TEACHER PERCEPTION OF PROJECT-BASED LEARNING IN A TECHNOLOGY-INFUSED

SECONDARY SCHOOL CULTURE: A CRITICAL CINÉ-ETHNOGRAPHIC STUDY

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Project-based learning has long been used in the educational realm as it emphasis a student-centered strategy which promotes meaning, enriched learning that enhances inquiry and problem-solving skills in a rich, authentic environment. The relevance and authentic design of projects may further be enhanced by the use of technology in the classroom. Technology is rapidly changing the face of American education in ways that were barely thinkable as little as five years before and provides the possibility for student to collaborate and complete complex project-based tasks with further level of authenticity which connects to the students preferred method of learning and productivity outside the classroom. At New Tech high school in Coppell, Texas, the entire curriculum is based around this project-based learning in a technology-infused classroom. This qualitative, case-based study is designed to explore and examine the teachers' perceptions of the use of project-based learning, technology in this non-traditional environment. The study also investigates the teacher perceptions of students' response to project-based learning and the technology available to them in their project-based tasks. Finally the study discusses the finding and their possible implications for traditional educational environments.

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CHAPTER 1

INTRODUCTION

Introduction to the Problem

One concept, not new to the educational realm, is project-based learning (PBL) and it connotes many definitions and images. This pedagogical model should not be confused with problem-based (pbl) learning, which is discussed later; PBL emphasizes student-learning experiences through projects. Advocates of PBL propose that this strategy promotes meaningful, enriched learning that enhances inquiry and problem-solving skills in a rich, authentic environment (Bransford, Brown, & Cocking, 2000). Thomas (2000) describes PBL as:

> Complex tasks, based on challenging questions or problems, that involve students in design, problem-solving, decision making, or investigative activities; give students the opportunity to work relatively autonomously over extended periods of time; and culminate in realistic products or presentation. (p. 1)

Capraro and Slough (2009) add that a project-based learning strategy starts with well-defined outcomes and clear expectations for the task to be completed through which, multiple solutions and pathways to completion are possible. Further, the teacher can further constrain the tasks to ensure and establish boundaries for learning.

The notion that particular projects encourage students to construct their own knowledge and understanding through hands-on activity is not new. That is to say, projects, in various formats, have been assigned to classroom students for years. What

is unique to the project-based learning approach is the set of criteria that has emerged

to successfully identify and characterize the term and distinguish it from more

traditional project-driven work that still takes place in the classroom. Several authors

including Thomas (2000), and Blumenfeld et al. (1991) offer basic qualifiers for PBL. First

and foremost, PBL projects central to any curricula in those projects are not secondary,

peripheral assignments. Further, they do not act as reinforcements for content; rather

PBL guides the content learning and exploration for the student (Blumenfeld et al.,

1991; Scarbrough et al., 2004; Thomas, 2000).

Second, PBL projects are driven by questions or problems that the students use

as a guide for their own independent investigations and these are expected to prompt

reflective thought and solution (Thomas, 2000). While PBL is not discovery learning per

se, the method employs the basic tenets of discovery learning that first formulated in

1960s. For example, with discovery learning the teacher assumes the role of facilitator

rather than "direct" teacher. Students are engaged in their own learning explorations as

they attempt to make sense of the problem presented to them. PBL projects are

designed to promote student hypothesizing and questioning thereby fostering a genuine

interest and curiosity in the subject. In discovery learning or any inductive learning

model, students are not passively receptive; instead, their learning requires activity.

Third, PBL projects emphasize the constructivist approach to exploration.

Constructivist educators believe that "knowledge cannot be transferred to a passive

receiver. It has to be constructed by every single knower" (von Glaserfeld, 1992, p.

171). It is theorized that as students engage in classroom projects and learn, each uniquely modifies his/her own cognitive structures through individual participatory investigation (Redish, 2003). Concepts become useful only when students are able to construct their knowledge in such a way that it becomes their own and this subsequently enables them to link prior learning experiences with new information (Kelly, 2000; Redish, 2003; von Glaserfeld, 1992). Warren, Najami and Wakefield (in press) argue that the different learning perspectives, such as social constructivism or Behaviorism, fail to "comprehend the holistic nature of reality and knowledge" (p. 5). That is to say, students do not "experience the objective world separate from the subjective or internal/relative cognitive states" (Warren et al., 2011, p. 5). They instead mix external, authentic experiences with a learner's subjective world represents a holistic approach that encompasses both inquiry and direct models of instruction. Warren et al therefore contend that a singular instructional model does not necessarily produce a better learning platform; rather, it is the blending of the views that makes the learning difference for the student. The authors further explain "learners do not experience the objective world separate from the subjective or internal/relative cognitive states (…) [instead,] it is clear that they instead experience all things at once and understand them in all their complexity and relationships concurrently" (2011, p. 5). Certainly, PBL embodies tenets of the social constructivist and information processing models, but it also fits within the framework of this Learning and teaching as communicative actions theory as presented by Warren et al. (2011); Wakefield, Warren

and Alsobrook (2011) ; and Wakefield, Warren, and Alsobrook, 2012; J Wakefield, Warren, and Alsobrook, (in press).

Fourth, PBL projects are mainly the responsibility of the student. This stems from the fact that there is no one best solution. Student approaches are thus open-ended; that is to say, the teacher does not package or script the information needed to complete the project (Blumenfeld et al., 1991; Thomas, 2000). In this model, each student functions independently of the teacher and in conjunction with peers. The instructor acts as a support for learning rather than as a purveyor of knowledge.

Fifth, PBL projects are student-centered rather than curriculum-driven. The intent of these activities is that their outcomes and experiences represent real, authentic challenges and are not simulations of the real world. As such, student-created products/solutions will have stronger meaning and importance to students while also having real consequences for failing to perform (Blumenfeld et al., 1991; Scarbrough et al., 2004; Thomas, 2000). Land and Zembal-Saul (2003) also contend that PBL allows for l student immersion into more complex, thought-provoking issues because problems/questions are authentic. The world is rich in natural and technological phenomena that are ripe for investigation and demystification. PBL provides a genuine context for students to attach their own reality with their prior experiences.

In addition, technology can be used to help students organize and review their thoughts and ideas regarding the project (Linn, 2000). This is consistent with the project-based learning model in that there is a need to use technology as a tool for

supporting learning. This stems from the fact that technology-based tools can facilitate

engagement and help make learning more natural, less frustrating, and less alienating

when they are used as appropriate scaffolds for student learning.

Statement of the Problem

Technology is rapidly changing the face of American education. Today,

information accessibility is nearly unlimited and this accessibility has impacted

education in ways that even five years ago would be unthinkable. Computers and other

technological tools have been integrated into the educational community. As with

anything progressive, technology has its critics. Among educators, there remains some

self-doubt that technology facilitates and promotes learning. The debate has raged for

years over the actual use of technology in the classroom citing high penetration but low

usage (Cuban, 2001).

Regardless of these claims, Robertson (2003) points out that technology is

enticing because it represents a possible answer to educational ills stating that:

> Information technology promises to deliver more (and more important) learning
> for every student accomplished in less time; to ensure "individualization" no
> matter how large and diverse the class; to obliterate the differences and
> disadvantages associated with race, gender, and class; to vary and yet
> standardize the curriculum; to remove subjectivity from student evaluation; to
> make reporting and record keeping a snap; to draw out reluctant and
> disinterested parents; to keep discipline problems to a minimum; to enhance
> professional learning and discourse; and to transform the discredited teacher-
> centered classroom into that paean of pedagogy; the constructivist, student-
> centered classroom. (p. 284-285)

At New Tech High School in Coppell, Texas, the entire school's curriculum is technology-supported. Each student has his or her own laptop and students are required to use this tool, in its various capacities, to complete their coursework. The accompanying curriculum is centered on particular projects designed by faculty and is modified through discourse with students. In this type of learning environment, technology is advantageous in that its web-based capabilities extend far beyond the printed word and associated symbols. In addition, courses at this high school are designed to promote the use of technological advancements through project-based learning assignments. The learning outcomes for each project include: content literacy, collaboration global citizenship, written communication, oral communication, professional ethics, and innovation and evaluation (www.coppellisd.com). The major distinctions that set this school apart from others lies in its cultural infrastructure combined with a technology-infused environment that promotes collaboration through project-based learning to enhance student interest, achievement, and success.

<div align="center">Purpose and Research Questions</div>

The purpose of this descriptive, case-based study was to examine four high school teacher perspectives on the functionality and feasibility of a technology-infused, project-based learning curriculum that forms the basis of their school's learning activities. Data for this study, in the form of teacher interviews and classroom observations, were filmed and later analyzed using critical ciné-ethnographic methods

(Warren & Gratch, in press). The primary research topics for exploration include the following:

1. Teacher perspectives on project-based learning in a technology-infused school culture.

2. Examples of typical teacher use of project-based learning in technology-infused classrooms.

3. Teacher perceptions of students' responses to project-based learning.

4. Students' use the technology available to them in their project-based learning projects.

Definition of Terms

For the purpose of clarification, the following definitions are included for the purpose of clarification throughout the study:

- Teacher perception – teacher viewpoints on various teaching strategies specifically project based learning and technology use in the classroom

- Technology-infused classroom – technology used through all levels of the classroom by teacher and students as a tool for communication and completion of project-based tasks

- Project-based learning – Experiential, often collaborative, learning activities with authentic application and a well-defined question to guide student activity

- Problem-based learning – Experiential, often collaborative, learning activities with authentic application and an ill-structured problem through which students must make their own meaning and decisions in order to completer the activity. Problem-based learning has an expected learning outcome—solving or providing a solution to a posed problem

- School culture as it pertains to project based learning and technology – Support structure designed to propagate and perpetuate the use of technology and project-based learning throughout the organization

- Communicative actions - Active linguistic communications among learners encourages a shared and personal understanding of activity

- Critical ciné-ethnographic– Combines the traditional ethnographic method of movie-based ethnographic research with the rigorous requirements of critical ethnography to create a research method that is both a holistic visual capturing of the subject/event and able to be analyzed through a critical lens.

Overview of the Dissertation

The second chapter of the dissertation discusses the literature on the relevant learning theory, constructivism and the development toward and influence on project-based learning, which is the primary instruction design method of the subject environment. The literature review begins with John Dewey's concept of "learning by doing" and proceeds to link this foundation of learning theory with constructivist theory and inquiry-based learning. Next, the literature review discusses project-based learning as used in education and examines the differences between project and problem-based learning as the two terms are often used incorrectly as interchangeable and synonymous by practitioner. The literature review then examines the use of technology in the classroom and the benefits for both student learning and PBL. Finally, the literature review examines teachers and project-based learning discussing the difference between teacher approaches for instruction -- inquiry vs. direct strategies and passive vs. active learning while connecting both to teacher beliefs.

Chapter 3 delves into the research methodologies, beginning with a discussion on the qualitative perspective and the decision to use a qualitative exploration for this

study as well as the limitations to qualitative methods. Next the chapter examines the

critical ciné-ethnographic methods that were used for data collection and analysis.

Chapter 4 looks at the results from the study. Chapter 5 presents the findings and

discusses the implications of the findings and suggests future research.

CHAPTER 2

REVIEW OF LITERATURE

Learning and Project-Based Learning

Learning occurs both purposefully and unintentionally as experiences and

explorations take place between the individual and the immediate, surrounding

environment. The definitions for learning vary from a few words of explanation to a few

hundred. Simply stated, learning is a change in behavior. Others refer to learning as an

acquisition of knowledge. In Gagne's (1977) words learning is "a change in human

disposition or capability, which persists over a period of time, and which is not simply

ascribed to processes of growth…[t]he change may be, and often is, an increased

capability for some type of performance" (p. 3).   Research confirms that learners

process information and learn best through experience (Byrnes, 1996; Eggen & Kauchak,

1992); this requires the learner to make connections between prior explorations and

new ones (Piaget, 1980). Thus, learning is created by the individual through subjectivity

of purpose (Kilpatrick, 1918; Saunders, 1992). John Dewey (1916) was one of the first

educators to espouse that learning is, in fact, doing. So adamant was he on his position

that he coined the phrase "learning by doing" (Dewey, 1916). In his book *Experience*

and Education (1938), Dewey repeatedly emphasizes the importance of participation

during the learning process; experience is essential to learning—part of his "learning by

doing" mantra. He firmly believed that learning was not a spectator sport; students

could not learn while receiving information from someone (e.g., teachers).   Other educators besides Dewey and Kilpatrick have echoed the sentiment that learning involves more than passive acquisition of knowledge, it involves activity (Kelly, 2000; Kelly et al., 2007; Mahmudi, 2011; Phillips, 1995; Saunders, 1992; Solomon, 2003). Kilpatrick (1918), who is recognized as being the first to advocate the use of projects in the classroom, also believed strongly in active, experiential learning, and he believed that incorporating student-driven projects was one way to accomplish this. Kilpatrick (1918) recognized the word was new to educational jargon. He professed, "The word 'project' is perhaps the latest arrival to knock for admittance at the door of educational terminology" (p. 319).

