for teachers, administrators, and the community. This works to unify stakeholders, build excitement, and clarify goals and expectations regarding technology enhanced learning. He and his relatively vast network of support team members actively seek out creative and convenient ways to build teacher capacity for effective use of technology as a teaching and learning tool.

Table 15

Charlies's (P3) Actions and Value Propositions to Address Contradictions

ID	Action to Address Contradiction	Value Proposition	Salience Characteristic
A	Job embedded coaching and professional learning	Value-in-use	Legitimacy
B	Advocates for essential skills and professional learning	Core values	Legitimacy

(continued)

ID	Action to Address Contradiction	Value Proposition	Salience Characteristic
C	Job embedded coaching and professional learning	Core values, achievement	Legitimacy
D	Job embedded coaching and professional learning	Value-in-use, achievement	Legitimacy
E	None	Belonging	Power

A priori analysis. Charlie hailed the power of information and communication technology to transform teaching and learning. His own experiences as a teacher and his current role as an educational technology leader marked an enthusiasm and conviction about the use of technology in the classroom that was evident in nearly every example he provided. The primary value proposition revealed in the a priori coding for Charlie was value-in-use (Table 16). He energetically accepts the role and responsibility of introducing students to new and relevant learning experiences that could serve to improve the quality of life for students and their families. This purposeful attempt to improve the lives of people in the community in which he serves was evident as well in the value propositions of well-being, meaningful life, and happiness. Charlie uses social consciousness as a rallying cry to encourage district stakeholders to support technology enhanced learning. As more stakeholders move toward that calling, Charlie suggested that it tacitly increases pressure to conform on those who might otherwise not be inclined to support technology enhanced learning.

Table 16

Top Six A Priori Value Propositions Coded for Charlie (P3)

Value Proposition	Total	Percentage
User/Experience	40	54.1%
Society/Psychology/Well-being	6	8.1%
Society/Sociology/Meaningful Life	5	6.8%
User/Psychology/Happiness	4	5.4%
Ecosystem/Psychology/Shared Drivers	3	4.1%
User/Sociology/Belonging	3	4.1%

Ella F. (P4)

Description of participant. Ella also has a long history in educational technology. She began her career as an elementary school teacher teaching English language learners. From there she led a technology program in a small elementary school district. When she received her first educational technology grant to support project-based learning and multimedia, she took great interest in "this conjoining of the pedagogy with the technology." She also worked briefly as a technology director, but preferred the instructional side, and later worked at both the county and district level until her current position as lead administrator for educational technology, but "the focus on instructional models versus technology has been there since the beginning." She said:

> My role has really been about the structures that need to be in place and the pedagogical shifts that need to be in place in order to use technology effectively in the classroom.

Emergent themes. The invariant constituents from Ella's experience were strategy and community. She sought the create systems characterized by professional learning, effective tools, and community appeals. How those horizons are revealed in the a priori analysis is what follows.

Primary stakeholders. One stakeholder group that is very important in Ella's district is parents. They utilize different parental involvement groups that "do a good job on surveying what the parents want and what their needs are." They hold parent nights and STEAM (Science, technology, engineering, arts, and math) related events to show their schools are "giving their kids that 21st century learning environment." Parents who may not have much exposure to information and communications technology at home also learn about the tools used in the classroom:

> They learn about the programs. They learn how to use them, and they learn how to increase student achievement. Really engaging the community and what's going on in the school has been… imperative.

These types of events are an integral part of the district strategic plan. She said:

> We really have to keep public schools relevant. We really have to do a better job of marketing ourselves as something that a charter school cannot take over. One of our things is how do we keep your kids in [our district]? Our public schools are taking care of you. How do we keep other entities from taking over? [By] being relevant.

In Ella's area, declining enrollment is a major concern, so there is considerable urgency in ensuring that parents are aware of the benefits of keeping their children enrolled in Ella's district schools.

Teachers are also an important stakeholder, and Ella works to build experiences for teachers to see pedagogy that exploits the affordances of information and communications technology:

> It's really about taking a group of teachers who are willing and able to move forward and really focusing on that group to build models of success…. I've worked with a group of teachers, and then they were building capacity at their schools. Once other teachers were able to see that the success, the engagement and the higher achievement, they were more willing to participate.

Ella realizes the importance of shifting pedagogy and using professional learning to equip teachers with the knowledge and confidence to make the necessary pedagogical shift. However, she admitted, "that's really, really hard." At the school sites during visits they use an observation protocol that looks for evidence of collaboration, student-led activities, the four C's (creativity, critical thinking, communication, and collaboration), and activities that are higher on the SAMR model. She said:

> You know, and it's really focusing on the shift, so the difficulties are really focused around having the time to really change the pedagogy of the teacher into a 21st century model, and… you can drop technology into any classroom. If you don't do that shift in the pedagogy, it's just gonna be an expensive worksheet.

Providing support and understanding the time constraints on teachers as teachers seek to achieve multiple priorities is a recognition of the legitimacy of teacher claims as they pertain to technology enhanced learning.

Value propositions. As described earlier, one of the primary value propositions offered to both parents and teachers was demonstrating how to use the tools effectively. She offered the negative example of a teacher in her experience who simply took the science worksheets he had before a one-to-one device adoption and put them on the device. His students were still bored because he was "using technology at the substitution level." The question for Ella was "How do we leverage the power of technology to differentiate, individualize and redefine the learning experience?"

Ella has a team of full-time educators that work towards this goal and work to increase teacher capacity for technology enhanced learning:

> We have 21st century specialist at multiple schools, so they actually do the coaching. They're at the school site coaching…. We needed to differentiate PD. You cannot go into a school and do a PD for everybody in technology.

In addition, Ella said they were using area content and educational technology specialists to develop blended learning tool kits to help teachers especially in English language arts to redefine learning. She said:

> You have the EdTech team working on it, and then you have the ELD team working on it. Because all of those have to be included in order for that technology to truly be integrated correctly…. No department works in isolation to get that toolkit together, because if it comes from EdTech and it doesn't have the ELA or ELD piece in it, then it's not a helpful toolkit.

Increasing the relevance of the educational experience was also very important:

> our [district and site] stakeholders need to know that in order for public schools to be relevant, they need to be preparing students and having the tools and meeting the needs of the stakeholders and the end users, which are the parents and the students.

The theme of relevance arose again in Q9 about the advice she would give to educational technology leaders. She said:

> The second piece of advice would go to how to keep your school district relevant, so that public schools continue, and that is listening to your stakeholders and

> responding to their needs. The only other—the only example I can give is the fear of our charter schools taking over; private sector taking over and being a disruptor that is meeting the needs of what the end user or parents and students;

Primary contradictions. As in the case of the teacher using his device as a substitute for paper worksheets, contradictions Ella encountered were teachers not fully understanding technology enhanced learning, not accepting that technology alone is unlikely to enhance the value of a learning task, and not realizing their role in teaching with technology and how to structure class activities (A. Subject - Object; Division of labor - Object). She said she went into a classroom and all the students were working on a specific learning program while the teacher was at her desk stapling papers.

> The teacher smiles at me… because they think 'Look, we're using technology,' but… that teacher should be using that time to be pulling small groups for small-group instruction. Again, if we're using that technology to be adapted to where the students are at, but if you're not building the structures to really effectively use technology, and you're only using it at the consumption level instead of the production or creative level, you're not being as effective as you could be.

Another tension that exists in their district pertaining to adoption of technology enhanced learning is the need for security (B. Tools - Object; Community - Division of labor; Rules - Object) of the device and the network:

> It's very important to keep it [devices] safe, and you think about what it takes at a high school here to get the rooms secured so that technology can be accessible; and having technology accessible—if it's not accessible, teachers aren't gonna want to use it. If they have to move it a quarter mile, they're not gonna want to use it. Some of the things that we've got to work on is … How do you get maintenance in to create rooms that are safe?

Another example of contradictions caused by the decisions of other stakeholders trying to accomplish their objectives occurs with the information technology department (C. Tools - Object; Community - Division of labor; Rules - Object):

> when you think about having passwords for kindergartners that are eight digits long and have a capital letter in it, you're just like you're killing me. You're killing a kinder....'Well, this isn't secure enough, you know….' The CTOs come

> from a world that isn't kid-friendly, so how do you get those stakeholders to understand that when they make the decision about passwords or when they make a decision about how a program is gonna be accessed, they've got to think about the end user.

These situations disrupt teacher adoption in multiple areas due to the inconvenience the policies cause, making it more difficult even for those who have a full understanding of technology enhanced learning to transform teaching and learning.

Teachers also had security concerns (D. Rules - Object) regarding student handling of the devices and tended to put unnecessarily restrictive policies in place. She said:

> Kids aren't gonna break it. It's getting stakeholders to know that this is the—it's part of the daily life of kids. They need the technology, and we need to make it accessible to them, so again, other stakeholders need to be on board, making sure that, you know, that there's design thinking taking place.

Figure 8 illustrates these contradictions in the activity system.

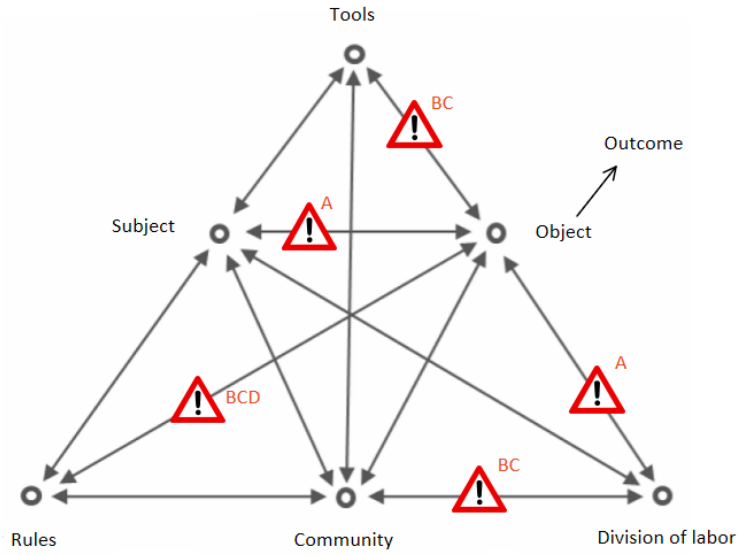

Figure 8. Contradictions to TEL adoption experienced by Ella (P4).

Value propositions that addressed contradictions. To address the problem of the teacher's role with technology, Ella said that the key was "having training and having support and coaching; and that's why our 21st century learning specialists are huge" (see also Table 17). They also use a cohort model for professional learning to increase teacher capacity:

> in every grant or every group or cohort of teachers we do, we actually spend 50-50 time on learning technology and shifting pedagogies. Right now, we have a 21st century model classroom cohort. It meets three times—three full days with subs for 50 teachers, and this is our second year, so now we've impacted a hundred teachers and we'll impact a hundred more next year.

In addition to this traditional, collaborative, professional learning, they also have more job-embedded coaching. The learning specialists are "at multiple schools, so they actually are… at the school site coaching." These activities as well as the visit protocols and well-funded support for the learning specialists is indicative of the financial and leadership support Ella receives. Her first piece of advice to would-be educational technology leaders (Q9) was as follows:

> ensure that the stakeholders understand and that those parents, community and district staff understand the importance of making sure that our kids are prepared for the jobs of the future and understanding that the district is providing the tools and the education to meet that need. I think if there isn't a clear understanding of the goals of why you're spending so much—why my million-dollar department exists and what the value of that is, then—and that's something that I have to deal with…. Ensuring that they know the goals and the importance of preparing students for the workforce of the future, and the goals and break that down on how you're gonna do that and the dollars that are tied to that.