Project-based learning conforms to constructivist epistemology which maintains that individuals' views and understanding of the environment around them are based on an ongoing process of building and constructing knowledge through actual experience (Kelly, 2000; Saunders, 1992). According to Glaserfeld (1992), an advocate of constructivism, "knowledge cannot be transferred to a passive receiver. It has to be actively built up by every single knower" (von Glaserfeld, p. 171), thus making the case for the basic tenets of the theory.   Piaget (1980), who has been credited with founding the constructivist theory, "Knowledge does not result from a mere recording of observations without a structuring activity on the part of the subject" (p. 23). Of course, Kilpatrick (1918) would add that the aforementioned "structuring activity" could be in the form of a student project. As has already been stated by Dewey (1916),

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constructivists maintain that the learner utilizes prior knowledge to make sense of new

experiences, and thus build a foundation by connecting experiences from the past and

including the present. Individuals with depth and breadth of experiences are more likely

to grasp knowledge at higher levels of understanding and abstract thought.   Dewey

(1938) concludes:

> There is, I think, no point in the philosophy of progressive education, which is
> sounder than its emphasis upon the importance of the participation of the
> learner in the formation of the purposes which direct his activities in the learning
> process, just as there is no defect in traditional education greater than its failure
> to secure the active cooperation of the pupil in construction of the purposes
> involved in his studying. (p. 27)

Within the constraints of constructivism, actual activity is more likely to transfer to

learner understanding than the written word because words or symbols are not always

written as concrete facts or concepts. Also, without prior experience (i.e., knowledge

and understanding), learners do not necessarily benefit from reading words or listening

to them (Kelly et al., 2007). Printed words are best utilized when placed in a specific

context that requires a learner's prior knowledge (Gagne, 1977; Lowery, 1998).

Much of inquiry-based learning includes the basic tenets of constructivism.

Inquiry is an alternative teaching model to the traditional classroom direct teaching

model that is utilized widely in the schools. The inquiry model, which the project-based

learning strategy would adhere to, requires students to act independently in conducting

their research to solve a posed problem and present a solution. In this learning model,

the teacher acts as the facilitator rather than the instructor. Even so, much of inquiry-

based learning (including PBL) has become overly structured, and the solutions too

"pat" (Kelly et al., 2007). Critics of constructivism assert that this type of inquiry-based

learning is appropriate for those learners who have adequately mastered the basics of

understanding regarding the topic at hand; otherwise, when in a non-structured

learning situation, students without prior learning experiences have a more difficult

time making sense of the activity (Jonassen, 1997; Moreno & Mayer, 1999). Schank &

Cleave (1995) would agree with this supposition because their perspective is that

students do not always recognize what they need to know or even how to gain an

understanding of knowledge that will assist them in their pursuit of what they do not

know.

The different perspectives on learning, such as the direct teaching model, which

emerged from a positivist view, and the inquiry teaching model, which grew out of the

constructivist epistemology (or relativist), "fail to comprehend the holistic nature of

reality and knowledge" (Warren et al., 2011, p. 5). He and his colleagues (2011) assert

that learners (and teachers) do not experience the real world separately from the

internal (personal) world. Instead, they "experience all things at once and understand

them in all their complexity and relationships concurrently…" (p. 5). Thus, a learning

curriculum should not be designed from only a single perspective (in this case, the

constructivist example), rather curriculum should be created from a cohesive, coherent

plan. Much of Warren et al.'s (2011) viewpoint was influenced by the work of Jurgen

Habermas (1993) who believes that active communication between learners encourages

a shared understanding of activity. Warren et al. (2011) write:

> Within an utterance, speakers are in contact with the objective world, the social world, and their own subjective world concurrently. This creates a crux of intersubjectivity (position taking) where knowledge is viewed concomitantly as objective, subjective, and relative by speaker and hearer. It is this understanding that forms the basis for our theory of learning and teaching. (p. 11)

Rather, than focusing entirely on students building their knowledge and understanding independently (inquiry model) or receiving their knowledge from the teacher (direct teaching model), Habermas (1998) believes that there are main communicative actions that ensure student learning within self and with others. He identifies them as strategic actions, constative actions, normative actions, and dramaturgical actions. The type of actions used by the individual is dependent upon the type of learning to take place in the educational environment. The most common action, strategic, directs students to "do" something while constative action focuses on conversations between the speaker and listener. "Constative actions are geared towards allowing students to interactively and inter-subjectively make and challenge claims to the validity of objective and even subjective knowledge" (Warren et al., 2011, p. 16). By contrast, normative actions provide perspective from two sides: objective and the social world "where norms establishment is commensurate with legitimacy" (Warren et al., 2011, p. 16). Lastly, dramaturgical action concerns personal response/identity to an issue or perhaps a concern or even a presentation. Dramaturgical is open to interpretation by the individual. All four communicative actions are a part of the learning process, regardless of the epistemological perspective

In fact, Warren et al. (2011) submitted that their model for learning and understanding, learning and teaching as communicative actions, allows for a holistic approach to learning rather than focusing on one approach only. Essentially, "Learning and teaching, at their core, are communicative practices and that these must be present for instruction to be successful and meaningful" (p. 28).

Project-Based Learning

Many educators view project-based learning as a constructivist strategy (Ehrie, ALTED solutions.com, 2011; Steffe & Gale, 1995) because students are responsible for their own learning, and they must build, modify, and refine their own knowledge and understanding (of a topic). Of course, the importance of personal involvement and the value of students operating within their own contextual, experiential framework is one that has been espoused as having a positive impact on learning by Dewey, Kilpatrick, Piaget, Bruner, and others (Warren et al., 2011). However, Warren et al. (2011) would likely add that aspects of project-based learning align with the tenets of other learning theories as well as constructivism. For example, from the positivist or empiricist perspective, learning takes place "outside" the mind; it is takes place as a result of sense-intensive activities such as reading, listening, or observing. In PBL students perform such activities and are engaged in other experiences as they construct or build knowledge by developing their specific projects which result in a final product of some sort. In yet another scenario, it might be assumed that lecture, a direct teaching

approach (positivist perspective), would not fit anywhere in a constructivist model.
However, a teacher lecture followed by student activity and then class discussion lends
itself well to scaffolding, questioning, and hypothesizing, which in turn, allows for a
better understanding of the specific subject (Kelly, 2000).

Support for the use of PBL in the classroom has been growing over the years
because educators recognize the positive impact the approach has on learning. Many
regard PBL as a mechanism to promote more cognitively advanced learning tasks (Land
& Greene, 2000). Students begin by researching their project topic, and as their depth
of knowledge grows, so does their understanding, with the notion that curiosity and
interest increases with activity and experience (Land & Greene, 2000; Solomon, 2003).
In addition, according to Thomas (2000) and others (Ehrie, 2011; Solomon, 2003) the
effects of PBL on the learning process are enhanced because of the real-life connections.
Research on situated cognition shows that "learning is maximized if the context for
learning resembles the real-life context in which the to-be-learned material will be used;
learning is minimized if the context in which learning occurs is dissimilar to the context
in which the learning will be used" (Thomas, 2000, p. 7).

Lattimer and Riordan (2011) are PBL advocates who believe if PBL is planned and
implemented well, it is more successful in promoting student learning than the
traditional classroom environment. In their paper, Lattimer and Riordan (2011) have
reiterated the concerns of other educators: PBL "fails when the emphasis falls too
heavily on the "project" element of the title rather than on the 'learning'" (p. 18). For

successful PBL usage, the authors named six *As* from Steinberg's (1997) model of project

design. These six A*s* have been named by previous educators, and Lattimer and Riordan

(2011) have repeated them here: academic rigor, authenticity, applied learning, active

exploration, adult connections, and assessment practices. These six A*s* have been

presented and discussed in other research, although specific "A" usage may not be

listed. In other studies, Geier et al. (2008) reported that in some instances, PBL student

achievement is higher on standardized tests. But, perhaps, the real gain for students is

in the enhancement of their problem-solving abilities and critical thinking skills (Lattimer

& Riordan, 2011; Thomas, 2000).

   While PBL has its supporters, there are others who are not as positive about its

educational attributes. In one report, researchers note that there are so many

"practices" aligned with PBL that it makes the method problematic to assess, especially

when one of the differentiating qualities of PBL, authentic or real world application,

which is a major component of the PBL model, is missing (Thomas, 2000). In addition,

differences in PBL frequently outnumber similarities which makes it almost impossible

to generalize or compare/contrast them. Lastly, there are many methods that are

identified under the PBL umbrella, but possess few to no PBL characteristics; other

names should be used to label these "projects" (Thomas, 2000).

   Barron and colleagues (1998) believe that in using a true PBL model, with

authentic application, the importance of a well-defined question to guide student

activity is essential to any learning success. Often, ill-defined questions are often the

source of misguided engagement and inaccurate learning outcomes. Too, Blumenfeld

(1991) acknowledges that it is not uncommon for students to spend more time on the

project-activity rather than understanding and reflecting on what they have learned. In

other words, the activity or product becomes the priority rather than the learning itself.

Vygotsky's scaffolding certainly has a place in PBL because it is allows the students to

grow in the learning process as they become more knowledgeable about the subject or

project at hand. Scaffolding allows student and teacher to reflect upon the learning that

has taken place as the project unfolds and progresses from beginning to end. With

scaffolding in place, students are more apt to connect the learning experience with the

process rather than the project product (Barron et al., 1998). If project-based learning is

decontextualized from the situation or circumstance, it is sometimes difficult for the

student to make sense of the learning experience and "connect the dots" so to speak;

critics would argue that students do not always make the necessary connections with

their prior knowledge and experiences with the problem at hand (Land & Hannafin,

1997). Researchers have presented other concerns and issues with PBL that include

time management issues for both teachers and students as well as collecting,

organizing, and analyzing data in a systematic order (Barron et al., 1998). In addition to

student issues regarding PBL, many teachers are deeply entrenched in the direct teach

model which puts the teacher "in charge" of learning rather than the inquiry model that

puts the teacher in a facilitator role and the student responsible for his/her own

learning (Kelly et al., 2007; Ladewski, Krajcik, & Harvey, 1991). Further, assessment of

PBL projects is a difficult task for teachers because there is no "right or wrong" final

product, therefore grading can become highly subjective even with a rubric. Other

teacher-related issues with PBL involve classroom management and the lack of activity

restrictions during class time (students are involved in group activity rather than class

activity, thus there is more class disruption). Training students to use and integrate

technology into the projects sometimes poses another threat to successful PBL project

completion. Projects may require more technology expertise than students have, and

there is little time for teachers to train students on usage and implementation.

Thomas (2000) summarized several preventative techniques that will improve

PBL effectiveness: Change school climate to a meaningful, work-related environment

rather than a school environment; teach students inquiry skills prior to engaging them in

PBL; direct inquiry with teachers actively engaged with students as projects progress;

show students how to collaborate, communicate, and balance assignments with others

in a congenial, informed manner; and share and present acquired knowledge and

understanding of project with others in the class.

A Comparison of Project-based Learning and Problem-Based Learning

It is not uncommon for project-based learning to be confused with or substituted

for problem-based learning. However, the two are not synonymous. Capraro and

Slough (2009) describe PBL as "a well-defined outcome and ill-defined task" (p. 17)

contrasted with their descriptors for pbl: "context rich but textually and informationally

impoverished" (p. 17). Project-based learning has multiple learning outcomes possible, not all of them expected while problem-based learning has an expected learning outcome—that of solving or providing a solution to a posed problem.

Some educators believe that PBL is more expansive than pbl and often encompasses problem-based learning, because typically, in PBL, students are engaged in a wide range of experiences, including problem solving, that are gradually narrowed down to a focal area by the students (Capraro & Slouth, 2009). While project-based learning generates many questions and options for research, problem-based learning emphasizes solution(s) of a singular problem. The authors conclude, "PBL provides the contextualized, authentic experiences necessary for students to scaffold learning…" (Capraro & Slough, 2009, p. 13). They continued, "PBL requires students to think critically and analytically and enhances higher-order thinking skills. PBL requires collaboration, peer communication, problem-solving, and self-directed learning" (p. 13). Land and Greene (2000) stated that PBL cultivates the learning process because students must apply their past experiences to move to the next level of understanding. This is a reiteration of the constructivist premise that students must use prior knowledge to build upon and make connections with newly acquired understandings.

There are several different views of PBL and both have merit in the classroom. Moylan (2008) differentiated between two of the more commonly used approaches. He wrote:

One perspective emphasizes the students performing a teacher-facilitated

project, with the transformation from "teacher telling" to "students doing." The second perspective uses a teacher-guided project to involve the students in their own self-directed learning, while using a standard curriculum approach to lecture the students on course content. In both cases, the teacher is an *enabler* of learning, utilizing a hands- on approach to engage the student learning, which are the hallmarks of the Project-Based Learning criteria. (p. 287-288)

For the purposes of this study, it is appropriate to use PBL in both of the contexts mentioned; how frequently one PBL approach is used over another is dependent upon the teacher and the classroom environment.

Traditionally, PBL has lacked in terms of uniform description (Hmelo-Silver, 2004), although in recent years it would appear that more common threads have emerged to identify and describe project-based learning. Grant (2002) explained that PBL projects possess these basic characteristics. These include:

a. An introduction to "set the stage" or anchor the activity

b. A task, guiding question or driving question

c. A process or investigation that results in the creation of one or more sharable artifacts

d. Resources, such as subject-matter experts, textbooks and hypertext links

e. Scaffolding, such as teacher conferences to help learners assess their progress, computer-based questioning and project templates

f. Collaborations, including teams, peer reviews and external content specialists and

g. Opportunities for reflection and transfer, such as classroom debriefing sessions, journal entries and extension activities. (p. 2)

While he would likely agree with the PBL characteristics provided by Grant (2002),

Moylan (2008) would also further portray PBL outcomes in terms of skill development.

He has stated a belief that students engaged in PBL projects learn to think critically and creatively; problem solve; collaborate with others; understand others and their perspectives; communicate in an informed way; acquire new technology and computing knowledge; and explore possible future careers. Blumenfeld (1991) and Mahmudi (2011) would add that with PBL students also learn to think reflectively, pose and re-define their questions, and search for answers/solutions beneath the surface of the posed problem.

In contrast to PBL, problem-based learning (pbl) was initially developed as a model approach for medical students. The model was designed to help interns improve their diagnostic skills through working on "ill-structured problems."

> Medical students are introduced to a diagnostic problem, usually a patient with a complaint or illness. Using a database of information and test data about this patient and guided by a facilitator who plays the role of a coach or Socratic questioner, students are led to construct a diagnosis by generating hypotheses, collecting information relevant to their ideas (e.g., interviewing the patient, reading test data), and evaluating their hypothesis. (Thomas, 2000, p. 5)

The pbl model was so successful in the medical environment that other entities such as businesses, architecture, engineering, and education adopted the approach and incorporated it into internships and apprenticeships as part of the "on-the-job" training structure (Barron et al., 1998; Mills & Treagust, 2003; Thomas, 2000). As with project-based learning, probably the greatest strength of the problem-based learning model is that the dilemma/issue presented to the students relates to the real life dimension. Savery and Duffy (2001) point out that there are several reasons as to why posed

problems must be real-life:

> First, because the students are open to explore all dimension of the problem there is real difficulty of creating a rich problem with a consistent set of information. Second, real problems tend to engage learners more -- there is a larger context of familiarity with the problem. Finally, students want to know the outcome of the problem -- what is being done about the flood, did AT&T buy NCR, what was the problem with the patient. These outcomes are not possible with artificial problems. (p. 11-12)

When comparing project-based learning and problem-based learning, there are several other similarities that come to mind. First, both approaches are rooted in constructivist epistemology, and both require students to be responsible for their own learning, self-direct their experiences, and take control of their own explorations (Barron, 1998; Perrenet, 2001). Second, students must collaborate and work with others to research and/or resolve the issues (Barron, 1998; Perrenet, 2001). Third, problems and/or projects presented to students can be multi-disciplinary, although PBL lends itself better to this than problem-based learning (Perrenet, 2001). Fourth, both approaches lend themselves to scaffolding opportunities for the learner (Barron, 1998). Fifth, there are "frequent opportunities for formative self-assessment and revision" with both PBL and pbl (Barron, 1998, p. 273). The emphasis in both approaches is on "acquisition of content and skills…and to help students become aware of their learning activities so they may take on more responsibility and ownership of their learning" (Barron, 1998, p. 273).

According to Perrenet (2001) differences between the PBL and pbl are more obvious than are the similarities:

- Project tasks are more "real" than those in pbl (probably because project is multi-dimensional), and typically require more time to complete

- PBL is aimed at student application of knowledge rather than student acquisition of knowledge as in pbl

- PBL aligns more closely with subject-content courses/curriculum while pbl may or may not be subject-related

- Typically, PBL projects require more time than pbl, so time management, if not handled properly with PBL, may become a concern for teachers

- PBL usually requires task differentiations for students working on the project

While the two words have often been interchanged and named one for the other, project-based learning and problem-based learning are distinct in what each represents even though, as previously discussed, there are some similarities. Each has its place in the educational realm, but it would appear that project-based learning is gaining more momentum simply because of its depth and breadth approach.

Technology

Today's fast-paced world is bombarded daily with advancements in technology, and the push by some to "keep up" in this fast-paced arena. With regard to computers in the classroom, some believe that technology is the magic bullet to solve all educational ailments. Robertson (2003) had this to say about that "technology will fix everything" mentality:

> Information technology promises to deliver more (and more important) learning for every student accomplished in less time; to ensure "individualization" no matter how large and diverse the class; to obliterate the differences and disadvantages associated with race, gender, and class; to vary and yet

standardize the curriculum; to remove subjectivity from student evaluation to make reporting and record keeping a snap; to draw out reluctant and disinterested parents; to keep discipline problems to a minimum; to enhance professional learning and discourse; and to transform the discredited teacher-centered classroom into that paean of pedagogy; the constructivist, student-centered classroom. (pp. 284-285)

As with anything progressive, technology is viewed with both reverence and skepticism. Admittedly, technology is not a panacea for educational ailments, but it has earned a well-deserved place in the classroom. Technology is a recognized learning tool, but even so, students remain responsible for their own learning, and there is no doubt that technology enhances project-based learning. It offers students research opportunities that far exceed what might be available at a local library. Using technology, students are able to research, collect, and aggregate written and numerical data from Internet websites; they use computer word processing to create outlines, draft essays, and write reports; and they create charts and graphs. In addition, the Internet has become a social network for communication, and students use emails, Facebook, electronic mailing lists, voice and video over internet systems, and other online technologies to communicate and collaborate between group members.

According to Land and Green (2000) "It is increasingly important for learners to become sophisticated consumers of information" (p. 45), and what better source than the Internet for this material. The assumption is that technology, if used properly, becomes the student's talented, well-informed assistant, but it is no substitute for student effort and performance. At Napa New Technology High, as a part of the project-

based learning program, students compile their work electronically for an ongoing portfolio of their creations. At given points, they cull the best from this collection for adult and peer review to demonstrate their learning over time.

Within the last ten years, technology usage has become more and more prevalent in the classroom environment. Teachers typically view technology as a tool, something of a necessity for students, and critical to their learning process as well. However, there remain some teachers who still do not have the requisite skills and training to properly utilize technology in their own classrooms and are fearful of this change (Kelly et al, 2007).   That group of teachers may represent a minority in today's classroom, and if they are attempting to implement PBL into their classroom, they might find it a difficult process since much of PBL involves research, and the internet offers countless research opportunities for the student.

In project-based learning process, technology is a segue into (Internet) research and could be considered a "staple" to any worthwhile PBL endeavor. In today's world, technology has given PBL a much needed boost in: it provides research options to the student that were previously unavailable or inaccessible. In 2000, Land and Greene conducted a qualitative case study on project-based learning and the web. The educators discovered that the Internet provided students with useful research opportunities. However, the authors determined that there were some issues that manifested themselves that could affect the success of any PBL project if not addressed. First, students seemed too data-driven rather than goal-driven which defeats the

purpose of the project which is to use the research to scaffold and extrapolate; the idea

is that students will move beyond the data itself and make sense of it in a bigger

"picture." Land and Greene (2000) stated, "One explanation for the tendency of some

learners to depend on data-driven strategies is that traditional, materials-driven

curricula, for instance, inherently require the use of data-driven strategies to succeed"

(p. 61), so thinking becomes more singular in thought rather than global.   Second,

because of the vastness of the web resources, sometimes students oversimplified

findings or "added" more information than was necessary; there was difficulty

consolidating findings. Third, prior knowledge was critical for student ability to

systematically pull the research areas together and make sense of the material**;**

communicating with others and trying to assimilate was essential, but too often

students acted individual rather than working with others. In earlier work, Laffey and

colleagues (1998) reported similar findings to that of Land and Greene (2000):

> Project-based learning places demands on learners and instructors that
> challenge the traditional practices and support structures of schools. Learning
> from doing complex, challenging, and authentic projects requires
> resourcefulness and planning by the student, new forms of knowledge
> representation in school, expanded mechanisms for collaboration and
> communication, and support for reflection and authentic assessment. (p. 73)

Laffey et al. (1998) reported on the success of a computer-mediated support system

that assisted students in the process of doing a PBL project and also provided a

knowledge base for them as they conducted their research. The project-based learning

support system (PBLSS) that was used in this study is a software application that

"integrates a number of tools designed to assist students involved in investigations that closely parallel the work of real researchers" (Laffey et al., 1998, p. 75). In addition, the support system focused on student representation of work, both individual and group. This support system was capable of sharing information among members. This was viewed as a way to bring group collaborators together to share and learn from others. The reporting phase, both formative and summative, was relatively structured, and students had to adhere to a process, which they found cumbersome, and some did not do it. Laffey et al. (1998) maintained that students needed to complete the record of their work because it was a way to formally demonstrate thinking process: "It is the process that provides rich opportunity for discovery and learning, provides occasion for reflection and rethinking, and leads to observable, authentic outcomes useful in assessment" (p. 84). This finding is in agreement with Land and Greene's (2000) assessment that determined students were not as goal-driven as they should be; rather, they tended to focus on data-specific information. Both studies reflected encouragingly on the role of technology as a source of communication between and among students. Overall, Laffey et al. (1998) found that technology had a positive role in assisting students who were involved in project research. Admittedly, there were some issues with PBLSS, but the strengths outweighed the weaknesses that mostly related to implementation of the process itself.

Teachers and Project-Based Learning

Research tells us that we learn best by doing; thus, experience is the best teacher. However, the majority of teachers utilize the traditional classroom approach: They teach the way they were taught (e.g., lecture delivery of content intended for student memorization and regurgitation). Yet hundreds of studies have noted that classroom activities that move beyond lecture and rote memorization to encourage active participation of learners improves their understanding and retention of key concepts (Garet, 2001).

It was once acceptable thinking that teaching was a matter of transferring information from those who "know" to those who "don't know." In the past, this behavioral model of teaching was considered a prototype. However, in today's information age, knowledge and information are unlimited, and teaching must shift from a "presentation" model to one that actively engages students in exploring, retrieving, organizing, and efficiently processing the desired content. In this New Age, technology offers many options to teacher and student that were not available previously, thus active exploration and engagement is quite possible in any classroom environment.

Teacher beliefs affect the way a teacher teaches and engages learners. Keys and Bryan (2001) determined that teacher beliefs affect "(a) knowledge acquisition and interpretation, (b) defining and selecting the task at hand, (c) interpretation of course content, and (d) choice of assessment" (p. 635). Teacher beliefs influence whether

teachers will attempt new innovations in the classroom, and those beliefs are often

difficult to change. Professional development can make a difference in teaching

thinking if it is properly administrated. Through professional development, the teacher's

experiences and knowledge act as a framework upon which to build.   According to

Dawkins and Dickerson (2007), professional development in which a learning

community or collaboration develops can produce a positive, synergistic atmosphere for

content and pedagogical growth provided there is trust, support, and a common

purpose.

   With the advancement in professional development during the 1990s, PBL

gained attention from teachers because they were given opportunities during training

sessions to experience the approach themselves. According to educators, teachers must

learn about and experience project-based learning in order to implement it effectively in

their own classrooms (Krajcik et al., 1994; Richardson, 1998).   To effect teacher change,

particularly in the classroom, teachers should be involved in the actual planning,

process, and delivery (Richardson, 1998; Wolk, 1994). Krajcik et al. (1994) noted that

teachers must not only learn about PBL, they must try PBL for themselves. Richardson

(1998) wrote that the best teacher change involves teachers who are change agents

themselves, that is, they are a part of the developmental process. In addition, teachers

must be supported in making curricular changes, such as to PBL, through "collaboration,

enactment, and reflection" (Krajcik et al., 1994, p. 483). In another study involving

inquiry-based learning, an inductive model as is PBL, researchers similarly concluded

that teacher ability to connect with others and reflect on student action was important to the effectiveness of the engagement process (Keys & Bryan, 2001).