Ella suggested that the tensions with other departments should be resolved with a "design thinking process and design with our end user in mind." This is especially important with technology enhanced learning because when leaders are not in agreement as to what the priorities are in their particular context, it makes success difficult due to ad-hoc policies (Fullan, Quinn, & Adam, 2015) that undermine pedagogy and student learning regardless of the amount of coaching support and professional learning available.

Table 17

Ella's (P4) Actions and Value Propositions to Address Contradictions

ID	Action to Address Contradiction	Value Proposition	Salience Characteristics
A	Job embedded Professional learning, traditional professional learning	Achievement	Legitimacy

(continued)

ID	Action to Address Contradiction	Value Proposition	Salience Characteristics
B	Design thinking	Sustainability, value-in-use	Urgency
C	Design thinking	Sustainability, value-in-use	Legitimacy
D	Reassurances that teachers are not responsible; expressed confidence is students	Security	Legitimacy

A priori analysis. Ella was focused on improving teacher pedagogy, and she employed her learning specialist to offer job-embedded professional learning, built cohorts of teachers, established protocols, and collaboratively designed curricular tools. She notes these are part of the support "structures that need to be in place… in order to use technology effectively in the classroom." These structures helped teachers to recognize the relative advantage of technology enhanced learning over traditional practices. These support structures also cut across many boundaries within the district. This is indicative of the leadership support and shared values about the importance of STEM, STEAM, and 21st century learning in to differentiate their district schools from other schools that may threaten student enrollment in their district. This fact appears to cause most value propositions to be directed towards parents and the community instead of teachers as with other districts. Table 18 shows that the well-being of students in terms of the value of the education their children receive is a priority for the district as enrollment contributes to the sustainability of the district itself.

Table 18

Top Six A Priori Value Propositions Coded for Ella (P4)

Value Proposition	Total	% of Total Propositions
Society/Psychology/Well-being	10	25.6%
Ecosystem/Ecology/Sustainability	3	7.7%

(continued)

Value Proposition	Total	% of Total Propositions
Ecosystem/Psychology/Shared Drivers	3	7.7%
Organization/Psychology/Core Values	3	7.7%
Relative Advantage	3	7.7%
User/Experience	3	7.7%

Shifting teacher pedagogy and maintaining enrollment are two priorities revealed in the interview and influence the core values and shared drivers in the district.

Dinah W. (P5)

Description of participant. Dinah spent several years as both an elementary and middle school teacher before transitioning to teacher on special assignment (TOSA) and later administrator for educational technology. As a middle school teacher, she said she didn't use much technology in her classroom until a volunteer from another country introduced her to some instructional tools for math. Dinah took great interest ever since. Through grants, she was able to garner enough devices to achieve a 2:1 student to device ratio in her classroom. The subsequent learning, leadership, and advocacy for professional learning and educational technology was recognized by the technology director of her district and led to the position she now holds.

Emergent themes. The horizons evident in Dinah's experience were support, alignment, and collaboration. She sought to increase capacity of teachers through professional learning and in-class support and provided vetted curricular materials. She worked with a variety of stakeholders to accomplish her goals related to technology enhanced learning. How these themes were related to the a priori analysis is described below.

Primary stakeholders. Dinah is an ardent supporter of professional learning for teachers pertaining to pedagogy, technology, and how these relate to other district priorities. She relayed a comment she made to her technology director while she was still a classroom teacher:

> I was really vocal that if you only invested in hardware, but you didn't invest in professional development, and you didn't invest in leadership to support teachers, then, I predicted, your [devices] would just get dusty in a closet.

Her passion on this topic helped her to land a TOSA job for instructional technology, and she along with her partners work to add value to teacher's experience through support and job embedded professional learning.

> And so we, the four of us, in addition to doing a lot of professional development, we are just there all the time. We're just in classrooms, we're doing a demo lesson, we're asking a teacher if they just want a second teacher in the room. You know, if you're trying out a new tool and you just want someone else in the room [to] be there and troubleshoot.

The person that recognized her passion for professional learning has also been an ardent supporter for her efforts:

> He's the person with the most clout and the most authority that's really pushed this agenda, so it's really come from him. I think in his perfect world there would be two people in that ... like a Director of Technology and a Director of Instructional Technology, that those two would be given an equal seat at the table.

Dinah described her close partnership with another coordinator from library services and how they worked together with two others to conduct most of the training and presentations pertaining to technology enhanced learning. She also acknowledged the assistant superintendent who "chose to fund all of it.... It was his decision to use… a lot of Common Core money… to move this along" since technology plays a significant role in those standards. Partnerships like these and integrating technology use in other district priorities is a way for Dinah to ensure the sustainability of technology enhanced learning in her district.

Value propositions. One value proposition that was evident with Dinah was collaboration. From the onset of their technology plans, she not only involved stakeholders from various communities within the district, she involved them in major decision making. She said:

> Did we want one-to-ones? Did we want 2:1s? Did we want bring-your-own-device? What did we want? We would bring together third through fifth grade

> stakeholders… and then, in the following year, we would launch whatever it was we decided…. In the following year, … we would then bring together middle school folks and kind of go through the same process. And that the year after that, we would do high school.

They worked to include other stakeholders as they sought to build a technology enhanced curriculum that included exemplars for affected stakeholders:

> So we really looked at what was already happening in our curriculum, and then we reached out to lots of teachers. That was a big work of this group, people who weren't in that room, to collect student work, of things that were already happening that we could then say, 'And this is… what that looks like in our district.' So, we created those. That was a big work of the committee, the technology working group.

Another key value proposition Dinah worked to achieve was job-embedded professional learning to assist teachers *in situ* to make instructional moves that foster student learning, especially with the increased profusion of student data that is available to teachers in a one-to-one environment.

> How can you really learn to shift your pedagogy to take advantage of the fact that in one second you don't have to walk around the whole room, but in one second you have all this student work. How can you leverage that?

They felt they only way to accomplish change in pedagogy was to develop a measurable plan for increasing their support for teachers. The data they collected on their own efforts was in classroom visits:

> the four of us, last year we did almost 600 classroom visits and this year we're on track to do 1,000 classroom visits, just the four of us. So, we've done almost 600 already so far this year.

In addition to the job embedded learning, Dinah and her team asked that those teachers that received a cart of devices become certified. They offered that they could receive the official certification and the district would pay for the test. She found, however, that the less "techy" teachers struggled with this option. As a result, Dinah created her own more personalized certification with screencasts of the tools and teachers could submit their own evidence of learning. She also offered an option for face-to-face certification. The result was "about 70% of

people who've done the official [certification]. About 30% who've done the alternative assessment. But that was a really nice blend so that people had a choice."

Primary contradictions. One of the contradictions that Dinah faced was teacher and administrator perceptions of technology. Another was technological determinism, which often ignores human agency in the outcomes facilitated by technology (Smith & Marx, 1994):

> I feel like one of the most important roles for me is to help all the stakeholders in our district not see technology as a separate subject and that we'll have technology time built into our day but that technology should be integrated into everything that we do and to really align that with our district-wide equity work and really move beyond.

Similarly, for Dinah, it's about teachers truly understanding their role in a technology rich classroom (A. Subject - Object; Subject - Tools; Community – Tools; see Figure 9). She said of her role:

> And just being really relentless around what are ways that technology naturally integrates into our curriculum. That... it can deepen kids' learning. It's not just an extra thing that happened. You know, that they [devices] don't make everything more engaging. It [technology] doesn't just naturally make everything more engaging.

Another contradiction that Dinah faced was funding (B. Rules - Object) to support professional learning. They had a plan to integrate technology in grades 3 - 12, but funding concerns have jeopardized the deeper integration in secondary schools. She said:

> As hard as it is to come by money in education, that finding money to buy, I always call it the stuff, but finding money to buy the stuff, the upgrading your wireless or buying the carts or buying the [devices], that that's actually a lot easier than finding the money in what actually becomes the time and paying for the time to really thoughtfully develop teacher capacity.

The truth of this statement in Dinah's context is that although high schools were excited about the plan that was executed in elementary and middle schools, the lack of funding has put the plan as well as her position in the district in jeopardy (C. Community - Rules; Rules - Object). She explained:

> So, my job was initially funded with one-time money…. It turns out that the end of those two years coincides with a huge budget crisis in California, especially like the increasing [benefits] contributions of the district, and so… it does not look like my job's gonna be re-funded next year.

The conflict here is between the community and rules because Dinah is a member of community.

So too are the state policy makers and the entire high school community.

As pertaining to full implementation of their plans through high school, she said:

> we have the money to fund the devices for one-to-one in seventh and eighth last year, [but]… we slowed down because we could see two years back that we weren't gonna have the money we thought we were.

This slowdown is also due to the competing curricular initiatives (D. Rules - Object) at the secondary level. She said:

> It just feels like we're competing against that many… other initiatives like building assessments, grading assessments, looking at data.... This new ELA curriculum is definitely a huge issue as well that's standing in our way.

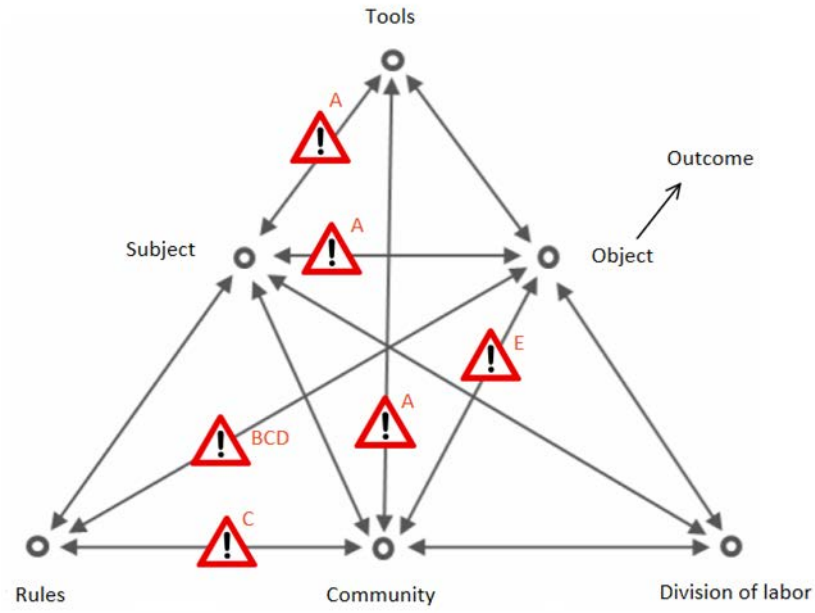

Figure 9. Contradictions to TEL adoption experienced by Dinah (P5).

Another tension Dinah described was parental concerns over too much screen time, but she said, "I have a lot of issues about [that] from an equity perspective because, in general,

people who say that [already] have tons of technology at home" (E. Community - Object). While many of her district's students have such access, she said, "some kids don't, so we'd better use it at school.".

Value propositions that addressed contradictions. One value proposition that addressed the screen time issue was to tie their technology initiatives closely to their equity initiatives:

> We've been very strategic in terms of what we focused on in our goals…. We have district-wide equity strategies, and so I feel like one of the most important roles for me is to help all the stakeholders in our district not see technology as a separate subject, and that we'll have technology time built into our day, but that technology should be integrated into everything that we do and to really align that with our district-wide equity work and really move beyond ... that equity in terms of technology doesn't simply mean access, although that's certainly an important part of the work.