Project-based learning emerged in the early 1900s as a strategy intended to move students away from student passivity and toward active involvement in the learning process. The strategy evolved over time and has waxed and waned in teacher popularity. Part of the reason attributed to usage and non-usage of the approach relates to teacher understanding of what it takes to effectively implement PBL in the classroom. In addition, educators have not always been clear on the basic tenets of the strategy. After all, the assumption has been that "projects" and project-based learning are one in the same, and they are not. In Blumenfeld's et al. (1994) qualitative study, it was determined that teacher training changed the direction or thinking about project-based learning: "Teachers' foci changed from concerns with fidelity of enactments, to strategies for dealing with challenges of implementing project-based science, to beginning exploration of underlying theoretical premises and congruent practice" (p. 539). Their project found that using interactive hypermedia "can foster collaboration and assist teachers in learning about project-based instruction" (p. 539). Richardson (1998), based upon her own experiences, wrote that teacher training and peer collaboration contributed to changes in classroom teaching.

Barron et al. (1994) also found that teachers carried out the basic tenets of PBL in their classrooms effectively if they collaborated with their peers, university faculty, and content experts in the schools. It also helped if they planned as a group (eg., peers,

faculty, content experts), then implemented the PBL in their classrooms, and later

returned to discuss and share their PBL-classroom experiences with the same group. In

the same study, Barron et al. (1994) concluded that it was not uncommon for the

activities to disconnect from the PBL project question, thereby losing the point of the

experience for the student:

> Too frequently, however, the question that drives a project is not crafted to
> make connections between activities and the underlying conceptual knowledge
> that one might hope to foster. Although the opportunity for deep learning is
> there, it often does not occur because of the tendency in project-based
> approaches to get caught up in the action without reflection. (p. 274)

Certainly it is the teacher's responsibility to ensure that this disconnect does not

occur. Although the teacher's role is that of facilitator in the PBL process, that role

requires that teachers have an ultimate goal in mind when using PBL, know how to

guide and maneuver students through the process, focus the students on the question

so that they do not stray from the original assignment, and assess their work.

Assessment practices require changes that some teachers may not be familiar with

because they do use rubrics for formative or summative grading evaluations. However,

in PBL it becomes necessary to think beyond "one way" to grade the process or final

product prepared by the students.

The teacher faces new challenges when using PBL that arise from changes in

curriculum, instruction, and assessment. Teachers are driven by curriculum, and

instruction follows the curriculum with assessment trailing behind the two.

CHAPTER 3

METHODOLOGY

Introduction

The purpose of this study was to gain a better understanding of teacher

approach to the use of project based learning in a technology infused campus. In

particular, the study examined teacher's perspectives on the use of project-based

learning in a technology infused school culture. How teachers used project-based

learning in their technology infused classroom; according to the teachers, how their

students respond to the project-based learning; and how students use technology

available to them in their project-based learning projects.

Qualitative Perspective

According to Guba (1990), qualitative research subscribes to several different

influences including constructivist and critical theory. The constructivist perspective is

that reality is understood best from multiple perspectives, including a social context and

experience (Guba, 1990; Wiersma & Jurs, 2009). In critical theory, one assumes that

reality is influenced by various external elements including economic, social, and

political factors. These factors often have a negative effect on the individual; thus, in the

critical theory paradigm, the focus is on the "detrimental effects of unequal power

relationships in cultures and in the global community" (Gall, Gall, & Borg, 2005, p.

381). There are similarities that exist between the different paradigms that shape the

nature of qualitative research; however, for the purposes of this study, it is assumed

that human behavior is best understood through activities which are multi-dimensional,

such as social or experiential (Guba & Lincoln, 1994). Therefore, the emphasis will not

reflect a critical theory paradigm that examines the detrimental aspects of power

struggles, but rather the constructivist paradigm proposed by Guba (1990).

According to Bogdan and Biklen (1982) and (Guba & Lincoln, 1994), qualitative

research possesses the following characteristics:

1. Research activities conducted in a natural setting or environment

2. Ethnographic research, using words or pictures rather than numbers, to collect data which are often termed thick record. The thick record refers an extensively detailed (as much as possible) accounting of the data. Clifford and Marcus (1986) view a thick record as the starting point for interpretation of behaviors and events accounted for in a study

3. Primary research focusing on process rather than product or outcome; in other words, the qualitative approach emphasizes how and why individual perceptions are formed and determined

4. Inductive research to analyze data in which emergent data are collected from multiple perspectives such as observations, interviews, spontaneous dialogue exchanges, field notes, and collected documents (e.g., journals). From the data, a grounded theory emerges; that is, researchers "do not search out data or evidence to prove or disprove hypotheses they hold before entering the study" (p. 29); and

5. Interpretation and perspectives of the individuals involved in the study are highly regarded and valued; thus, it is essential that the researcher capture the views of the participants accurately and realistically even though he/she might be a participant-observer

A researcher must be aware of possible ideological biases and account for possible subjectivity, which Peshkin (1988) views as an "amalgam of the persuasions that stem from the circumstances of one's class, statuses, and values interacting with the particulars of one's object of investigation" (p. 17). Regardless, Janesick (1994) would argue that no research design exists that is value-free or bias-free. Nonetheless, in qualitative research, because of the involvement of the investigator, subjectivity must be accounted for in some way.

Qualitative researchers choose a particular research design based upon what they intend to investigate. Essentially, there are two basic research designs: 1) Case study, which entails a thorough examination of one particular setting, subject, and event; and 2) Multi-site studies, which involve more than a single setting, subject, or event (Bogdan & Bicklen, 1982). Data collected in either type of study design frequently involves field notes which are "the written account of what the researcher hears, sees, experiences, and thinks in the course of collecting and reflecting on the data in a qualitative study" (Bogdan & Bicklen, 1982, p. 74). Realistically, in any field situation, the interaction and overall situation are often too complex for the participant observer or external observer to record everything that occurs (LeCompte & Goetz, 1982) although every reasonable attempt is made by the researcher to ensure the holistic integrity of the field notes.

For some researchers, generalizability presents a challenge to qualitative studies. In the use of quantitative methods, the assumption is that the research is

generalizable to other settings and environments different from the one in which the findings are applicable. However, as Wiersma and Jur (2009) point out, generalizability in qualitative methods is "grounded in phenomenology and not in the positivism approach of quantitative research" (p. 298). Polkinghorne (1983) makes a distinction in the types of generalizability, which addresses the qualitative/quantitative differences. Quantitative research utilizes aggregate-type generalization (i.e., generalizing to a population in its entirety), while qualitative uses general-type generalization (i.e., generalizing to specific members of a population).

In this study, critical ciné-ethnographic methods were used to conduct a thorough examination in order to understand teacher's perspectives to the use of project-based learning in a technology infused school culture. Specifically, it was sought to explore several questions. These included: wow teachers use project-based learning in their technology-infused classroom; according to the teachers, how their students respond to the project-based learning; and how students use technology available to them in their project-based learning projects.

Participants and Setting

Setting

The setting for this study was a suburban high school in the North Texas area. The high school selected was a technology-laden campus, which focused on collaborative and project-based learning. All classrooms in the school were available for

selection for observations, interviews and participation. Approximately 25 hours of video footage was collected in the form of classroom observations and interviews.

Participants

All faculty members were available for participation in this qualitative study. Of all participating faculty members, four teachers were selected based on the following criteria: representation of content field, interview, and direct classroom observation. For this qualitative study, the researcher sought to present a balanced representation of the population in terms of sex and content field. Preferable selection was based on providing equal representation of gender.

Critical Ciné-Ethnography for Data Collection and Analysis

Generally qualitative research and ethnography is perceived of being week as it relates to validity, generalization and replicability. With these inherent weakness in mind, Warren and Gratch (in press) have developed a process blending traditional ciné-ethnographic as viewed by Rouch (2003) with Carspeken's (1996) vigorous criticial ethnography. This synthesized method blends the best elements of both methods, while addressing some of the weaknesses found in Carspeken's method focusing on the analysis of relevant systems which impact the participants (Steps 4 and 5).

Using Banathy's (1992) motion picture model of systems analysis the broader impacts of school culture are examined allowing for a full and detailed depiction of

intersubjective reality of the educational experience of teachers, learners and those

present and interacting within the educational environment. This lens allows for

simultaneous examination of the interactions of all participants in the environment

including the social, political, economic, technological, environmental and epistemic

systems that can influence student and teacher activities.

The blend of Carspecken's (1996) analysis methods for attaining validity through

a stringent five-step process along with data collection methods that incorporate

Rouch's (2003) approach to cine-ethnography is called, critical ciné-ethnography.

Specifically, this method strives to follow Denzin and Lincoln proposed major goal for

social research:

> Thus, we have two arguments proceeding simultaneously. The first, borrowed
> from positivism, argues for a kind of rigor in the application of method, wheras
> the second argues for both a community consent and a form of rigor-defensible
> reasoning, plausible alongside some other reality that is known to author and
> reader-in ascribing salience to one interpretation over another and for framing
> and bounding an interpretive study itself. (Denzin & Lincoln, 2003, p. 275)

Warren and Gratch (in press) further establish a series of goals and authenticity

criteria for qualitative research methods that seek to address (p. 278). These are:

- Trustworthiness

- Rigorousness

- Fairness

- Ontological authenticity

- Educative authenticity

- Catalytic authenticity

- Tactical authenticity

In order to reach these goals and meet these criteria, we have particularly sought to:

- Give participants and researchers voice, whether unified or disparate

- Allow researcher reflexivity in filmed reflections on choice of research problem   and participants as well as how we develop and change as researchers in the field (p. 283)

- Allow for multiple representations (film, textual, dramaturgical, audio, other) and allow for first and third person accounts.

- Allow viewer and researcher/filmmaker interpretations not one or the other

- Reveal researcher bias through self-report and discourse

- Include multiple observers and analysts who bring perspectives from multiple genders, races, etc. as part of analysis as well as participants to seek partial validity from findings/images

- Include narration only from validated themes while showing and letting speakers tell and confirm outcomes

- Leverage stringent validity construction process borrowed and adapted from Carspecken (1996)

Procedure

First day procedures included a tour and walk through of the location in order to

become familiar with the environment and to introduce the researchers to the

participants – both faculty and student participants. The walk through permitted the

researchers to fine tune intended camera setups for observations, identify locations for

interviews and finalize scheduling for the next three weeks data collection proceedings.

As the school does not have a traditional bell schedule for classes flexibility was needed

in determining and drawing an exact observation schedule routine. Individual teachers

had to be contacted and their specific daily class schedule had to be accounted for in

organizing the observation schedule. Scheduling was based upon a 4-day week from the

hours 10 am until 4 pm with a 45-minute break for lunch. School activities from 7:45 am

until 9:50 included teacher planning periods, collaborative curricular sessions, and

administrative faculty meetings. The participants recorded select curricular planning

sessions – the critical friends meeting, for the researchers as I was not permitted in the

sessions. As the school's daily schedule varied greatly no set Lunch break could be

scheduled, instead lunch was based around the observation schedule for that particular

day. The lunch period was also provided the opportunity to download daily footage and

reset the camera media for afternoon sessions. The daily schedule was as follows:

Week 1

- Day 1 – walkthrough, tour and introductions. Minimal in-classroom observations, (mostly for familiarization)

- Day 2 – Meetings with location coordinator to review policy and procedures; collect participant/model /parent/teacher consent forms. Classroom Observations begin.

- Day 3 – Classroom observations (all day). Concluded with NTFUZE Level 1 and 2 observations in the NTFUZE classroom.

- Day 4 – Complete week 1 observations. Reflection meeting in NTFUZE classroom.

Week 2 (Classroom Observations)

- Day 1 – Weekly meeting, Classroom observations all day. Conclude day with observations in the NTFUZE classroom.

- Day 2 -- Classroom Observations (all day). Conclude at NTFUZE for daily meeting and equipment storage

- Day 3 -- Classroom Observations (all day). Conclude at NTFUZE for daily meeting and equipment storage

- Day 4 – end of week morning meeting to determine needed content for last day. Classroom Observations (all day). Conclude at NTFUZE for daily meeting and equipment storage.

Week 3 (Interviews)

- Day 1: Weekly meeting. Student interviews (all day) External recordings.

- Day 2: complete student interviews and begin teacher interviews. External recordings.

- Day 3: Teacher interviews (all day). External recordings.

- Day 4: Complete Teacher interviews. Administrator Interviews. Additional interviews. External –classroom location observations (cafeteria, hallways, meeting centers). Breakdown.