In addition, Dinah's passion for professional learning is her cure for many of the ills concerning technology enhanced learning (see also Table 19). The job-embedded professional learning was an important value proposition that addressed the problems associated with teacher pedagogy:

> I think that the challenge is helping teachers, some teachers, see that though this tool might be really effective at certain things, in and of itself the tool does not change how kids are learning and really pushing that through working with teachers, working in classrooms, one-on-one, professional development.

In terms of sustaining their plans for technology integration grades 3 - 12, she works to ensure the district leadership team and other site administrators are aware of the work the teachers are doing with technology:

> We blog once a week and it's always just showcasing work that's happening in a classroom. So, every week we're just featuring a teacher and the ways they're integrating technology. We try to be pretty aware of K-12, kind of every week switch it around, what sites, what grade levels, what way, what subject areas.… The work that I'm doing is 'whatever,' but the work that the teachers are doing is the most important work…. I feel like [the blog] has been another tool to let people in the district see, constantly see, what's happening.

Dinah also said:

> I'm going to Ed Services, which is sort of all the people at the director level above me, to share our accomplishments and then this, specifically it's to have them prioritize what work they want to continue, if indeed my position will be around next year so that they can really think about what's gonna go away and what should stay.

Although Dinah's district has received recognition for their work in the educational technology community, there is still work to do. She is clearly proud of the collaborative work her team has been able to accomplish in the elementary and middle school levels and the support she has been able to provide, but as the initiative rose in grade level, it became complicated by other curricular initiatives and leadership support appears to have waned. The part of the initiative that has been implemented, however, was met with enthusiasm by teachers as evidenced by their willingness to earn the technology certification and their willingness to allow Dinah into their classrooms for job-embedded support.

Table 19

Dinah's (P5) Actions and Value Propositions to Address Contradictions

Contradiction	Action to Address Contradiction	Value Proposition	Salience Characteristic
A	Professional learning	Achievement	Legitimacy
B	Keep data; share results	Achievement; sustainability	Power Legitimacy
C	Share results; walks with leaders	Achievement; sustainability	Power, Legitimacy
D	Integrating TEL in initiatives	Sustainability	Power Legitimacy
E	Parent nights; professional learning	Security; core values	Legitimacy

A priori analysis. Dinah proclaimed that she needed to be "relentless about why technology integration is so important." To her, information and communications technology should be an integral part of all the district's priorities, so she and her team work hard to demonstrate its use to teachers and how it supports the core values of the district. Professional

learning is a key strategy that works to empower teachers with technology, and she is proud that all the teachers involved in the technology initiative also participated in the technology certification. She recognized this achievement as well as other teacher accomplishments with technology in the blog that is shared with district administrators. Equity is one of those core values for the district, and she works to integrate technology use in that priority as well. She hosts parent nights and works with parents that may not have ready access to technology or may not be aware of the ways in which it can be used to support their student's learning and online safety. She also informs them about quality screen time and how they can use email to communicate with teachers. Efforts such as these characterize the value propositions of social responsibility and doing good. Table 20 shows the top values propositions noted from the a priori analysis.

Table 20

Top Six A Priori Value Propositions Coded for Dinah (P5)

Value Proposition	Total	% of Total Propositions
User/Experience	20	35.1%
Organization/Psychology/Core Values	11	19.3%
Motivational values/Achievement	7	12.3%
Organization/Sociology/Social Responsibility	6	10.5%
Ecosystem/Ecology/Sustainability	4	7.0%
Ecosystem/Doing good	3	5.3%

John C. (P6)

Description of participant. John began his career in public education as an elementary school teacher. He said at the time he thought of technology just as a "hobby" or "interest," but as his skills developed, district leaders took notice and moved him to the district office. He worked as a teacher on special assignment (TOSA) for several years working to "train other teachers throughout [the] district" on incorporating technology into their instruction. He is

now an administrator responsible for "educational technology initiatives and supports in [the] district." He is also responsible for professional learning for all staff on technology-related initiatives.

Emergent themes. Inclusion and professional learning were the invariant constituents for John in his efforts foster technology enhanced learning. He realized the important of including all stakeholders in their initiative and made overt attempts to connect with as many as possible and solicit their support and feedback. They created cohorts of teachers to participate in the technology enhanced learning initiative, and he worked to support them through job-embedded professional learning. How these horizons relate to the a priori analysis is described below.

Primary Stakeholders. At the mention of stakeholders in Q4, John demonstrated his awareness of their importance. He said:

> Well, you know there's stakeholders at various levels. There's students. There are teachers. There's parents. There's community members. There's the board members. Executive cabinet. So, there's a variety of different audiences. What we've always tried to do is get those groups together to gather feedback.

In describing his work with teachers, he said they started a new one-to-one initiative focused on quality instruction and personalized learning. The interested teachers had to fill out a questionnaire for acceptance into the initiative. They asked the applicants that wanted to participate a variety of questions regarding their experience with technology and their instructional practices. The goal was to get teachers involved in the initiative "who were kind of middle of the road, that were interested but weren't necessarily those cutting-edge teachers using technology." Out of that larger group, he described the advisory group selected from among them as follows:

> It's about 20 people of all of the teachers in our initiative, and we bring them together every other month. And we share our plans with them for upcoming professional learning that we're planning, or different technologies that are coming down the pipe. And we get their feedback on how things are going and

> with their implementation. So that's another big area in terms of getting feedback and improving what we do.

For district leadership, he and his team try to involve them as much as possible and keep them informed on their progress and plans:

> And we've done things like we have them walk classrooms with us to actually look and see what's going on and explain it to them. That's been really helpful. And then presentations as well. Getting in a space with them in meetings and presenting our data, our findings. So that's a key one too. Is being able to collect measurements of your impact, and then to be able to communicate that with the stakeholders. That's a big one.

He also described his involvement with other stakeholder groups. In nearly every description of his interaction, the focus was on students and their learning. He described work with the college and career readiness teams "to make sure that kids are college and career ready with the 21st century four C's…." He said, "we talk to site leaders about their perception of how things are going," and "we've also brought in folks from our social/emotional department because we're closely looking at how the use of technology can support students at a social and emotional level." He also expressed the importance of the IT department and their role in selecting equipment and getting it "set up and deployed and maintained and supported throughout. Having a robust infrastructure, and wireless throughout all the classrooms. And then supporting it on all those other technical levels."

Involvement with a wide breadth of stakeholders in his large district is an essential element of their success. He said:

> I've done a one-to-one initiative in the past, and we didn't really bring all the stakeholders together in terms of district staffs who are supporting it. We didn't bring in like all the players that really need to be involved with the planning and the support. So, that's something I've learned a big lesson…. It's a real challenge trying to keep everybody in the loop and get time and get in space with people, and keep it a collaborative, supportive effort.

Value propositions. One of the value propositions that contributes to the success of their technology initiative is job-embedded learning. He said:

> we have our instructional coaches who we've worked with. And again, they've been critical because they're the boots on the ground. They're also talking to the teachers, providing job-embedded coaching, and they need to be able to speak to what we're preaching. And so they've been critical to the process as well.

John also described the role of tools in their plans to implement technology enhanced learning:

> And then having the tools have been critical.... For ELA and math we have online curriculum materials. And so, the students can access all of their content through the devices. And then we also use [our software platform] as supplemental tools to facilitate creativity and collaboration and a venue to really develop those digital literacies.

John also described their partnership with another member of the curriculum and instruction team. This person acts as a broker building legitimacy for the change efforts (Kubiak et al., 2015) within the learning community. John said that person is:

> dialed in to what our curriculum and instruction team is pushing through the system in terms of the vision and the mission…," making sure we're closely aligned to those goals as we integrate the tech…. He's been instrumental in really kind of bringing and aligning everything.

Primary contradictions. One contradiction John identified is the lack of a complete understanding of the role of technology in student learning. He suggested that some think that the role of technology is just "to engage the students because we think they'll be more engaged if they have a device in their hands." He also described site leaders who simply pursue devices to ensure equitable distribution among the staff (A. Division of labor - Object; Community - Tools):

> right now, what I see a lot of is their biggest concern is having enough devices. So, they're always thinking about, 'Okay, how many grade levels are one to one now?' And you know they're working towards being one-to-one site-wide, and not so much on… how the devices are being used.

This lack of emphasis on transformative use of the devices is reflected in teacher use as well (B. Subject - Object). He described an example of a writing assignment he observed:

> it uses the technology, but that's a case where it could have just been something quickly written on pencil and paper and reflected on, and then moving on from there. And again, that's also just a substitution level activity, they're not using the writing for any purpose beyond that.

John said this low-level use could be a symptom of how the teachers view themselves when using technology (C. Subject - Object; Community - Object):

> it's that vulnerability that they tend to hold. And we've worked with a lot of teachers on that and getting them to just let it go, you know? And accept the fact that you're not gonna know everything about technology, and kids might know things you don't know, but embrace that. Let the students share what they know and celebrate that. And that gives them more confidence.

It is clear in this example that technology enhanced learning raises question about roles and identity of both teachers and learners and the false dichotomy between the two.

Testing has also been a source of contradiction because for some stakeholders "all the focus was on preparing for the test," (D. Rules - Object) whether that was district interim assessments, the SBAC, or other assessments that were developed to be delivered online. This created an interesting concern regarding student attitudes (E. Community - Tools) toward technology:

> So, like we got in front of students, and we asked them, we said, 'Do you guys feel that using technology in your learning is helpful?' And, it was kind of eye-opening because a lot of them said, 'Well, no. We really don't like using computers because every time we get 'em out we use 'em to take a test.' And so that was eye-opening, but it made sense because that's kind of been the habit since Common Core rolled out.

Finally, despite the curricular and learning goals John might have for the technology in the classroom, he is always concerned about getting others involved. When others don't understand what he and his team are trying to accomplish, he fears that may cause teachers, site leaders, and district leaders to view educational technology as something separate from what

they do for student learning (F. Community - Object). Figure 10 illustrates these contradictions in the activity system.

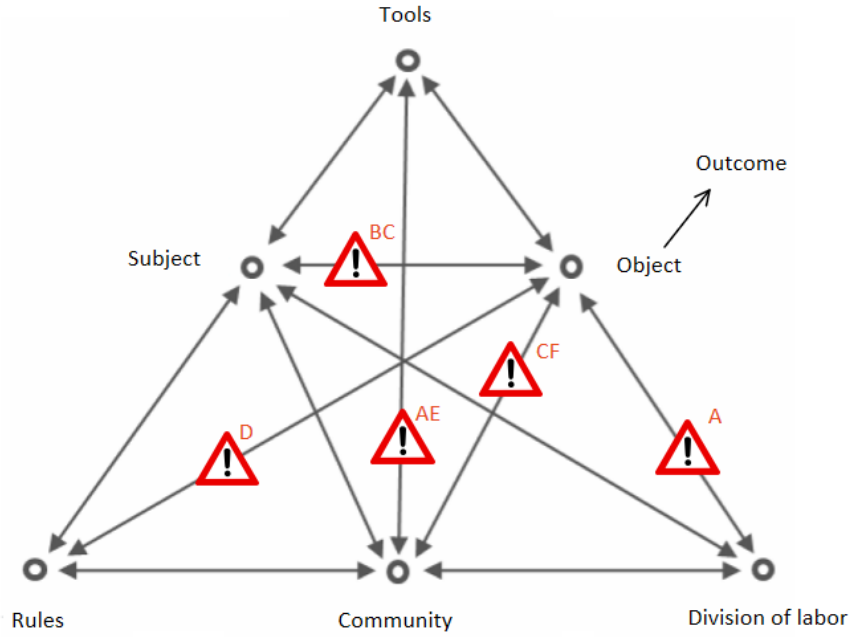

Figure 10. Contradictions to TEL adoption experienced by John (P6).

Value propositions that addressed contradictions. Certainly, their attempts to communicate and seek feedback from all stakeholders plays a primary role in addressing many of the contradictions described above (see also Table 21). The curriculum and instruction team member who is "pushing [their technology initiatives] through the system in terms of the vision and the mission" uses their shared values to unite stakeholders in their efforts. The job-embedded learning helps to build teacher capacity and identity as modern educators that exploit the affordances of information and communication technology to foster student learning. John says that he works at "researching current trends in the industry and looking at best practices for adoption of technology, and best practices for effective instruction and using the technology in meaningful ways in the classroom…." Sharing this knowledge and expertise is also an important value proposition to those who might desire to have it such as teachers and district leaders.

Now lacking the urgency of a Common Core rollout, John is very conscientious about getting feedback from all stakeholders about their technology and learning initiative. He also works to include leadership in the classroom walk-throughs when possible, and he makes presentations to district leadership and engages them in dialogue as well. John understands that in order to sustain momentum with technology enhanced learning in their large district, others must be involved and aware. He said, “what can tend to happen with an edtech initiative, is it can turn into a technology initiative real quick.” In his advice to educational technology leaders he stressed that “it’s critical to bring all those different teams together that need to be involved, and make sure that they are tightly involved in communicating and collaborating together.”

Table 21

John’s (P6) Actions and Value Propositions to Address Contradictions

Contradiction	Action to Address Contradiction	Value Proposition	Salience Characteristic
A	Get feedback; professional learning	Belonging; sustainability	Power Legitimacy
B	Job-embedded coaching	Achievement	Legitimacy
C	Job-embedded coaching	Achievement	Legitimacy
D	Professional learning; advisory groups	Sustainability, achievement	Power Legitimacy
E	Advisory groups	Belonging, Eco-effectiveness	Legitimacy

A priori analysis. Table 22 shows sustainability and shared drivers as the value proposition likely because of John’s previous troubled technology initiative. John realizes the deleterious effects of failure to get other stakeholders involved, that sustaining a change effort requires involvement and ownership of stakeholders at all levels. He knows that IT departments, curriculum, teachers, principals, parents, executive cabinet all play a part in achieving the changes required, and he is very conscientious about listening to their needs and concerns. He also keeps them informed on changes and progress. He also listens to ensure that the technology

and learning initiative he is seeking to sustain supports the goals that each stakeholder has for his or her own department. This certainly increases the feeling that they are working together and that the technology and the changes in pedagogy are a part of a larger plan to which they all belong. This job-embedded is an important value proposition because it works to encourage teachers who might be insecure about trying new things with technology. Like other educational technology leaders, use value plays a key role as a value proposition, but John understands that usability is not the same as sustainability.

Table 22

Top Six A Priori Value Propositions Coded for John (P5)

Value Proposition	Total	% of Total Propositions
Ecosystem/Ecology/Sustainability	9	18.8%
Ecosystem/Psychology/Shared Drivers	9	18.8%
Organization/Psychology/Core Values	7	14.6%
User/Sociology/Belonging	5	10.4%
User/Experience	4	8.3%
Motivational values/Security	3	6.3%

Collective A Priori Analysis

The findings from the a priori analysis related closely with the emergent thematic analyses. Appendix J lists the top 25 value propositions identified from all six interviews. What follows is a brief discussion of the top five. Use value or value-in-use (n = 125) was the most prevalent type of value proposition discussed in support of technology enhanced learning. Use value "offers a pleasurable experience for users, seducing them into changing their behavior and keeping on using the product or service to contribute to an increased quality of life" (den Ouden, 2012, p. 98). Den Ouden asserted that use value can also provide enabling value by easing workload, increasing productivity, fostering safety, or increasing effectiveness. Use value was

most often demonstrated in the professional learning offered through educational technology departments and in the choices of digital devices and curricula.

Though much less prevalent, core values (n = 26) was second. Den Ouden asserted that core values are often identified in a mission statement used to communicate to various stakeholder groups and to offer guidance on how to accomplish that mission. These values are often embodied in symbols and slogans and are designed to guide the behavior and thinking of employees. In this study, participants often expressed these values in terms such as "21st century learning," "equity," "access," and "college and career." These core values, however, only served the co-creation of value if the teacher or other stakeholder also embraced these values. There was a great deal of overlap in this code and the three that follow, as the same statement may have received more than one code. For example, Herbie said of his new curriculum, "It's not a couple of hyperlinks to some cool pictures and sound. But curriculum really designed around all the promises that technology has. And we were able to [adopt it] in our district… because we have the [devices] and the sufficiency to be able to justify [it] to the Williams Act." This statement was coded both as core values and shared drivers because it expressed beliefs about what technology should be and about policies and laws pertaining to equitable access (Williams Act). It also worked to propel technology enhanced learning forward in his district.

Belonging (n=26) enables users to belong to a group that is important to them. This was evident in discussions of teacher recognition, collaborative groups, test groups, and advisory groups. These persons often felt a sense of appreciation and power in being included in the decision making and in being recognized by peers and leaders in the organizations.

Well-being (n = 22) is subjective and "concerns the assessment of people's evaluative reaction to their lives and societies: their normative ideals, subjective experiences and ability to

select the goods and services" (den Ouden, 2012, p. 31). Giving teachers and parents voice in matters of their concern, offering benefits designed to improve stakeholder lives, and facilitating access to cultural tools characterize items that were coded as well-being.

Shared drivers (n=18) were recognized when stakeholders of the school district appeared to share the mission of the district in its efforts to provide benefits to all." The efforts of Oscar, Dinah, and Ella and the actions they described to involve the community and demonstrate what they were trying to accomplish for students and parents were coded with shared drivers.

Achievement (n=19) was the only motivational value in this group. Schwartz (1996) asserted that such value propositions are related to personal success. In this study, these value propositions often related to the growth and position of the educational technology leader as they themselves create value for the organization. Another manifestation of this value proposition was with parents in building their capacity to use technology to support their own and their student's growth. Finally, teacher success through practice and professional learning was also an appeal in this area.

Summary

The answers to the research questions for each participant were provided in the organization of this chapter. The chapter described the experience and context of the educational technology leader, identified emergent themes not explicitly described in the a priori analysis, provided a description of the primary stakeholders, and identified the salience characteristics of those stakeholders. The description of value propositions indicated the main value propositions described by each educational technology leader, and this was followed by a description of the main problems or tensions shared by the educational technology leader. In addition, a description of the ways in which each of the educational technology leaders used value propositions to

address contradictions was charted along with the salience characteristics of the stakeholders to whom the value propositions were made. The a priori analysis described and charted the main value propositions and their relationship to the value frameworks described in the review of literature and methods sections. This chart also included the percentage of the total number of value propositions by type. Finally, the collective a priori results were identified as the top six value propositions preceded by a brief explanation of how they were manifested in the interview protocol. In all, while value-in-use or user/experience for teachers was the main value proposition offered for most districts, the district relationship with the community, the community characteristics, school culture, and school and district leadership priorities all affect the leadership practices of educational technology leaders and the ways in which value propositions and stakeholder relationships are managed. These findings will be discussed more fully in the next chapter.

Chapter 5: Discussion

This phenomenological study was designed to understand the experience of successful California educational technology leaders in co-creating value for technology enhanced learning. The term "successful" was operationalized as educational technology leaders within districts that have been recognized by at least one reputable educational technology organization for their implementation of educational technology initiatives. Six California district educational technology leaders were interviewed using a semi-structured interview protocol and several value propositions were identified. The frameworks or constructs used to identify the value propositions were the value framework (den Ouden, 2012), motivational values (Schwartz, 1996), and relative advantage (Rogers, 2010). This study sought to understand the ways in which value co-creation might have eased the tensions that might hinder teacher adoption of technology enhanced learning in California public schools. A third purpose of the study was to identify the salience characteristics of stakeholders to whom most value propositions were directed.

Findings

Value propositions in this study. In this study, both the emergent and a priori analysis revealed that these successful educational technology leaders attempted to create value for stakeholders. For teachers, educational technology leaders worked to create value through traditional and job-embedded professional learning, by providing reliable infrastructure, by offering just-in-time technical support, and by supplying tools and curricula to support technology enhanced learning and foster student learning beyond the substitution level (Puentedura, 2006). They also attempted to align technology enhanced learning with existing initiatives and priorities to increase the likelihood of teachers adopting the practice and to prevent teachers from feeling overwhelmed by "initiativitis" (Fullan & Quinn, 2016, p. 5). They

sought to establish platforms for recognition of teachers' exemplary use of technology enhanced learning using blogs and newsletters. It was also common that educational technology leaders used core values of preparing students for college and the workforce as justification for teacher adoption of technology enhanced learning (Ottenbreit-Leftwich et al., 2010). Den Ouden (2012) maintained that through values we conceive of what might be desirable for others and ourselves. They are often the standard by which we act, judge, choose, argue, exhort, rationalize, and attribute cause. From an organizational leadership perspective, values play a critical role in the power and coherence of any management strategy (Freeman, Gilbert, & Hartman, 1998), and their effectiveness can be enhanced when the strategy appeals to value sets instead of simply one value (Schwartz, 1996).

All the educational technology leaders, even if intuitively, applied the principles of value co-creation evident in service-dominant logic. Axioms 2, 4 and 5 assert that value co-creation is created by multiple actors including the beneficiary, it is always determined by the beneficiary, and it is coordinated through actor-generated institutions and institutional arrangements (Vargo & Lusch, 2016). Herbie declared rhetorically, "our role is really to provide a service to our teachers and our schools, right?" His test of service was "do people feel like you're valuable? Do people want to talk to you? Do people feel like you have the same values, missions, and beliefs as they do?" This mindset embodies axiom 4 and fostered value propositions such as his "911" response policy to urgent site leader claims: "if you're saying that it's that important, it's that important and we want to respect the fact that you feel it's that important." This is axiom 4 in action, and this mindset also prompted him to seek out a better, digital-first, curriculum to support teachers in implementing technology enhanced learning in the classroom. This involved coordination with

several other departments, teacher groups, and curriculum specialists. He felt the curriculum adoption was a “feather” in his cap. It represents axiom 2 and 4 in action.

Teacher experience with this curriculum helped them better appreciate the affordances of technology and recognize the deficiencies of some of the curriculum tools they were using already. The experience with one tool empowered them with the knowledge and experience to make more informed value claims for other tools and vendor-products offered to support student learning.

Charlie realized the importance of tools as well, especially the teachers’ main device. He involved teachers with differing degrees of technology proficiency in a pilot of teacher devices and brought them together to discuss the pros and cons of each device. Once the teachers selected the device they wanted, he was able to assure the district’s executive leadership of the suitability of the device. This was due not only to its technical specifications, but also because this choice was the result of authentic testing with the actual users of the device. Charlie believed that one of the keys to teacher adoption of technology enhanced learning was finding the right tools: “I believe that when you find commonality with what people will use, they will come with you a little bit more. As they start using the tools, they’ll say, ‘Hey Charlie, what else can I do with that?’

Ella recognized the importance of design-based thinking in addressing the concerns over teacher adoption of technology enhanced learning. She felt she had effective structures in place to support technology enhanced learning such as job-embedded coaching and a cohort model of professional learning that modeled the importance of effective pedagogy. These institutional arrangements are essential aspects of the co-creation of value (Axiom 5). She was frustrated, however, by other stakeholders and their concerns about security which made using the

technology inconvenient for both teachers and students. The steps of design thinking are to empathize with the end user, define the problem, brainstorm ideas, create prototypes, and test solutions. Ella urged stakeholders and decision makers to consider first the end users, teachers and students, before making policy decisions that affect classroom activities, especially technology enhanced learning. For her superintendent's concerns about declining enrollment, Ella supported STEM and STEAM projects to ensure parents were aware of the value of the education their children were receiving from her district in preparing them for college and the modern workforce.