Specifically, we commenced observations at the high school for a period of approximately three weeks. Daily recordings and observation were scheduled depending on the content need and teacher availability to capture the use of technology-infused, innovative learning methods in humanities and computer science-based courses. Digital video was used to capture the classroom experiences of teachers, students. The video focused on teacher's instructional methods and student engagement in classroom activities – specifically the use of PBL and technology in the classroom. I also examined how these teachers, now responsible for educating the Millennial Generation, view teaching and learning through interviews. Teachers were interviewed in direct one on one sessions about the structure of school, state standards

and testing requirements, time constraints, training, and school technology availability that influence their perception of using technology and innovative methods to teach. The filmed interviews and observations were analyzed using the qualitative method of critical ciné-ethnography in order to understand how and why the methods are used as well as the influence of technology use in the school context.

Daily Observations

In order to provide the most comprehensive coverage for the video observation, five digital video cameras were used on any given day. Two cameras were tripod-mounted and placed in opposite corners of the classroom, out of the way of teacher and students. Both cameras were placed from a high perspective and used a wide angle to capture expansive views of classroom activities while providing minimal overlap in content. These observation cameras remained largely stationary for the class period, though camera operators choose to pan the camera to focus on particular activities or behaviors when necessary. These two stationary cameras were only moved from their placement locations if extremely necessary. Camera 3 was manned and mobile, tasked with recording the instructor. When at all possible, this camera was fitted with an external wireless receiver for recording high fidelity audio from the instructor's lavaliere microphone. Camera 4 and 5 were mobile cameras. These cameras roved the classroom and recorded medium to close-ups shots of student interactions, teacher-student interactions and ongoing learning activities. Cameras 4 and 5 were also fitted with

cardioid microphones for audio pickups during student collaboration and teacher-student interactions. Through use of mobile and stationary cameras I was able to produce an accurate and comprehensively record the classroom activities and communications in a holistic fashion. Additionally, still images were captured of classroom activities in their instance of occurrence, while all five cameras had the capabilities to take instant digital photographs only one camera was tasked for photography. The still camera looked for expressive moments from students and teachers. These moments can include behaviors, facial expressions and interactions.

At the completion of observations each day, all recorded content was logged and captured to storage devices. Videos was transcoded to an intermediate format to allow easy review and matching frame rate, dimensions and pixel density to ensure maximum playback quality. Logged footage was correlated to date/time, filming location (classroom), and course. At the conclusion of the three-week data collection period all equipment was disassembled for transport back to the University to commence data collection. All observations logged footage from each classroom and interview was matched and synced.

Interviews

Semi-structured interviews were conducted at the conclusion of the observation period. Interview questions were designed to explicitly delve into the instructor thoughts on teaching, learning, project based learning, student and teacher technology

use, school support for PBL and personal perspective on the use of technology and PBL

in the classroom at the High School. Interviews were conducted at the conclusion of the

observation period, as it is important to gather some information directly from

participants after engaging in direct observation. Interviews and observations were used

to identify those instructors observed to build the *thick record* - the collection of all data

to be analyzed. The interview process requires knowledge of the participants, their

values, and required being sensitive to what they are comfortable with saying on film.

Collecting Ethnographic Data with Video

When collecting data using critical ciné-ethnographic methods, a perspective

informed by practice in the particular field of education or by some preliminary

observation and conversation with all parties are observed, interviewed, and filmed.

This allows the development of a larger frame of understanding from the perspective of

the participants. While the researchers bring their personal experiences and lenses to

bear on the situation, allowing the participants to shape the research questions gives

them voice in the process from the very beginning rather than after the fact through

some form of member checking validation.

We had a minimum of three researchers involved in both data collection and

analysis. For the analysis, two researchers analyzed and coded the footage

simultaneously with a third participant overviewing the analysis and able to discuss and

assist in settling disputes between the coders. This method had several purposes:

1. Multiple observer perspectives during the data capture and analysis

2. Permits multiple reflexive positions that may reveal challenges and problems

3. The construction of research outcomes such as texts and films

4. Provides a group large enough to conduct Carspecken's (1996) methods for constructing validity

Subjectivity Statement

As the researchers develop their research questions, it is important that the researchers adopt a critical stance regarding their own perceptions as well as those of the system they are collecting data in for the CinéEthnography. As one of the main goals of the research is to empower and make recommendations that allow the educational setting to improve, all researchers involved must be aware of how their presence influences those that they observe while they are themselves influence by the participants they observe.

We recommend that the researcher begin with examining their own personal biases through a statement of subjectivity in which they state at least the following about what they believe:

- What is learning and teaching?

- What does this mean for my interviewing?

- What do I already know about this topic?

- What is then the challenge of what I think I already know?

- What should my peer analysts know before they review my codes?

By constructing such a statement of subjectivity and sharing it with those members of a group of analysts, there is an expectation that the peer analysts will recognize when a member of the group may be coding things at a high inference level according to their personal bias rather than at a low level of inference that can be supported though the context of the discourse surrounding an utterance. Some subjectivity statements can be longer than others. The statement made by the primary researcher for this study may be found in Appendix B.

Data Analysis

To conduct data analysis with a critical ciné-ethnography, we have adopted and modify Carspecken's methods as outlined in *Critical Ethnography in Educational Research* (1996). The original was five-step process that involves:

1. Capturing data and researcher reflections in a thick record

2. Conducting reconstructive analysis of the data

3. Conducting follow-up interviews to validate findings from the reconstructive analysis

4. Describing the relationship of the findings and participant speech acts with respect to other systems, and finally, and

5. Explaining these findings with respect to cultural, power, political, and other systems.

Each step in the process is one of building from low inference observations up to a high level of inference that is grounded in low and medium inferences that have been confirmed through a stringent validation process. We provide a summary of this process

here and break it further into a ten-step process as Step Two consists of a large number

of equally important sub-steps.

The following were the stages of analysis used to validate those sections of film

included in the final documentary product and were adapted from Carspecken (1996).

Step 1: Build a primary record describing the complexity of interactions in the

system including context, speech acts, body language, setting diagrams, time, direct

observations, all using low-inference vocabulary.

Step 2: Preliminary reconstructive analysis: meaning field generation. This stage

employs the articulation of meaning fields in which the researcher defines the possible

meanings of important speech acts. Using validity horizon analysis, the claims made in

these meaning fields are classified in terms of their validity related to how near or far

the meaning is from the unadorned statement.

Step 3: Preliminary reconstructive analysis: Validity horizon analysis. Continuing

from the meaning field generation, this step seeks to classify statements, often taken

from the meaning fields, with objective, subjective, normative, and identity validity

claims as a means of seeking to understand the values of the individual speakers and

their interactions with one another. To verify these horizons and the meaning fields that

preceded them, it is important to conduct interviews as part of the next step.

Step 4: Dialogical data generation: in which the researcher engages in a means of

democratizing the research process to provide the interviewees with the opportunity to

challenge the findings of the researcher and give participants voice in the process; this is a form of member checking.

Step 5: Interactive rhythms can be used to identify speech acts as a series of give and take between and among speakers. These rhythms can indicate comfort among speakers, tensions, and other issues that may require further analysis.

Step 6: Umbrella norms are identified through participant speech and physical acts that represent how they feel they *should* behave.

Step 7: Roles are identified: Often there may be a Vygotskian (1978) sense of a zone of proximal development in which a more experienced person – either a teacher or student in a collaborative group helps another member of the group to complete a task they would normally be unable to do on their own.

Step 8: Analysis of interactive power: The final step in the reconstructive analysis phase is to generate an analysis of interactive power in order to understand how the roles and norms play out in the establishment of authority and action in the classroom.

Step 9: Describing system relations is a stage at which the researcher seeks to understand participant actions and perceptions of the systems that most impact them. In the case of students, this often includes school, culture, family, etc.

Step 10: Use system relations to explain findings including such aspects as environmental, economic and political conditions to understand the cultural relationships and similarities in the system among the many sites represented in the study by leveraging the motion picture lens of analysis put forth by Banathy (1992).

Step 11: Critical reflection: The penultimate step in which the researcher engages in reflection about their participation in the research process and their relationship to the outcomes as well as how biases may have shaped them.

Step 12: System critique is the final stage during in which the researcher engages in a full critique of the systems involved towards a goal of improvement.

To have a fully valid process, each step should be included.

Limitations of the Study

There are limitations to the generalizability and replicability of the proposed study inherent to the use of ethnographic research. As the observations take place in a natural setting the researcher has limited control over the environment and thus cannot achieve the same level of control over external variables. Burns (1994) reports that reliability is based upon two primary assumptions:

1. The study can be repeated using the same procedures as the original research

2. Other researchers can have a consistent interpretation by using the same procedures

In ethnography, accurate replication is very difficult to achieve as the natural setting, events and behavior will vary and differ at each instance of recording. Student populations can and will differ, teacher employments and methods will change, etc. thus the exact natural setting cannot necessarily be reproduced. While the natural setting of the study will be difficult to impossible to reproduce this does not limit future

researchers from attempting to replicate study conditions and procedures at the same location.

Researchers acknowledge that reliability and validity may be of concern in qualitative studies (Wiersma & Jurs, 2009). The use and application of reliability and validity in qualitative studies varies from one researcher to another (Creswell, 2007). For example, some researchers believe that qualitative studies should adapt their research to fit the quantitative perspective (primarily for acceptance by quantitative researchers) while others maintain that qualitative research is in a category by itself and should not adhere to the quantitative model. According to Golafshani (2003), because reliability and validity have their roots in positivism, their meanings and applications should be redefined to fit the qualitative model.

As generalization is a limitation of the ethnographic methods used within the stud, in regards to the generalizability the more likely a phenomenon is to be consistent across a number of studies the greater the "generalizability". However, once again, the natural setting of the study limits the generalizability as future studies will be faced with a different set of variables – particularly the participants – teachers and students, their interactions, as well as possible changes in instructional methods, curriculum and technology observed. Ethnographic research focuses on the process of behavior in a community and the interactions among the community members so as those members change so may the events and the interactions (Nurani, 2008).

Summary

This qualitative study focuses on the interactions and events in a North Texas high school using technology infused project based learning in order to gain a better understanding of the teacher approach and the school's support of the methods used in instruction. Qualitative data was gathered through video observations of teacher instruction and student interactions and through teacher interviews. Analysis of the recorded data was conducted through the twelve-step critical cine ethnographic methods in order to gain an understanding of the underlying truths of the school environment. The study examined teacher's perspectives to the use of project-based learning in a technology infused school culture. Specifically, it looked at how teachers use project-based learning in their technology infused classroom; according to the teachers, how their students respond to the project-based learning; and how students use technology available to them in their project-based learning projects.

CHAPTER 4

RESULTS

Few studies in the literature have focused on teacher perspectives and project-based learning in a technology-infused high school learning environment whose student population consists of middle-to-upper class students. New Tech High School in Coppell, Texas, represents a new educational prototype for the secondary classroom. With a population of about 400 students, the school is much smaller in size than most suburban/urban high schools (e.g., Coppell High School is home to approximately 2,000 students). The goal of this new technology-based school is to motivate students to learn through different project-based learning options in which teachers act as facilitators of knowledge acquisition rather than conveyors of content knowledge.

Background Information

Data for this qualitative, descriptive study was gathered from different sources including teacher interviews and classroom video observations. The four teachers who participated in this study represented different content areas and have taught at least one year at New Tech High School. The demographic information provided here was obtained through interviews conducted at the culmination of the project.   Mr. Quimby teaches the English part of an American Studies course, which is a combination of English and History, to all high school grade levels, ninth through twelfth grade.   He

explains, "American studies is an integrated US history, English II course. So we integrate the two subjects together so when we're learning about different periods of American history, we'll kind of supplement that with English skills from the TEKS and they'll do a lot of writing and analyzing and those kinds of activities their English with social studies. So, it's all taught/co-taught with another teacher."

Mr. Quimby has nine years of teaching experience and has been at New Tech since it opened three years ago. He has a bachelor's and master's degree from the University of Texas at Tyler and is currently pursuing a doctorate in curriculum and instruction at the University of North Texas. For the purpose of this study, I looked at the tenth grade classroom taught by Mr. Quimby.

Mr. McClure teaches Spanish III, IV, and V to upper grade levels at the high school. He has 22 years of teaching experience and has been at New Tech since its inception. Mr. McClure possesses a Bachelor of Arts degree from the University of Central Oklahoma. For the purpose of this study, students represented were from Grades 10-12.

Ms. Skinner has eight years of teaching experience and teaches pre-calculus and Algebra II at New Tech. This is her first year of teaching in a non-traditional school setting. Ms. Skinner has a bachelor's degree from the University of North Texas and a master's degree from Dallas Baptist University. For the purpose of this study, students represented were from Grades 10-11.

Ms. Muntz has been at New Tech since it began three years ago. She teaches a combination broadcasting and film course, to all grade levels. She also teaches classes in virtual business and communication. Ms. Muntz has six years of teaching experience. She graduated from Cameron University with a bachelor's degree and two master's degrees in education. Data was collected from Ms. Muntz's Level 1 and 2 film and broadcasting class.