Like Charlie, Oscar also involved teachers in the decision making regarding their implementation of technology enhanced learning. Throughout their implementation, Oscar emphasized openness, availability, and transparency. He prioritized the needs of teachers over the concerns that he and others might have over online security and digital irresponsibility. Their policy choice "to err on the side of instruction" brought about opposition from parents and board members, but Oscar argued that a more open internet held true to the district's vision for teaching and learning and thus garnered the support of the superintendent, district leaders, and teachers.

Dinah's passion for professional learning was evident, and it was shared by her district's technology director, the assistant superintendent of curriculum and instruction, and other key stakeholders. She worked collaboratively to build structures that included curriculum, professional learning, and tools to foster adoption of technology enhanced learning. The fact that all her teachers pursued a technology certification is a clear indication of the value they perceived in the learning and in securing access to carts of devices for their classrooms. Showing how technology enhanced learning supports the California standards and district equity initiatives created value for many district leaders and positively influenced implementation of

their one-to-one program up through the middle grades. That leadership support, however, lessened for middle grades and became truly uncertain for high school due to budget concerns and conflicts with other curriculum adoptions.

John seemed to be most acutely aware of the importance of value co-creation without ever mentioning the term. For his process, he said, “it starts with gathering feedback from multiple stakeholders at multiple levels and involving them in the process from the beginning. And then bringing all those key players at the department level, central office level, [and getting them] involved.” He also said, “we get their feedback on how things are going and with their implementation. So that’s another big area in terms of getting feedback and improving what we do.” John’s openness to feedback and improvement, however, was prompted by problems with previous technology initiatives—a lesson that perhaps many educational technology leaders are on the precipice of learning.

Individually and collectively, these educational technology leaders displayed great insight and skill in their experience with implementing technology enhanced learning. A marketing framework proposed by Frow and Payne (2011) that coupled the stakeholder perspective and value co-creation could work to replicate some their positive experiences. It consists of five steps:

1. Identify stakeholders
2. Determine core values
3. Facilitate dialogue and knowledge sharing
4. Identify value co-creation opportunities
5. Co-create stakeholder value propositions

Adopting this simple and iterative framework could enable educational technology leaders to ensure their technology enhanced learning implementation plans are meeting the expressed needs of relevant stakeholders. This process could increase compatibility (Rogers, 2010), build trust, (Ertmer, 1999; Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur, & Sendurur, 2012; Jones et al., 2013; Kujala et al., 2017) and encourage concertive action (Gronn, 2002).

Findings and their relationship to the literature. The researcher used co-creation of value in service-dominant logic (Vargo & Lusch, 2016), the value framework (den Ouden, 2012), motivational values (Schwartz, 1996), and stakeholder theory (Freeman, 1984, Mitchell, Agle, & Wood, 1997) to examine the experience of California educational technology leaders in their efforts to co-create value among district stakeholders for technology enhanced learning. To complete this discussion of the research findings and their relationship to the literature, the discussion will be conducted within the context of some of the major divisions of the review of literature.

Technology enhanced learning. Not surprisingly, all the participants in this study had a sophisticated conception of technology use in the classroom, understanding that devices themselves were far less important than the pedagogy that informed the technology use. All of them decried in one form or another instruction with technology that was not student-centered and did not foster critical thinking and creativity (Culp, Honey, & Mandinach, 2005; Glennan & Melmed, 1996; Kim & Reeves, 2007). Ella specifically mentioned her support of project-based learning as an important aspect of their technology strategy and others in some way mentioned the SAMR[1] model (Puentedura, 2006) and the need to foster the popular four Cs of critical

[1] SAMR (Substitution, augmentation, modification, and redefinition) is a model often used to introduce teachers to technology integration. The main premise is that the first two stages represent transformation of the learning task and last two represent transformation. Substitution level is using technology to do things that could

thinking and problem-solving, collaboration, creativity, and communication. None mentioned TPACK, or more current pedagogical supports like Magaña's (2017) T3 framework, or the Deep Learning Global Competencies (Fullan, Quinn, & McEachen, 2018). While the Puentedura framework is indeed popular, easy to understand, and has a high degree of "stickiness," it has been criticized for its emphasis on the technology. This is unlike the TPACK model which in addition to technological knowledge also included content knowledge and pedagogical knowledge (Mishra & Koehler, 2006). Some critics argue that the SAMR model hints of technological determinism because it suggests that a learning task transformed through technology necessarily engenders the deeper or more critical thinking required of technology enhanced learning (Magana, 2017; Phillips, 2015). The popularity of SAMR may explain why the predominance of value propositions described by the educational technology leaders had value-in-use as its focus, emphasizing how to use the tool to accomplish teacher and student objectives. The lack of pedagogical depth beyond popular research and common online resources may present an opportunity for more informed research-based practices. Indeed, Sawyer (2008) argued that for teachers to be able to prepare students for the knowledge economy, they must "deeply understand the theoretical principles and the latest knowledge about how children learn" (p. 57). Professional learning that focuses on constructivist principles can help teachers to recognize that technology enhanced learning is not simply understanding how technology redefines the learning task, it also redefines the teaching task, breaking down the false dichotomy between teacher and learner.

Educational technology leadership. As with most change literature most of the educational technology leaders mentioned the importance of having a vision for educational

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easily be accomplished without the technology. Ideally, teachers would take advantage of the affordances of technology to do things that could not be accomplished without the technology (Puentedura, 2006).

technology that is supported by all district stakeholders (Choi, 2007; Freeman, 2007; ISTE, 2018; Kujala et al., 2017; Ng, 2008; Office of Educational Technology, 2016). In some cases, it did not appear as though the vision was compelling enough to resonate with the core values of teachers and the lived experience of administrators. In the case of leadership, this caused serious disruption in the adoption of technology enhanced learning due to failure to coordinate existing systems (Cook et al., 2007; Fullan & Quinn, 2016; Pierce & Cleary, 2016) and executive leadership's unwillingness to actively support technology enhanced learning in the face of powerful parent opposition due to concerns about screen time. It appears one or more of the six factors necessary for value co-creation (Kujala et al., 2017) were missing among the leadership in these cases, especially stakeholder interaction, trust, and willingness to learn.

Budgeting concerns and conflicts in priorities were not revealed in districts that appeared to embody these six factors. These districts appeared to have greater focus on community building between teachers, with district parents, with other interested stakeholders outside of the district. Educational technology leaders fostered this sense of community through public events and showcases, teacher collaboration, social media, and involvement in educational technology professional organizations. In working to build these communities, the educational technology leader was able to foster acceptance of technology enhanced learning through the coordinating pressure the community (Rowley, 1997). In turn, they were able to build internal accountability (Fullan, 2016; Fullan, Rincón-Gallardo, & Hargreaves, 2015; Hooge et al., 2012) and broaden the regimes of competence or community standards of excellence (Wenger-Trayner & Wenger-Trayner, 2015) and influence second-order barriers such as teacher beliefs and willingness to change practice (Ertmer, 1999).

While pedagogical barriers to technology enhanced learning may still exist within these districts, many of the first-order barriers such as reliability and availability of the tools have been addressed satisfactorily by most stakeholders in the districts examined (Ertmer, 1999). Time, however, still appears to be a first-order barrier that still exists in these districts. These time concerns can be in the construction of the bell-schedules that may hinder execution of class projects or time for professional learning activities for teachers to improve their capacity with technology. To address these time concerns concerning professional learning, some educational technology leaders used job-embedded coaching, and some offered shorter "flipped" professional learning that is more focused and convenient for teachers. Since teacher participation in these types of professional learning activities is most often voluntary, those who use it regularly clearly recognize its value. Perhaps the true value of this type of professional learning is the low barrier to entry it's teacher-centered nature which can encourage teachers to try new techniques (Bernhardt, 2015).

Co-creation of value and stakeholder theory. The interrelation of stakeholder theory and value co-creation warrants that these two constructs be discussed together. The main tenet of stakeholder theory is that organizations that seek to create value for all stakeholders fair better in the marketplace (Freeman, 2007; Sisodia, Wolfe, & Sheth, 2003). When justice and fairness are emphasized by leaders and recognized by stakeholders, loyalty and commitment to continuous improvement are more likely to occur (Colquitt, Greenberg & Zapata-Phelon, 2005; Greenberg, 1987; Jasso, 1980; Phillips, Freeman, & Wicks, 2003). Even without the profit motive, these aspects of organizational behavior apply in education as well. Those educational technology leaders that involved stakeholders early and often were able to lessen resistance to their technology initiatives and thereby facilitated a more positive attitude toward the change efforts.

They also attempted to create value propositions for stakeholders by seeking feedback, working collaboratively, coordinating change efforts with existing initiatives, and supporting stakeholders through professional learning and community events, and communicating the status of change efforts in a variety of ways from classroom walks, to newsletters and blogs, to student-showcase events.

In many of these examples, however, it is not clear if the value was truly co-created because value co-creation requires the beneficiary's participation. The term "creation" demands this participation be evident in the earliest conception of the value proposition. In the examples of those who did engage in value co-creation they held open meetings, purposefully sampled teachers of various technology integration capacities, and conducted surveys of teachers before deciding upon a course of action. These means of value co-creation where stakeholders interact, share, learn, and set shared objectives worked to build trust and acknowledge the legitimacy of these stakeholders. Some district leaders and educational technology leaders felt this approach was imperative, thus highlighting the urgency of the value claim (Kujala et al., 2017).

Urgency, however, did not always result in inclusive, participatory, distributed leadership. In some cases, urgent situations such as the need to maintain enrollment resulted in seemingly prescriptive solutions to problems related to adoption of technology enhanced learning. Though the solutions prescribed were pedagogically sound, well-funded, and supported with job-embedded as well as cohort styled professional learning, prescriptive decision-making neglects the opportunity to co-create value and may lessen the likelihood that the professional learning will result in a change in practice (Doyle & Ponder, 1977; Ottenbreit-Leftwich et al., 2010).

Other findings relevant to the literature were brokering, trust, and change management. Most of the actions of educational technology leaders to foster adoption and support of

technology enhanced learning was a form of brokering in that they created boundary objects that served to clarify communication and enhance understanding of concepts related to technology enhanced learning. These boundary objects often connected stakeholders to the character and values of the organization, encouraging further participation in the community. Concerning change management, a powerful factor in facilitating adoption of the technology enhanced learning was trust. This included faith in the infrastructure to support technology enhanced learning (Davies & West, 2014) or faith in the efficacy of technology to foster the learning teachers and administrators desire (Ertmer, 1999; Ertmer et al., 2012). This was evident is the complaint described by some educational technology leaders that according to some teachers the technology is more of a distraction than a learning tool. The value propositions educational technology leaders offered to build the necessary trust were evident in having a service orientation, by including stakeholders in the decision making, by illustrating how technology enhanced learning fostered learning goals, and through demonstrating how it supported other initiatives such as equity and career readiness.

Limitations of the Research

While every effort was made by the researcher to conduct a valid examination of the experiences of educational technology leaders, this study does have some limitations. Among those are the small sample size and concentrated locale. California has a very large population with great ethnic, cultural, and economic diversity. This small sample size represents a preliminary investigation into the experiences of California educational technology leaders and the findings may not be generalizable to all California districts. Another factor hindering the generalizability of these findings is that the diversity and political climate of California may contrast significantly with the culture and climate of other states or countries. In addition to this,

although the researcher made significant attempts at bracketing and using participants' statements as support for his findings, there is a degree of subjectivity in all research and this study is not exempt. This is especially relevant in the coding of the data. The researcher did review the coding scheme and pilot coding with the dissertation chair, conducted member checks with available participants (n=3), but many statements were coded as more than one value proposition, and all coding for the interview data was based on the researcher's interpretation and experience as an educator, educational technology administrator, and graduate student in learning technologies. Therefore, while ranking value propositions may provide a helpful lens into interpreting the data, one should not regard those highly ranked value propositions as a definitive statement of their importance to the co-creation of value for technology enhanced learning; nor should the lower ranked value propositions necessarily be viewed as insignificant. In addition, while there was some regard for not counting more than one mention of the same value proposition within an interview question, the researcher simply counted occurrences of value propositions as they were shared in each question. An educational technology leader that described a particular value proposition in more than one question might have many coded occurrences of that value proposition because it was used or elaborated upon in more than one question. Finally, the measure of success for these educational technology leaders was recognition by the educational technology community. While this is still a very select group of school districts in the state, this criterion is not a definitive endorsement of the practices of these educational technology leaders.

Activity theory proved a useful model for understanding the context of teachers in their adoption of technology enhanced learning even though this context was analyzed from the perspective of district educational technology leaders based in the district office. One could

certainly argue that this type of analysis would be useful (even more complete) if it were based upon interviews with the teacher (as well as the principal, counselors, students, and parents), but there is already ample research on the barriers to technology adoption from the teacher perspective. In addition, because teachers are often so engaged with their students in the classroom, they do not have time to consider or investigate why decisions are made in the district office, county, or state level. The educational technology leader, however, often has one responsibility and an ideal vantage point for understanding the machinations of both the district office and the school sites in terms of implementation of technology enhanced learning. Still, a case study involving all of the aforementioned stakeholders with value co-creation as the main construct, analyzed as activity, and expanded to examine the tertiary and quaternary contradictions would likely be a significant contribution to the body of knowledge on the adoption of technology enhanced learning.

Conclusions

This study shows that co-creation of value for technology enhanced learning could be a useful practice for fostering this change in pedagogy in California public schools and perhaps in all schools. It also showed that the co-creation of value can ease the tensions and contradiction that might exist in teacher adoption of technology enhanced learning. While service-dominant logic is primarily used in marketing to influence consumer behavior, this study suggests that it can also be used to change teacher behavior, especially when the construct of value co-creation is employed throughout the district and school systems to foster that change. Despite this observation, none of the educational technology leaders appeared to be aware of service-dominant logic or value co-creation as a strategy for effecting organizational change even though they regularly and intuitively employed the principles.

Educational technology leaders also sought to create value by increasing teacher capacity and including parents and community members in their adoption plans. They used traditional, job-embedded, flipped activities and coaching to personalize professional learning for teachers to lower the affective barriers and influence teacher beliefs relevant to adoption of technology enhanced learning. In addition, they often held showcases of student work to engage parents and the community to foster parent support for their efforts. Along with teacher training, some educational technology leaders built parent training into their plans so that the parents might have a better understanding of the technology many students were bringing home.

Tools were also an important value proposition for teachers. Educational technology leaders collaborated with other departments to create technology enhanced curricula that provided guidance and models for district teachers to follow. They also emphasized having the right tools for the job. This included the teacher device as well as vendor curricula that made effective use of the unique affordances of information and communications technology to facilitate instruction and maximize student learning.

All the participants made some effort to give district stakeholders a voice in the district technology plans. They used surveys, held open meetings, created advisory groups, and trained in cohorts so that they might hear the concerns and recommendations of teachers and other stakeholders in their implementation of technology enhanced learning. Most sought to build open and productive relationships with all stakeholders to help them feel they have a part in the educational technology plans. These types of behavior were among the clearest examples of value co-creation. This sharing and openness also facilitated the educational technology leaders' opportunities to offer their own experience and expertise to other district stakeholders to help set a beneficial direction for their technology enhanced learning plans.

Concerning stakeholder salience, legitimacy was the characteristic that garnered the most responses from educational technology leaders. This was especially true to teachers, students, and parents, but also included district and site leaders. The needs of these stakeholders were evident, and the educational technology leaders acted to respond to those needs. District leaders such as superintendents, executive cabinet, and union leadership had more than one salience characteristic, but legitimacy was often the characteristic addressed in the responses of educational technology leaders. At times, however, powerful stakeholders may usurp the legitimate claims of less powerful stakeholders to be included in the decision-making process.

Implications of This Study for Practice.

The results of this study have several implications: This study suggests that a framework for implementing technology enhanced learning that includes the understanding of value co-creation in service-dominant logic (Vargo & Lusch, 2016) might be a useful tool for educational technology leadership in implementing and sustaining effective technology enhanced learning cultures in California schools. Another implication of these findings is that value-in-use should be used along with a purposeful variety of other value propositions to sustain technology enhanced learning in a school district. This suggests that educational technology leaders would benefit from a deeper understanding of value and value propositions to foster the changes stakeholders agree are necessary in district systems and teacher pedagogy. By understanding the expressed needs of stakeholders and making the appropriate value propositions, educational technology leaders who make those value propositions build the collaborative structures and create the boundary objects necessary to motivate change.

Finally, while pairing technology enhanced learning with other urgent initiatives such as common core, equity, or the next popular or state mandated initiative may be necessary to keep

technology enhanced learning in focus, some participants in this study found that when funding or attention dissipated for those initiatives, so too did the funding and support for technology enhanced learning. While it's likely that technology enhanced learning will remain applicable to any future initiative, a better strategy might be to make technology enhanced learning the norm and all other fleeting initiatives fit into it. This is likely to require a shared vision and mission that prioritizes technology enhanced learning and a firm understanding of the needs of district leaders and board members to make the appropriate value propositions for these district leaders.

Recommendations for Further Research

Den Ouden's (2012) value framework proved very valuable in constructing this study. It was, however, designed for a wider context than a school district. An education value proposition framework that translates the economic and ecosystem aspects into features that more closely match educational contexts could improve this methodology considerably. Working to create and validate such a model to be used in conjunction with the axioms of service dominant logic should prove to be a powerful tool for fostering adoption of innovation in schools.

Furthermore, an empirical means of identifying common or persistent needs of school district stakeholders would also be helpful in designing value propositions appropriate for those stakeholders, yet such research appears to exist only by position (i.e. superintendent, principal, support personnel). A needs profile of school and district personnel could prove valuable in the co-construction of value propositions for these stakeholders.

This study used activity theory to examine teacher adoption of technology enhanced learning with the teacher as the subject. Some may believe that due to the second-hand nature of some of the information affecting the teacher in this method, a valuable perspective might be with the educational technology leader as subject and adoption of technology enhanced learning

as the object. The study could also include the neighboring activity systems to obtain a much richer perspective on the adoption of technology enhanced learning regardless of who is identified as the subject.

Other recommendations for further research to understand technology adoption are as follows: How might similar data collected from teachers and other stakeholders affect the conclusions? Would a complete case study be elucidating? How much does the educational technology leader affect adoption of technology enhanced learning? In what ways do vendor sponsored curriculum undermine teacher creativity and personal accountability for improving educational outcomes for California students?

Closing Thoughts

Many innovation models and frameworks begin with empathizing with the end-user, and activity theory provides a credible means of examining and understanding the teacher and the teacher's context. For those educational technology leaders in this study who demonstrated some degree of empathy by listening to the needs of teachers and even students early and often in the planning process, it's not surprising that those educational technology leaders enjoyed more cooperation from teachers. Despite this reality, in the urgency of complying with external accountability measures, districts and sites often seem to allow this vital step of empathy to be overlooked. Activity theory also asks us to consider the primary contradiction that is present in every element of the system. That is the tension between the use value for the producer and the commercial value of each element in the system. Too often, due to the deep well that is public education, this contradiction is manifested in vendor products being oversold and underused. Perhaps these funds could be better used to build the capacity of teachers to understand TPACK

more deeply and to fund more time for teacher planning so that they can design learning experiences that are relevant for the unique populations that each individual teacher serves.

I had a long history in retail management before becoming a teacher. Perhaps the customer wasn't always right, but I sure wanted them to feel that way. They were supposed to leave my stores with what they felt they wanted and intending to return. Certainly, information and communications technology has disrupted that experience, forcing retailers to make new value propositions or suffer diminishing returns from a diminishing client base due to the popularity of online shopping. A similar convenience is available for our students, and it has already been shown that many students leave our schools not feeling they got what they came for and not wanting to return. Making learning relevant, engaging, and intellectually stimulating in such a way that our students look forward to coming back is the job of our teachers. Equipping teachers with the time, training, tools, and physical surroundings that they believe are necessary is what the co-creation of value for technology enhanced learning is all about. For state, district, and site level leaders, products, processes, and procedures should be pursued only if they have value. Value perceptions are influenced through marketing and education, but value is determined by the end users, our teachers, not the providers.

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APPENDIX A

Distributed Leadership Model

Distributed Leadership Model (Jones, Hadgraft, Harvey, Wollongong, Lefoe and Ryland, 2013)

DOMAIN	SCOPE	ELEMENTS	GOOD PRACTICE DESCRIPTOR
ENGAGE	Distributed leadership engages a broad range of participants from all relevant functions, disciplines, groups and levels. This includes formal leaders, informal leaders and experts.	Formal leaders (academic and professional)	Formal leaders proactively support initiatives through attendance at meetings, publication of activities and other sponsorship activities.
		Informal leaders	Staff participate in learning and teaching enhancement and are recognised for their expertise through good practice.
		Discipline experts	Academics from relevant disciplines contribute their discipline expertise to initiatives either through self- nomination or peer nomination.
		Functional experts	Professional staff contribute their relevant functional expertise to initiatives either through self-nomination or peer nomination.
ENABLE	Distributed leadership is enabled through a context of trust and a culture of respect coupled with effecting change through collaborative relationships.	Context of trust	Decisions made in initiatives are based on respect for and confidence in the knowledge, skills and expertise of academics and professional staff in addition to the relevant rules and regulations.

(continued)

DOMAIN	SCOPE	ELEMENTS	GOOD PRACTICE DESCRIPTOR
		Culture of respect	Decisions made in initiatives are shared between all participants based on their expertise and strengths.
		Acceptance of need for change	Initiatives combine formal leadership authority, relevant rules and regulations and the expertise of staff in an integrated top-down, bottom- and middle-up approach.
		Collaborative relationships	Participants in initiatives are provided with professional development opportunities as well as experienced facilitators and mentors to encourage collaborative decision making.
ENACT	Distributed leadership is enacted by the involvement of people, the design of processes, the provision of support and the implementation of systems.	Involvement of people	Initiatives identify and encourage the participation of experts from among all relevant academic and professional staff.
		Design of participative processes	Communities of practice and other networking opportunities are encouraged and supported.
		Provision of support	Space, time and finance for collaborative initiatives are provided.
		Integration and alignment of systems	Systems are aligned to ensure that decisions arising from initiatives are integrated into formal policy and processes.

(continued)

DOMAIN	SCOPE	ELEMENTS	GOOD PRACTICE DESCRIPTOR
ASSESS	Distributed leadership is best evaluated drawing on multiple sources of evidence of increased engagement collaboration and growth in leadership capacity.	Increased engagement	Performance review processes acknowledge individual engagement in initiatives.
		Increased collaboration	Data (such as university cultural surveys; collaborative grant applications related to learning and teaching enhancement; and collaborative publications) identify evidence of increased collaborative activity between staff.
		Growth in leadership capacity	Participation in initiatives is recognised and rewarded.
EMERGENT	Distributed leadership is emergent and sustained through cycles of action research built on a participative action research methodology	Participative action research process	Encourages participation through cycles of activity underpins the [illegible]
		Reflective practice	Reflective practice is built into initiatives as a formal practice and stage of the initiative.
		Continuous improvement	Output from each stage of the initiative will be sustained.