Table 1 below summarizes teacher demographics.

Table 1

Participating Teacher Demographics

	Subjects Taught	How Many Years Teaching	How Many Years at New Tech	Educational Background
Mr. Quimby	English	9 years	3 years	Bachelors Masters Working on Ph.D.
Mr. McClure	Spanish III, IV, V	22 years	3 years	Bachelors
Ms. Skinner	Precalculus Algebra II	8 years	1 year	Bachelors Masters
Ms. Muntz	NTFUZ Virtual Business Communications	6 years	3 years	Bachelors 2 Masters Degrees

The following research-guided statements directed this study:

1. Teacher perspectives on project-based learning in a technology-infused school culture

2. Examples of typical teacher use of project-based learning in technology-infused classrooms

3. Teacher perceptions of students' responses to project-based learning

4. Student use and implementation of available technology during preparation and/or presentation of their project-based learning assignments

Overview

To fully explore these areas, I collected data from four teachers using video recordings of classroom teaching and activity for a period of three weeks over four days per week in non-consecutive weeks, recording between four and six hours a day. At the conclusion of the video recordings, extensive interviews were conducted with each teacher. All collected data, both video recordings and interviews, were aggregated, reduced, coded, and analyzed. Findings are reported here. Because background information, pertinent to this study was asked, results for the teacher interviews are presented first. The presented results (below) are organized by topic categories.

Interviews

Teacher Education Programs

Higher education has always been concerned with whether or not university teacher preparation programs adequately prepare teachers for their role in the classroom. Over the years that concern has been heightened, and teachers are now required to do professional development training that is aimed at maintaining and promoting teacher proficiency. As a part of this study, teachers were asked whether they felt their teacher education programs adequately prepared them for teaching at

New Tech High School. Of course, New Tech represents the "new wave" in education,

and most teachers, even those with technology training and newly graduated, are not

always ready for what awaits them. Mr. Quimby, Mr. McClure, and Ms. Skinner felt they

were not prepared to teach at New Tech. The remaining three teachers expressed

varying degrees of preparedness. Mr. McClure recalled that "the real world prepares

you," but his college education did not (he attended classes 23 years earlier). Mr.

Quimby recalled that his teacher preparation program assisted in relating to the

students. He commented, "It [training] prepared me for the relationship aspect of

working with kids and everything else. As far as the planning and project-based

learning, I didn't even know what project-based learning was, and I went through the

program." Ms. Skinner remarked:

> At the university, I was taught how to explain why mathematics works and how
> to explain all the formulas and operations and different things and there was
> some hands-on learning and activities, but it wasn't full blown projects that we
> were taught how to make.

Ms. Muntz was the only teacher that felt that she was equipped for the New Tech

classroom. However, she stated that her business background probably gave her an

advantage in the technology arena. She said, "…I think between my business

experiences and going through training in the environment in a business that was very

progressive in their trainings and then coming into the [teacher] program that I chose

was a good choice."

Ms. Muntz pointed out that teacher education programs could be improved.

She thought the education programs she was aware of focused too much on theory

rather than practical application. She related the following:

> Theory is great, and as an educator, we have been around a while, theory is really great, but until you see it happening, you're going to get a lot of education, educators who are saying, I don't think I can do that. But, if they can see it and visualize it, it's a lot easier for them to adapt. …Teacher education programs need to really step up to being open to different types of educational theory and realize that just because you saw it 20 years ago doesn't mean that it's not different or it's not innovative or it's not what's best for kids.

Teaching and the Role of the Teacher at New Tech

Teacher definitions of teaching pulled in learning. None of the teachers

separated the two terms. All teachers looked at teachers in terms of their environment

(i.e., New Tech). Mr. Quimby asserted that "Teaching looks different here…it's not just

about the content, again, it's really about forming relationships with students and

teaching kids how to know how to function." Mr. McClure identified teaching as

"facilitating" while Ms. Muntz stated that she believes there is a difference between

teaching and facilitating: "Teaching, I believe, is the giving of information. Facilitating is

helping other people realize what they're learning." Ms. Skinner felt that teaching

involves the teacher as the director of student experience.

When teachers specifically addressed their perceived role of 'teacher' at New

Tech, they identified themselves as facilitators. Mr. Quimby stated:

We're facilitators. And so, you know, when you use that word…our role is to facilitate the learning. Sometimes that looks like a traditional classroom. Sometimes you will come to our class and one of us will be lecturing. But, more often than not, it's just working with kids to teach them how to go through a process to get a product or get somewhere we want them to be, and we really want them to get there on their own.

Mr. McClure had this to say about teaching at New Tech: "It's crazy to be a teacher at New Tech. Every day is different. I was a traditional teacher for 18 years before I switched over to New Tech, and um, it's definitely a, a, a different lifestyle here."

Ms. Skinner echoed Mr. McClure's sentiment:

Being a teacher at New Tech is very different from being a teacher at my other places I've worked. Here it seems like, instead of wearing a thousand hats at a traditional school, I'm wearing about a million…I teach, I facilitate, I walk around, I interact with them [students].

While the first three teachers spoke about New Tech teaching in terms of challenging and change, Ms. Muntz was different. She called the experience "awesome." She admitted that teaching at New Tech often made one feel like a failure, especially in the first year of teaching, but as she got acclimated to the different way of doing things, she considered herself an innovator because teaching and facilitating made her "engage" herself in activities along with the students.

Learning

Learning poses many different facets of understanding, application, and implications for use. In the interview teachers were simply asked, "What is learning?" Mr. Mr. Quimby and Mr. Mr. McClure stated that learning involved acquisition of 'new

information' while Ms. Skinner and Ms. Muntz moved more toward learning experiences.

Mr. Quimby commented "anytime you're picking up something new, no matter what it is, no matter whether its content-related or learning how to deal with somebody who's mad at you when you walk in to class." Mr. McClure carried his definition further: "Learning is about collaborating. Learning is finding out new information and actually being able to apply what you're learning to your life and to your world and to your environment." Ms. Skinner and Ms. Muntz expressed learning in terms of experimenting and experience through activity.

Project-based Learning

Teachers referenced project-based learning throughout their conversations during the interview. They were trained on process and product of PBL use at the New Tech Foundation before engaging in their teaching roles at the school itself. They agreed that PBL is an instructional methodology that poses questions or problems and requires students to research, problem solve, and make decisions about the topic and subsequently develop a product from the work that they performed as a collaborative group. Teachers noted that PBL involved independent work on the part of the students while their role as a teacher was minimalized. Mr. Quimby commented that there were several distinct parts to the PBL process: project launch, workshop days, and presentation. In project launch, the PBL assignment was introduced to the class by the

teachers. Mr. Quimby said, "In launching the project, we go through our knows and need to knows. We guide the students through making social contracts and driving statements about the assignment." On workdays, it is more of a traditional environment because background information might include a teacher lecture or demonstration of the content, all intended for the students' benefit. The last stage of the PBL involves student research, problem solving, and investigation to produce and present a final project, whatever that might be.

When asked about the term and to contrast project-based learning with problem-based learning, teachers made the distinction, but it was not unusual for them in dialogue to co-mingle the two terms. Ms. Muntz distinguished between PBL and problem-based learning with time. She explained:

> If I'm doing a problem-based activity, that is a shorter activity. It is usually a problem that I'm suggesting and there's usually one to two sets of answers. A PBL project is going to be more intensive…I have more time, I go deeper. I'm usually allowing for some diversification of end product from the kiddos.

Ms. Skinner noted that the vehicle for learning at New Tech is through projects. This teacher, who teaches math, did say that she probably does more instruction than most simply because the students require it for their own understanding. However, students sometimes protest because she asks them to use pencils and paper. "And I'm like REALLY? It's math. You can't take notes on your screen. Give me a break." For her, she combines the use of projects with instruction to enhance student understanding of math. Ms. Muntz describes PBL in terms of how he goes about it introducing and

preparing the project for students. She explained that the first time a new project is introduced to students, she presents an entry document and carries the students through "know" and "need to know information," then students make social contracts or commitments for what they are willing to do on the project. Another day on the project might be a workday. He described what a typical workday might look like:

> On the workday, the kids will come in, and the kids will have guidelines that we want them to accomplish within that class period. For the most part, they are on their own and we're just moving around the room visiting the groups from time to time….

Mr. McClure spoke about the projects that his students did as a way to describe PBL in his classroom. For example, he talked about students writing Spanish books for elementary school children, and then teaching Spanish to the children.

Student Activity and Engagement

Part of PBL learning is the collaboration that takes place among group members. Teachers responded to questions about student activity including group experiences and other types of classroom engagement. Working on projects, students not only engage in active learning, but they are also exposed to many hours of group interaction; thus socialization/collaboration becomes an integral part of the learning process. Teachers view this type of learning positively, although several admitted that they were initially apprehensive about the project style of learning because of classroom management concerns. Mr. McClure stated:

It's crazy at first. When you first walk in [to the classroom], it looks a little bit like a zoo and uh, you see kids Skyping and you see kids gaming. But really, it's all about multi-tasking, making sure that they can work together collaboratively in groups and making certain that they're getting a job done.

Ms. Muntz believes that working on projects provides students with an identity because they are allowed to choose their participatory role. She said, "the more we progress in figuring out student choice, and allowing learners to have more choice in their end products, the more they're able to dive into their interests." Her perception is that they retain more information (with choice) and knowledge context with the use of projects.

Mr. Quimby noticed that enculturation plays a role in student learning. Once students are acclimated to the learning environment, they "benchmark themselves" and direct their own learning. Students recognize their role as an active learner and group collaborator, and they realize that learning becomes their responsibility; it is not the teacher's fault if they do not 'learn' something.

(T)hey figure that out on their own. And when we come and check with them [on the project], they tell us what it is we're supposed to be seeing and see that it's done and that's been great. And I think that comes from three years at New Tech. It just comes with time.

Mr. McClure noticed that the students tend to form their own relationships via the groups, so after one project they are more inclined to want to work with the same set of peers---"their comfort zone." She had this to say about student groups:

[The kids] are more comfortable with each other so there's different groups that now naturally form in the classroom and those are the groups the kids like to be in. And, I kind of don't like to rock the boat because if they're working, I'm ok with that. I'm not going to knock a kid out of their comfort zone.

As noted by several of the teachers, traditional school environment requires more

control of students, even in group work because students do not always know how to

work together and collaborate. That said, the teachers observed that the New Tech

setting had similar issues when the school first started and also with new students that

transferred into the program. Mr. Quimby described situations in which group members

simply could not get along with each other. It was a learning process for them---

experiencing working with others. He said:

> I mean, that first year, it was just constant, not just one group, not just two
> groups, you know four or five groups in a class always had issues with at least
> one group member. And they would come to us and they'd want us to fix
> everything.

He explained that in a facilitating role, it was his job to keep interaction moving so the

group dynamic had a chance to grow and morph on its own, not because he made it

happen. Mr. Quimby stated that the same students he had as freshmen are now juniors

and do not seem to have the same group collaboration issues; there has been

tremendous improvement in their ability to communicate and interact with each other.

Ms. Muntz noted that the seniors are good at policing other members in their group and

documenting group participation and job responsibility. She also commented that the

culture of the school promotes trust and encourages students (and teachers) to respect

and support one another. Ms. Skinner said that she has not met many defiant students

at New Tech; typically the students are respectful of one another. According to several

teachers, the school environment builds an infrastructure that fosters content learning

and also emotional growth and maturity; they maintained that does not always happen

in a traditional school setting. Ms. Muntz commented:

> They [the students] know they can text me or they can call me and they're going
> to have a support system there that not every kid is going to have. And that is, if
> we're really in the business of educating kids, not only with content but also in
> their emotional values, we have to be open to going a little bit above and
> beyond what is normally acceptable to make sure they have that support
> system.

Regarding the use of group work, Ms. Skinner explained that there is an expectation

that students will work together, but sometimes it is not possible. She explained:

> They're certain kids they don't wanna work with just because they've worked
> with them before, and they know the kid doesn't do their work or the kid's late
> or there is just a distinct personality conflict. And in those cases, I'm like, if it's a
> personality conflict or they're like enemies, and I'm like, we're not going to deal
> with this in my class. So, we'll just keep that separated. …I'm like, try to
> encourage him, and I'll work with you and let's see if we can work together and
> have your group be successful.

Special PBL Projects

As part of the interview process, teachers were asked to discuss some PBL

projects that they considered to be outstanding undertakings. Mr. Quimby remarked

that student projects completed in year three by students was much improved over

those projects presented in year one. He indicated that part of that could be attributed

to planning on his part. He said that he and his co-teacher repeated only one project

from the first year because they found other PBL ideas that they considered more

worthwhile. Mr. Quimby stated that students planned and performed a roast of Teddy

Roosevelt:

> It was like the Comedy Central Roast for Teddy Roosevelt. One kid played Teddy and other kids played people that were somehow affiliated with Teddy Roosevelt during that time period and then they were each responsible for getting up and giving a roast about…about Teddy and their connection to him. Of course, they tied in history.