APPENDIX B

Invitation to Participate

Dear [Name],

My name is Steven Hickman, and I am a doctoral candidate in the Graduate School of Education and Psychology, Learning Technologies program at Pepperdine University. I am conducting a research study examining the experiences of educational technology leaders in creating value for technology enhanced learning in California public schools, and you are invited to participate in this study because you are a district educational technology leader in a California district that has received significant recognition for your district's integration of technology into learning and instruction. If you agree, you would be participating in a semi-structured interview concerning your efforts to foster teacher adoption of technology enhanced learning which is loosely defined as the effective ways in which teachers use information and communications technology to foster student creativity, collaboration, critical thinking, and communication and/or how teachers use technology to personalize or deepen student learning in ways that are likely not possible without the use of the technology. Your contribution to this research project could help to establish or validate a model that could aid in the adoption of sound practices for educational technology leadership and teacher adoption of technology enhanced learning.

Participation in this study is voluntary, yet as a token of my appreciation, those who participate in the study will receive their choice of a $25 Starbucks or Amazon gift card. The interview is anticipated to take no more than 90 minutes and will be completed using Zoom video and web conferencing software. The Zoom software will allow the interview to be completed privately, anywhere you have a reliable internet connection, and at your convenience. It will also be used to record the audio and video of the interview for later analysis.

Your identity as a participant as well as the organization you are employed by will remain confidential during and after the study. The scheduled interview can only be accessed with a unique passcode that I will provide, and the audio and video files from the interview will be saved on a password protected computer. If you are willing to participate in this research project, please use the link below to complete the 5-minute demographic survey using Pepperdine's secure Qualtrics online survey tool. This information will be used to better understand the context of your technology integration efforts. The data from the survey and the recorded audio and video files will be stored separately and interview participants will be asked to use pseudonyms during the interview. No personally identifiable information about interview participants or their school districts will be shared with anyone not essential to the completion of this dissertation project. All interview data will be destroyed within six months after the final dissertation defense.

If you have questions, please contact me at [redacted] If you would like to participate, please complete the 5-minute demographic survey or copy and paste the following link to your browser: http://pepperdine.qualtrics.com/jfe/form/SV_d57XR06kcg1Mbwp

Thank you for your consideration,

Steven B. Hickman

Doctoral Candidate
Pepperdine University
Graduate School of Education and Psychology

APPENDIX C

Informed Consent for Participation in Research Activities

PEPPERDINE UNIVERSITY

Graduate School of Education and Psychology

INFORMED CONSENT FOR PARTICIPATION IN RESEARCH ACTIVITIES

THE CO-CREATION OF VALUE TO ADDRESS STAKEHOLDER CONTRADICTIONS IN THE ADOPTION OF TECHNOLOGY ENHANCED LEARNING IN CALIFORNIA PUBLIC SCHOOLS

You are invited to participate in a research study conducted by **Steven B. Hickman, doctoral candidate, principal investigator, and Judith Kledzik, Ph.D., faculty advisor,** at Pepperdine University, because you are an educational technology leader of a district that has gained public recognition for your technology integration efforts. Your participation is voluntary. You should read the information below, and ask questions about anything that you do not understand, before deciding whether to participate. Please take as much time as you need to read the consent form. You may also decide to discuss participation with your family or friends. If you decide to participate, you will be asked to sign this form. You will also be given a copy of this form for you records.

PURPOSE OF THE STUDY

The purpose of the study is to understand the ways in which district educational technology leaders create value with district stakeholders in order to deepen and enhance student learning through teacher and student use of information and communications technology. The study also seeks to understand which stakeholder value claims are given priority by the educational technology leader and why.

STUDY PROCEDURES

If you volunteer to participate in this study, you will be asked to complete a demographic questionnaire in order to better understand you and the context in which you perform your duties as an educational technology leader. You will also be asked to participate in a 45 - 90 minute online interview with Steven Hickman, the principal investigator. This online interview will ask about your experiences as an educational technology leader and your interaction with various district stakeholders to achieve your goals for technology integration in your school district. If you are willing, the principal investigator would like to share the results of his analysis of the interview data collected from you to verify its accuracy. This meeting would also be conducted online, and it should take approximately 30 minutes within two-weeks of the initial online interview. This follow-up meeting, however, is your option and is not essential to the study design.

Both the audio and video of this interview will be recorded using Zoom video conferencing software and both forms of data collection are essential to the design of the study. All data collected in the interview will remain in the principal investigator's possession and all published information will be de-identified so that no personally identifiable information will be disclosed during this study or in its publication.

POTENTIAL RISKS AND DISCOMFORTS

The risks and discomforts associated with this research are minimal due to the non-intrusive nature of the interview. The potential and foreseeable risks associated with participation in this study include loss of time, boredom, and inconveniences. You are free, however, to withdraw from the interview at any time, if that is your desire.

POTENTIAL BENEFITS TO PARTICIPANTS AND/OR TO SOCIETY

While there are no direct benefits to the study participants, there are several anticipated benefits to society which include:

- Opportunities to reflect on your practice as an educational technology leader
- Sharing successful practices with the educational technology community
- Contributing to the body of knowledge on value creation for technology enhanced learning

PAYMENT/COMPENSATION FOR PARTICIPATION

You will receive a $25 Starbucks or Amazon gift card as a token of the principal investigator's appreciation for your time and allowing your interview data to be used in this study.

CONFIDENTIALITY

I will keep your records for this study anonymous as far as permitted by law. However, if I am required to do so by law, I may be required to disclose information collected about you. Examples of the types of issues that would require me to break confidentiality are if you tell me about instances of child abuse and elder abuse. Pepperdine's University's Human Subjects Protection Program (HSPP) may also access the data collected. The HSPP occasionally reviews and monitors research studies to protect the rights and welfare of research subjects.

The online tool used for the demographic survey will be Qualtrics, and it uses security methods that keep the collected data secure. The tool also has restricted access so that only those with permission protocols can review the data and related information. No information will be shared with anyone not essential to the design and completion of this research study. The raw interview data will be stored on a password protected computer in the principal investigators place of residence. The audio data collected will be transcribed by a company that has established processes in place to ensure the information is kept secure, and those transcripts will be de-identified by the principal researcher and stored separately from the raw audio data. The raw audio data, video data, and the demographic survey data will be destroyed within 6 months after the defense of the dissertation.

SUSPECTED NEGLECT OR ABUSE OF CHILDREN

Under California law, the researcher(s) who may also be a mandated reporter will not maintain as confidential, information about known or reasonably suspected incidents of abuse or neglect of a child, dependent adult or elder, including, but not limited to, physical, sexual, emotional, and financial abuse or neglect. If any researcher has or is given such information, he or she is required to report this abuse to the proper authorities.

PARTICIPATION AND WITHDRAWAL

Your participation is voluntary. Your refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study.

ALTERNATIVES TO FULL PARTICIPATION

The alternative to participation in the study is not participating or answering only the questions which you feel comfortable.

INVESTIGATOR'S CONTACT INFORMATION

You understand that the investigator is willing to answer any inquiries you may have concerning the research herein described. You understand that you may also contact the people listed below if you have any other questions or concerns about this research.

Principal Investigator
Steven Hickman
[redacted]

Faculty Advisor
Judith Kledzik
[redacted]

RIGHTS OF RESEARCH PARTICIPANT – IRB CONTACT INFORMATION

If you have questions, concerns or complaints about your rights as a research participant or research in general please contact Dr. Judy Ho, Chairperson of the Graduate & Professional Schools Institutional Review Board at Pepperdine University 6100 Center Drive Suite 500 Los Angeles, CA 90045, [redacted]

APPENDIX D

Participant Contact and Context Survey

Q1 What is your first name?

_____

Q2 Have you been in your position as an educational technology leader for at least 12 months?

O Yes (1)

O No (2)

Q3 Your phone number xxx-xxx-xxxx (cell preferred)

_____

Q4 Approximately how many students are in your school district?

O Less than 10,000 (1)

O 10,001 - 25,000 (2)

O 25,001 - 50,000 (3)

O More than 50,000 (4)

O More than 100,000 (5)

Q5 Type of public school district?

O Elementary (1)

O K-8 (2)

O High School District (3)

O K-12 (4)

Q6 Choose the option that best describes the type of technology initiative in your district?

O one-to-one (Student take home devices) (1)

O one-to-one (class sets of devices. Devices not taken home) (2)

O Bring your own device (3)

O Online school (4)

O Blended learning (5)

O Other (6)

Q7 Number and types of positions on your team (including you)?

Full time Administrators (1)

Full-time certificated (2)

Full-time classified (3)

Certificated stipend positions (4)

Q8 By type of school, approximately how many schools are in your school district?

Elementary (1)

Middle School (2)

High School (3)

APPENDIX E

Topic Guide

This purpose of this topic guide is to allow you to gather some thoughts around our upcoming interview. As you share you experiences in this interview, please remember that there are no right or wrong answers. I am simply asking you as a district educational technology leader to relay your own experiences as you have lived them. Here are some things to think about for our upcoming interview:

- Your goal for technology use in the classroom and how you have worked to achieve it.
- The stakeholders that were critical to the success of your technology integration plans
- The difficulties that you encountered in achieving your technology integration plans
- The role of value in enlisting stakeholder support
- The programs, tools, and interactions that are sustaining stakeholder support.

The story of your experience with issues such as these will produce a very fruitful interview. Here are some more details for the interview:

- Please allow up to 90 minutes for the interview.
- Please try to take the interview from a comfortable, distraction-free location with a broadband internet connection.
- The date and time for your interview is:
- The URL for your interview is: _____
- The password for your interview is: _____
- If you are not familiar with the Zoom Conferencing Platform, please a few moments to familiarize yourself with it here: https://support.zoom.us/hc/en-us

APPENDIX F

Verbal Consent and Interview Protocol

Verbal Consent and Interview Protocol

Ground Rules:

Thank you for agreeing to participate in this interview. You were invited share your experience with educational technology in a public education environment because you led a district effort that has achieved significant organizational recognition for what you've accomplished with technology, instruction, and student learning. As you share your experiences, insights, and ideas today, I want to assure that everything you say to me will be kept confidential and that no personally identifiable information will be shared with anyone or in my final dissertation. Also, you are free to end the interview at any time and request that your interview data not be used in this research. You received an informed consent letter after agreeing to this interview. Do you have any questions regarding that document? [Wait for answer].

Both the video and audio of this interview will be recorded. No actual images from the interviews will be shared in the research, but just to ensure anonymity, please ensure no personally identifiable information shows in the video. If you choose to use names of persons or schools, they will be changed in any quoted information shared in the research document. The recording will be downloaded onto my password protected device and only I and those essential to the completion of this dissertation project will have access to the recording.

During the interview, please keep the video on so that, as much as possible, we can approximate face-to-face interaction. Do you agree participate in the interview? I will ask next question again once the recording starts, but do you agree to be recorded? [On yes] I have begun recording.

–Start Recording–

Just to verify, you have given permission to record this interview. Is that correct? Thank you.

The primary question in my research is "What have been the experiences of successful district educational technology leaders in identifying, prioritizing, and creating value for stakeholders in teacher adoption of technology enhanced learning in California public school districts?" When I say value, I'm referring to any type of value proposition with specific stakeholders (for example, increased efficiency, moral purpose, solution to a problem, and so on) to enlist their support or cooperation in your efforts to foster teacher adoption of technology enhanced learning. When I say technology enhanced learning, I mean to describe the effective ways in which teachers use information and communications technology to foster student creativity, collaboration, critical thinking, and communication and/or how teachers use technology to personalize or deepen student learning in ways that are perhaps are not possible without the use of the technology. This could be in a BYOD, one-to-one, blended, or on-site use of teacher and student technology. Whatever model your district or specific sites have implemented, the focus is intended to explore how you identified the stakeholders that might influence teacher adoption of technology enhanced learning and how you influenced those stakeholders.

(continued)

During the interview, I may ask follow up questions to clarify my understanding or explore specific themes, but for the most part, my intent is simply to allow you to share your experience as comfortably and completely as you can in the time allotted. I plan to end this interview at: [within 90 minutes of the start]. Do you have any questions with what I've shared so far?

I will now begin with the first question.

APPENDIX G

Interview Questions

Interview Questions

Addressed	Fully Addressed	Question	Theoretical Construct
❑	❑	1. Describe your path to your current position and the motivations that brought you to this point in your career?	Identity Historical context
❑	❑	2. As you examine your role and your goals within your district, please explain how you see your role in the organization and some of the things you are trying to accomplish in the organization?	Identity Object-oriented behavior
❑	❑	3. Describe some examples of teaching and learning with technology that you have observed from exemplary to ineffective. a. What were some of your reactions? b. In what ways could the teaching and learning have been improved?	Technology enhanced learning Leadership
❑	❑	4. Please walk me through the ways in which you influence stakeholders to actively support the goals you have for technology use and student learning in your district. a. Who are the specific stakeholders? b. Can you share your experience with specific stakeholders?	Leadership Technology enhanced learning Stakeholder theory Value
❑	❑	5. Describe the people and their roles that were most essential to your efforts to implement or sustain technology enhanced learning in the classroom? a. What are some qualities that made these stakeholders so important?	Stakeholder theory Stakeholder salience

(continued)

Addressed	Fully Addressed	Question	Theoretical Construct
❑	❑	6. In what ways have you listened to the needs of stakeholders as pertaining to technology enhanced learning?	Value Leadership
❑	❑	a. What did you find out?	
❑	❑	7. Describe some of the difficulties you have experienced in having teachers change the way they teach with technology?	Contradiction
❑	❑	a. In what ways did you try to reconcile those conflicts?	
❑	❑	8. Describe some the difficulties you've experienced with other stakeholders in achieving the changes in teaching that you would like to see.	Contradictions Stakeholder theory Activity theory
❑	❑	a. In what ways did you try to reconcile those conflicts?	
❑	❑	9. Given your experience in dealing with stakeholders in the public school system, what two pieces of advice might you offer district educational technology leaders wanting to implement technology enhanced learning?	Stakeholder theory Leadership
❑	❑	10. In the interest of accuracy and validity, once I've analyzed the interview, I'd like to share with you the themes that emerged from our conversation. Is that something you would interested in?	Validity and reliability
❑	❑	11. Can you think of other California educational technology leaders who have been recognized by educational technology organizations that might be interested in exploring the topic of creating value for technology enhanced learning?	Snowball sampling
❑	❑	a. If you're comfortable doing so, please share with me their district and contact information.	
❑	❑	b. You can also email me that	

(continued)

(continued)

	information using the Pepperdine email address through which I have been contacting you.

APPENDIX H

Invariant Constituents not Included in A Priori Analysis

Invariant Constituents not Included in A Priori Analysis

Invariant constituents	Emergent codes	Actual Example from Interviews
Alignment	Synergy/ Coherence Alignment Collaboration	And we did three full days together over the course of three months. So we met once a month for three months where we each had a lot of work to do in between and our goal was a couple of things. Our goal was to create technology-integrated pacing guides that would be aligned with our curriculum for third through fifth grade, which we now have.
Trust	Trust Reliability	What our teachers really value is does it ... When I turn it on every day, is it going to work? And if it doesn't work, how long does it take to fix? And how often do I have to fix it? (P1)
Relationships	Communication Relationship Building Values	I'm just trying to be involved with my teachers to kind of connect with them on a more personal level and not just have them be the faceless email names that I interact with but to actually visit the school sites and interact with them in person and get an understanding of what it is that they're doing in their classrooms, what's working well for them, what's not working for them, what they would like to do, what their concerns are with the way certain things are set up or aren't set up (P2)
Belonging/ Inclusion	Inclusion	…we had a couple of meetings on different topics as we built our plan and in every case it was open to the entire district, any teachers or non-instructional staff who wanted to join could. We also included a couple of parents and students from our middle school who were suggested by the principal there as being ones who could come and add to that conversation but more than anything it was probably having the teachers and having their feedback and hearing their concerns and hearing their ideas about what's happened previously in this district and what they wanted to see happen in this district was really I think important (P2)

(Continued)

Invariant constituents	Emergent codes	Actual Example from Interviews
Teacher Collaboration	Collaboration	I also think that the evolution from that has been that as you share teaching strategies, you suddenly find out, "Hey, it's okay if the language arts teacher talks to the math teacher," for crying out loud. That you figure out, together, what you can do as a team, so that when you're learning something in one class, that you can transfer that knowledge to the other class, and there's a cohesiveness to it. You're no longer learning in groups, and silos, and blocks, it all comes into one unit (P3)
Support	Coaching Models Professional Learning	we really focus on our data-driven, blended learning plus PBL model, and within that, we have three pedagogical shifts that we really look at. We look at moving... teachers and students up the SAMR model; we look at student-centered learning, and we look at the four Cs (P4).
Expertise	Expertise	I disagreed based on my experience and so that was something that as we were going through this process, it wasn't that it was not a device that could meet the needs of our students but that it was a device that had a lot of other potential challenges that we needed to consider as part of the overall plan (P2)
TEL	Novelty Goal Pedagogy Relevance TEL	So even if your reading instruction is at a lower level, making sure that kids are listening to the books at their level to then be prepared to have the conversations when they meet in book groups with kids and with other kids or be a part ... So some really strategic work in terms of using audiobooks to give kids access to grade level material for kids who are reading below grade level would be one (P5).
Community	Community	…what makes that special is when you show parents and families that you care, as a district, and you constantly keep them informed. That when you go to the ballot box to ask for a bond, they step up to the plate and they pass the bond. We've passed two bonds where we see districts around us struggle just to pass one bond…. Part of it is everybody's got a stake in our community (P3).

(Continued)

Invariant constituents	Emergent codes	Actual Example from Interviews
Educational Technology Leadership	Leadership Scale/ Ubiquity Strategies Synergy/Coherence	whatever it is that they're trying to utilize in terms of our adopted technology, that's my job to support that. But also looking at researching current trends in the industry and looking at best practices for adoption of technology, and best practices for effective instruction and using the technology in meaningful ways in the classroom versus just using tech to engage the students because we think they'll be more engaged if they have a device in their hands (P6).
Strategy	Strategy Role Breakthroughs	My role has really been about the structures that need to be in place and the pedagogical shifts that need to be in place in order to use technology effectively in the classroom (P4).
Professional Learning	Professional Learning	And so, what I've learned really over the last couple of years, because I've been doing technology staff development for over 10 years now, and what I learned over these past two years is that job embedded professional learning is much more effective than bringing teachers together for a face to face (P6).

APPENDIX I

IRB Approval Letter

PEPPERDINE UNIVERSITY

Seaver College Institutional Review Board

November 10, 2017

Protocol #: 17-07-584

Project Title: The Co-creation of Value to Address Stakeholder Contradictions in the Adoption of Technology Enhanced Learning in California Public Schools

Dear Steven:

Thank you for submitting your application, *The Co-creation of Value to Address Stakeholder Contradictions in the Adoption of Technology Enhanced Learning in California Public Schools* for exempt review to Pepperdine University's Institutional Review Board (IRB). The IRB has reviewed your submitted IRB application and all ancillary materials which was a study original submitted an approved by the **IRB**. Upon review, the IRB has determined that the above entitled project meets the requirements for exemption under the federal regulations (45 CFR 46 - http://www.hhs.gov/ohrp/humansubjects/guidance/45cfr46.html) that govern the protections of human subjects. It is Pepperdine University's IRB belief because there is little to no risk to the subjects and children are not being recruited to participate, therefore, this study qualifies under section **45 CFR 46.101(b)(2)** which states:

> (b) Unless otherwise required by Department or Agency heads, research activities in which the only involvement of human subjects will be in one or more of the following categories are exempt from this policy:
>
> **Category (2) of 45 CFR 46.101**, research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: a) Information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and b) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

In addition, your application to waive documentation of informed consent has been **approved**.

Your research must be conducted according to the proposal that was submitted to the IRB. If changes to the approved protocol occur, a revised protocol must be reviewed and approved by the IRB before implementation. For any proposed changes in your research protocol, please submit a **Request for Modification Form** to the IRB. Because your study falls under exemption, there is no requirement for continuing IRB review of your project. Please be aware that changes to your protocol may prevent the research from qualifying for exemption from **45 CFR 46.101** and require submission of a new IRB application or other materials to the Institutional Review Board.

A goal of the IRB is to prevent negative occurrences during any research study. However, despite our best intent, unforeseen circumstances or events may arise during the research. If an unexpected situation or adverse event happens during your investigation, please notify the IRB as soon as possible. We will ask for a complete explanation of the event and your response. Other actions also may be required depending on the nature of the event. Details regarding the timeframe in which adverse events must be reported to the IRB and the appropriate form to be used to report this information can be found in the *Pepperdine University Protection of Human Participants in Research: Policies and Procedures Manual* (see link to "policy material" at http://www.pepperdine.edu/irb/graduate/).

Please refer to the protocol number denoted above in all further communication or correspondence related to this approval.

On behalf of the IRB, we wish you success in this scholarly pursuit.

Sincerely,

Institutional Review Board (IRB)
Pepperdine University

cc: Dr. Lee Kats, Vice Provost for Research and Strategic Initiatives
Mr. Brett Leach, Regulatory Affairs Specialist
Dr. Judy Ho, Graduate School of Education and Psychology IRB Chair

APPENDIX J

Top 25 A Priori Codes for All Six Cases

Top 25 A Priori Codes for All Six Cases

#	Code	Total	% of codes
1	User/Experience	126	33.1%
2	Organization/Psychology/Core Values	46	12.1%
3	User/Sociology/Belonging	26	6.8%
4	Society/Psychology/Well-being	22	5.8%
5	Motivational values/Achievement	19	5.0%
6	Ecosystem/Ecology/Sustainability	18	4.7%
7	Ecosystem/Psychology/Shared Drivers	18	4.7%
8	User/Psychology/Happiness	13	3.4%
9	Organization/Sociology/Social Responsibility	9	2.4%
10	Organization/Doing well	8	2.1%
11	Ecosystem/Doing good	7	1.8%
12	Motivational values/Security	7	1.8%
13	Motivational values/Self-direction	7	1.8%
14	Society/Sociology/Meaningful Life	7	1.8%
15	Motivational values/Power	6	1.6%
16	Motivational values/Stimulation	6	1.6%
17	Relative Advantage	5	1.3%
18	Ecosystem/Economy/Stability	3	0.8%
19	Ecosystem/Sociology/Reciprocity	3	0.8%
20	Motivational values/Benevolence	3	0.8%
21	Motivational values/Universalism	3	0.8%
22	Organization/Ecology/Eco-Effectiveness	3	0.8%
23	Society/Transformation	3	0.8%
24	User/Economy/Value for Money-Investment	3	0.8%
25	Motivational values/Conformity	2	0.5%