Mr. Quimby spoke of other quality projects including one on Medieval Times, World

War I and post-traumatic stress disorder in soldiers ("…that things that happened almost

a hundred years ago are still happening today in war").

Mr. McClure talked about Spanish students giving back to the community

through service. In discussing PBL projects in Spanish III, he said:

> Students have to write their own resume in Spanish, their own cover letter in Spanish and then they have to go on a 10-minute interview with outside evaluators who are only Spanish speakers. So, really it prepares them for real life. They can choose whatever profession they're interested in. So, their vocabulary is very specialized and it helps them.

Mr. McClure also discussed a project in which students in Spanish III developed Spanish

lessons for students in the elementary schools. They also chose certain books that might

of interest to the children and read to them in Spanish.

Ms. Skinner responded that she is proud of the fact that her students, even

though it is a math class, do not complain about the PBL projects assigned to them. She

said:

> I really don't have kids that refuse me. I know that sounds weird, but I have a relationship with them where it's built on respect. Like, I say, 'Hey, I'm asking you to do this, and I'm asking nicely, so will you work with me here.'

Ms. Muntz noted that she really had to experiment with her video production/broadcasting class projects because not all of them in previous years were well received by students: "I will tell you my first semester flopped…lots of lessons learned." She went on to say that some of the better projects included 'Touch of Life' project. This was a PBL where students found ways to educate the community about an organization called Touch of Life and its founder, Pam Cope of Ghana. Students created a documentary about the founder and her organization, and they presented a festival called 'Touch of Life' film festival where they showcased their work. The teacher noted that not many parents came to the one-night evening festival, but those that did enjoy it.

Use of Technology

The name of the high school, New Tech, implies the use of technological advances in the classroom. When the school began three years ago, it was with the understanding that technology would become an integral part of each and every classroom. Students were to have training and access to numerous different technology tools including computer (laptop) and software (Final Cut Pro, Photoshop, Prezi, Celtx, etc.), whiteboard, iPod, iPhone, digital camera, and camcorder. Technology became a dominant force in the classroom. All teachers remarked that their technology know-how increased because of the expectation that technology was to be in every classroom. Mr. McClure stated that he had "zero technology proficiency" and did not own a laptop. He

said teaching at New Tech helped move him into the 21st century because he considered himself a "dinosaur of a teacher relying on that trusty file cabinet." For him, the first year adjustments made him want to quit, but he commented that he is pleased that he has stuck it out because it has been a rewarding experience. He added that with every project he creates for students, he is always trying to think ahead about the technology they will need to do the assignment. He mentioned that Facebook has entered the classroom. He commented, "[Facebook] that's the big thing these days, and I'm constantly reading or listening to the kids to figure out what's out there that I can bring into the classroom." Mr. Quimby said in his first year he referenced the term "laptop" frequently, but now, laptop use has become routine. "(W)hat I've found is that the technology now has just become a tool, and it's just another part of our school like a locker is or a backpack or a textbook, and we definitely use the technology." Ms. Skinner remarked that much of what is done at New Tech she experienced in other schools where she taught. She commented, "I'm used to having a computer lab in my classroom where I came from so I didn't really see a huge shift as maybe some other people have." Ms. Muntz indicated that there was an assumption, when the school began, that students would be molded into programmers and "take over the world." But, she admitted, many students at New Tech are not "tech savvy kids."

> I do believe that kiddos in this generation know technology, but not as an educational tool. They know it as entertainment. So, to teach them, 'how do I use technology in a way that can further, um, my progress, or what I'm learning is really important. So, it is a tool. Are there days that we de-plug? Yes. There are days that I want to have face-to-face time---where laptops are down.

Ms. Muntz went on to say that she frequently learns about new software and various

equipment from her students. For example, one student introduced her to a free

screenwriting program that she had never heard about until he said something to her.

She summed up New Tech and its technology use in this way:

> I know we have New Tech I our name and technology is a huge thing here but it's
> so much more than just the technology. Like I said, as I describe the school to
> people, it becomes less about that laptop that they all get and more about just
> the collaboration and the 21st century skills which is kind of a buzz word that I
> guess is a little bit annoying. But all those learning outcomes that we have---the
> oral communication, the collaboration, the critical thinking skills, the global
> awareness, all those other things that we measure students on in the school,
> they're so important.

All teachers interviewed noted that not every day was a good day in a tech world. There

were abuses and misuses of technology by the students. For example, cell phone texting

was a problem in one class; video gaming was an issue in two classes, and Internet

browsing off topic was a concern in another class. All teachers did say that technology

misuse/abuse was not a major difficulty, but at times they did have to address it with

their students.

Critical Friends

When teachers were asked how they monitored PBL for its quality and

effectiveness with students, they responded that their method of quality control was

something identified as "Critical Friends." Critical Friends is the name given to the group

of teachers who are work together to review and collaborate with others on PBL ideas.

All project ideas that are generated must be presented and approved through Critical

Friends before the project can be implemented in the classroom. If a project fails to

successfully meet the established criteria for a worthwhile PBL (after implementation),

then the failure of the PBL is reported to the Critical Friends group. The project may be

refined for future use or it may be dropped altogether. Ms. Muntz stated that projects

sometimes flop in the classroom, but sometimes that failure becomes a much-needed

learning experience for teachers. She said:

> Sometimes you need to them (teachers) launch that project even though you've
> given them advice that it might not work, but you know that's how they're going
> to learn to be better at what they do, so one of the ways is through Critical
> Friends…

> Critical Friends is a concept that was presented to the high school teachers when

they attended training sessions on PBL. The New Tech Foundation grounded all teachers

in PBL procedures prior to the opening of New Tech. It was during this training session

that teachers were first exposed to the concept of Critical Friends. Mr. Quimby had this

to say:

> You can't run a project without running it through critical friends. But, it's our
> staff, and we all meet together for about 45 minutes and we'll bring our project
> ideas and we go through a protocol where we present and then we listen to the
> feedback from the teachers. The beautiful thing about this process is that I can
> be presenting something for English or Social Studies and we can have three
> math teachers in the room, and they know their content really well, but they
> don't know mine and so they ask questions that really help and guide us.

Ms. Muntz agreed with Mr. Quimby's assessment that Critical Friends is a big part of the

PBL planning process. She said the rapport among teachers is quite positive; teachers

are respectful and collaborative. More importantly, teachers offer insights into PBL

development across the curriculum because they all provide input regardless of the

subject being a taught. For Ms. Muntz this "across the curriculum" input is invaluable.

Mandatory State Testing and New Tech

Even though New Tech is a non-traditional high school with a PBL approach to

learning, students are still required to adhere to state testing regimens. Teachers

mentioned that parents were concerned initially because New Tech is not a traditional

campus setting. Mr. Quimby summed it up when he said: "Early on…our parents were

really worried about their kids. And I don't blame them. We were a brand new school,

and it was a method that no one really knew about---especially in the community."

However, the parents soon realized that delivery of content might not be the same as a

traditional learning environment, yet the academic expectations were no less. Teachers

administered quizzes, tests, papers, projects, etc. in the same way teachers not at New

Tech do, and students were given grades for their required assignments. In addition,

students took the state required TAKS tests in all major subject areas. Mr. Quimby had

this to say about the state testing experience in social studies:

> For the Social Studies test, we did a little more prep, but it was not anything like
> we used to do in traditional schools. It was through games and quiz shows and
> simulations—where [the kids] didn't even realize they were learning…with social
> studies we had to do a little bit more because, you know, you don't always get to
> all the content that is going to be on the test by the time the test rolls around, so
> we had to some scaffolding activities and some things with some of the TEKS we

hadn't gotten to yet and that we may not get to. But we really do very little test prep.

Mr. Quimby reflected further by saying that students at New Tech learn to think independently of the teacher; they learn through experience how to problem solve.

Ms. Skinner stated that he did not feel stressed about state testing; she thought her students were prepared for the TAKS, but she was concerned about college entrance exams such as SAT and ACT. She said, "I feel stressed about the ACT and SAT, I'm like, it's not Algebra II curriculum. I don't teach SAT, I teach Algebra II." For her, preparing those students through tutoring and added review topics seemed to help students through the difficult parts of the math.

Ms. Muntz remarked that testing is here to stay. It is a measurement of performance, and regardless of the school setting, assessment is a part of education. She applauded the performance of student test scores at New Tech:

> Our scores are awesome. I mean, our kids critical thinking skills, I will challenge that most of those tests are about critical thinking, and we're teaching critical thing. So, our scores are extremely competitive. We are an exemplary school, and it's our second year as an exemplary school.

One Word Summation of New Tech

The interviewer asked teachers to sum up New Tech High School in one word. All four found it difficult, but they each selected a word, and then followed up their word choice with an explanation as to why they chose that particular word. Table #2 spotlights the single descriptive word teachers used to describe New Tech.

Table 2

One Word Descriptive Word

Teacher	Descriptive Word
Mr. Quimby	Community
Mr. McClure	Different
Ms. Skinner	Flexible
Ms. Muntz	Creative

Mr. Quimby talked about the idea of community or family. He described a

feeling of closeness between faculty and students. He attributed that tight-knit feeling

to the learning environment.

> We work really hard at what we do. We know that what we're doing is different
> and so the kids know that what they do is different, they have to work a little bit
> harder sometimes than they might if they were just sitting in a class with rows
> and a worksheet, so I think because of that, we that we're kind of part of
> something special.

Mr. McClure referred to New Tech as "different" as did Mr. Quimby;however, he

chose the descriptor "community" over "different." Both teachers shared similar

perspectives. Mr. McClure described New Tech in these words: "We're not all about

books or all about worksheets or running to a locker. We're really about figuring out

what make the kids tick. Figuring out how, what we're doing is going to help them get

along in life."

Ms. Skinner explained the use of the word "flexible" by saying: "Things are thrown at us every day, and we never know what's going to happen, and you just have roll with the punches." She said every day is different, and the implication was that adaptability was key if one was to survive in the New Tech learning environment.

Ms. Muntz called New Tech school "creative." She explained her choice of words:

> this environment allows for your learners to be creative, and it allows for your facilitators to be creative, it allows for your school administrators to be creative. It's an environment that is open and that is challenging but also allows you to express things that are definitely outside of the box.

Video Observations

Videos of teacher and students in the classroom covered an extensive period of time. Classrooms were videotaped over a three-week period, four days per week, and 4-6 hours per day in non-consecutive weeks. Videos were reviewed and coded. Categories that were identified emerged from the grounded data. Findings are reported here.

Emerging Categories were Classified as Teacher Action or Student Action

Analysis of the observations revealed that teacher classrooms reflected high student engagement/activity numbers. While the actual type of activity varied from class-to-class, engagement was regularly observed in all four classrooms. Examples of student activity included discussion, problem-based activity, group work, reflective

practice, and (itemized) technology use. Mr. Quimby and Ms. Muntz demonstrated the

highest level of student engagement. Ms. Skinner's classroom showed the highest

classroom management while Mr. McClure's classes reflected the most classroom

routine. Technology integration was visible in every class during filming sessions with

the exception of examination days, such as in Mr. McClure's Spanish classes.

Mr. Quimby

This classroom demonstrated much activity on a daily basis; in the student action

category, group activity (student engagement) and student collaboration were his

highest rankings. Teacher action was highest in the areas of facilitation and guidance.

Tables 3 and 4 show individual teacher percentage frequency by category of student

action and teacher action. It was the beginning of a PBL project on poetry. For the next

several days, students engaged in discussion beginning with the initiation of the project

by the teacher. The teacher first showed a video to connect and expand student

understanding of poetry. Class discussion ensued following the video. Then, students

began researching poetry themes on their laptops. Poetry could be created and

presented as students determined. Mr. Quimby did set expectations for the projects. He

said to the class, "I expect yours [poetry] to be freaking awesome!" Student gained

enthusiasm for the topic when he announced his expectations of the group and

questions/discussion followed. Students then broke into groups and began work on the

poetry project. During one working session, a student decided to use a camera and

record group activity. One girl lamented, "You are actually serious about this, aren't

you?" That particular group used video as a way to express their poetic creations.

During this PBL exercise, the teacher's technology tool was the MacBook Pro and

YouTube, and Google Docs were accessed. Students were observed using their

computers to access the Internet for research as well as Google Docs and Gmail. They

also used Photoshop and Microsoft Word. Other hardware included video cameras,

microphones, and smartphones. Tables 3, 4, 5, and 6 rank technology usage by teacher

and student and by tool and software categories.

Table 3

Ranking of Teacher Technology Used from Highest to Lowest

Rank	Technology
1	Whiteboard
2	Internet
3	Laptop/MacBook
4	IPhone/Smartphone
5	Projector
6	Audio

Table 4

Rankings of Teacher Software Use, from Highest to Lowest

Rank	Software
1	YouTube
2	Gmail
2	Google Docs
3	Echo

Table 5

Ranking of Student Technology Use from Highest to Lowest

Ranking	Technology
1	Whiteboard
2	Internet
3	Laptop/MacBook
4	IPhone/Smartphone
5	Audio
6	Projector
6	Video Camera
7	LAN

Table 6

Ranking of Student Software Use from Highest to Lowest

Rank	Softward
1	Gmail
2	Echo
2	YouTube
2	Final Cut
2	Jing
3	Google Search
3	Google Docs
3	Photoshop
3	Wikipedia

Mr. McClure

This teacher taught Spanish and, to incorporate PBL projects into his classroom, required students, in pairs, to read Spanish books, discuss their readings, and give oral book reports. He expected the students to demonstrate their knowledge of Spanish through these oral reports. In another class period, he engaged students by asking them, in groups, to translate songs into Spanish. Teacher action for Mr. McClure was highest in the area of guidance and facilitation. Student action ranked highest in group

activity followed by student performance. Tables 3 and 4 show individual teacher percentage frequency by category of student action and teacher action.

Technology was consistently applied in Mr. McClure's classroom, especially by the students. During classroom activity, the teacher used the MacBook Pro (YouTube, Gmail, Internet sources). Students were observed using their computers to access the Internet for research. They also used a whiteboard and smartphone.

Ms. Skinner

This teacher engaged students through question-answer sessions as she taught math. For example, she asked one class, "What are we learning about?" Most students in the class responded, "Vectors!" although there were some shout outs of "magnitude" and "direction." In addition to class discussion, she asked for student volunteers to demonstrate specific math problems on the whiteboard. Once explanations were completed, Ms. Skinner requested that students work in groups on assigned PBL projects. Teacher action for Ms. Skinner was highest in the area of student-teacher interaction followed by discussions. Tables 7 and 8 show individual teacher percentage frequency by category of student action and teacher action. In class, the teacher regularly employed a whiteboard, a computer (internet and YouTube), and a smartphone. Students were observed operating whiteboard, iPhone, and microphone headset.

Ms. Muntz

There was very little routine in Ms. Muntz's class. She insisted on student

engagement, and that varied from day-to-day. Student actions, in response to her

assignments, were highest in the areas of group activity and engagement followed by

student autonomy (student ability to think and act independently of the teacher). Ms.

Muntz acted as a guide/facilitator to her students. Leadership and facilitation/guidance

were her highest rankings under the teacher action category. Tables 7 and 8 show

individual percentage frequency by category of student action and teacher action.

Table 7

Percentage Frequency by Teacher Theme

Theme	Mr. Quimby	Mr. McClure	Ms. Skinner	Ms. Muntz
Project launch/initiation	6.3%		16.6%	11.8%
Direction and instruction	37.5			
Guidance/facilitation	43.7	50.0	16.6	29.4
Expectations	12.5			
Teacher-led discussions			16.6	5.9
Teacher-student interaction			33.2	11.7
Real world connections			16.6	
Leadership				35.2
Accreditation				5.9
Evaluation		50.0		

Note. Percentages are based upon individual teacher category totals

Table 8

Percentage Frequency by Student Theme

Theme	Mr. Quimby	Mr. McClure	Ms. Skinner	Ms. Muntz
Reflective Practice	13.3%			6.9%
Group Activity	33.3	33.3%	30.0%	34.5
Collaboration	33.3	25.0%	20.0	10.3
Attention	3.3			
Brainstorm	3.3			
Self-Guidance	3.3			
Excitement	10.0			
Student Performance		37.5%		
Discussion			20.0	
Technology Engagement			20.0	17.2
Demonstration			10.0	
Task Analysis				3.4
Student Autonomy				20.7
Organization/Time Management				6.9

As an example of Ms. Muntz's PBL projects, she used "Plan the Spring Fling." She directed activity, but allowed the students to make decisions about the project; she required them to set their own short-term and long-term agendas. She asked students to reflect upon what they have learned. She asked, "How do you feel about this? Are you comfortable assessing?" Students worked in groups and collaborated on their PBL.

Ms. Muntz circulated throughout the room as the students worked to create a movie script as a final product. Some of the students expressed frustration with project pacing (too fast), but Ms. Muntz reassures them that the next project will move at a slower rate. In class, the teacher regularly used a whiteboard, a computer (internet and email), Echo, and the iPhone. Students were observed operating whiteboard, iPhones, and microphone headsets. Depending on their assignments, they accessed different software packages including Echo, Jing, and Final Cut Pro.

CHAPTER 5

DISCUSSION

The purpose of this study was to gain a better understanding of teacher and

student perspectives on the functioning of a project-based learning, technology-infused

high school. Because of the nature of this study and an effort to provide data in context

of a naturalistic setting, I elected to develop a Critical ciné-ethnography to portray the

culture and underlying tensions, strengths, weaknesses, and emergent power relations

evident in the school. In this study, these methods were used to conduct a thorough

examination to understand teacher's perspectives regarding the use of project-based

learning in a technology infused school culture: how teachers use project-based learning

in their technology infused classroom; according to the teachers, how their students

respond to the project-based learning; and how students use technology available to

them in their project-based learning projects. This qualitative study focused on a high

school curriculum design featuring project-based learning and the use of technology

throughout all levels of the school. Four teachers were selected for interviews and

classroom observations. They included two males and two females, and representing

four different content fields (English/social studies, mathematics, digital

communications and Spanish language learning). Collected artifacts consisted of video-

based teacher interviews and direct video-based observation of teacher and classroom

functionality. Chapter 4 described and delineated the results from this study. This

chapter includes:

1. Overview

2. Discussion of Research Statements

3. Emerging Themes from Data

    a. Collaboration (group work for students and Critical Friends for teachers

    b. Facilitation/Guidance (classroom management takes care of itself if facilitation and assignments are handled properly

    c. Learning process—student involvement in learning process produces student ability to make decisions and take responsibility for own learning---from student preferences to providing feedback

    d. Technology efficacy and technology as a tool for learning

4. Implications for further research

<center>Research Statements</center>

The research statements that guided this study:

1. Teacher perspectives on project-based learning in a technology-infused school culture.

2. Examples of typical teacher use of project-based learning in technology-infused classrooms.

3. Teacher perceptions of students' responses to project-based learning.

4. Students' use the technology available to them in their project-based learning projects.

The findings from this study support previous research **(**Blumfeld et al., 1991; Thomas,

2000; Land and Zembal-Saul, 2003) on project-based learning which found the approach

encourages learning and facilitates student ability to problem solve and think independently. The discussion that follows details findings in the four areas focused upon in this research which include: Teacher perception of PBL, curriculum examples, student perception of PBL as seen through the eyes of the teacher, and technology usage by student and teacher in the classroom.

<div align="center">Emerging Themes from Data</div>

Through observations and interviews four main themes arose through the data. During the analysis 88 separate codes were initially identified with 100% agreement between coders. These 88 codes were collapsed further into 21 categories divided between student and teacher-based categories. Student related categories were:

- Reflective practice
- Collaboration/group activity
- Attention
- Brainstorming
- Excitement
- Student performance
- Discussion
- Technology engagement
- Demonstration
- Task analysis
- Student autonomy/self-guidance

- Organization/time management

Teacher categories were:

- Project launch/initiation

- Direction and instruction

- Guidance/facilitation

- Expectations

- Teacher-led discussions

- Teacher-student interaction

- Real world connections

- Leadership

- Evaluation

From the 21 categories, regardless of teacher or student based-perspectives,

four primary themes emerged. The four primary themes that emerged included:

1. Collaboration

2. Facilitation/guidance

3. The learning process

4. Technology

Collaboration

One of the most lauded aspects of project-based learning is the takes place

among group members. Nelson (1997) stated that an effective method for learning was

to engage the learners in collaborative problem solving of real-world problems. This

statement would hold true to both aspects of the category of Collaboration from both the perspectives of teacher and student. In terms of teachers most identified themes were focused not within the classroom but in the teacher's critical friend's group where at new projects were vetted, designed and ultimately reviewed. The small, highly collaborative groups of teachers that met once per week formed an effective "community of practice, which was defined by Wenger (1997) as a group of professionals with similar goals and interests. Communities of practice have been long recognized as a source of growth for many of the world's professions (Lesser & Storck, 2001; Burk, 2003; Harrison, 2002). One aspect that lends well to PBL that was observed within the Critical Friend's group was that teacher teams were encouraged to exchange ideas and share experience of the past projects while working to develop or revise other projects. The observed discussion included conversations on cross-curricular project development, technology infusion and effective usage and broader community support and outreach.

Student working in groups not only engaged in active learning but were also exposed to many hours of group interactions, making this socialization and collaboration an integral part of the learning process. The teachers viewed this type of learning positively as it allowed the student to choose their participatory role in the project and kept them on-task, motivated and interested (Blumenfeld, 1991). Project-based learning requires the students to collaborate and work with others to research, resolve issue and present solutions during the project (Barron, 1998). The level of

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collaboration and engagement witnessed in the classrooms was constant and

continuous leading to perhaps an under-representation in the theme counts as the level

of engagement and collaboration occurring in the classroom quickly reached saturation

and remained constant for the duration of classes.

Facilitation/Guidance

Teacher-led instruction was extremely limited in most of the classrooms

observed. While student engagement and collaboration were highly represented as

emerging themes in the study, the instances of facilitation and guidance were very

much limited. Teacher's classroom roles were mostly focused on making sure the

students had the necessary skills to meet the content and project needs. Teachers were

able to monitor student learning and interaction, assist where needed, provide

scaffolding through the introduction of the content and alternative delivery methods,

and guide the student to self-analyze the student's own needs and the requirements for

the assignment. One aspect that surfaced was the lack of direct classroom management.

As the students were constantly engaged and frequently on-task classroom

management took care of itself, demonstrating Woolfolk's (2008) contention, that if

assignments and facilitation were handled properly, classroom management would take

care of itself. Thus, in this scenario classroom management issues were not very

apparent, but in Ms. Skinner mathematics' classroom the classroom management issues

were a more frequent occurrence, requiring the teacher to intervene and exhibit a

greater amount of direct control over the course. In interviews teachers noted that PBL involved independent work on the part of the students while their role as a teacher was minimalized.

Learning Process

The third emerging category was the home of themes focused on the learning process. Student involvement in the learning process produced the ability for students to make decision and take responsibility for their own learning. This approach is rooted in constructivism and requires students to be responsible for their own learning, self-direct their experiences and take control of their own investigations (Barron et al, 1998). Teachers were guided through student requests on preferred content delivery methods, classroom time management and evaluation methods. Students were commonly called on to reflect on skills and content learning thus far this year, group and individual performance, and task management in starting new projects or when collaborating with others. Teachers reported that students quickly learned who worked well together and who did not, which individuals were suited for specific roles in group work and those who were not.

Technology Use

The final category emerged was strongly focused on technology use. Technology use within the school fell under the *tool* category in Taylor's (1980) seminal work, *The*

Computer in the School: Tutor, Tool, Tutee. Whether hardware or software, technology

was a used a tool for learning. Student use was identified as technology for

collaboration, technology efficacy and knowhow and technological limitations. Teacher-

based technology related themes revolved around technology control, collaboration and

limitations. The theme of technology as a tool is reiterated by Mr. McClure "what I've

found is that the technology now has just become a tool, and it's just another part of

our school like a locker is or a backpack or a textbook, and we definitely use the

technology." In that technology is indistinguishable from any other learning tool one

would find in a traditional school. Furthermore, the technology usage was so constant

and continuous. It was not infrequent to see students pull out their laptop or cell phone

to send a quick email or work on a project for another class at any given time.

From these codes and categories, a series of thematic topics for exploration

emerged tied to the original questions this study sought to address. These are

elucidated in the following section.

Topic for Exploration 1: Teacher Perspectives on Project-based Learning in a
Technology-infused School Culture

Teachers were asked about their perspectives on project-based learning at the

technology-infused school. As revealed by the interviews, teacher attitudes on project-

based learning were generally favorable; most teachers spoke quite positively about a

PBL-based curriculum and how it enhances student learning and fosters independent

decision-making in students, which follows Land and Zembal-Saul's (2003) contention that PBL allows for greater student depth through immersion into more complex, thought provoking issues as PBL provides authentic investigation. All interviewed teachers mention the hardships of having to overcome what participants called "the October Wall." This refers to the first nine weeks of the first semester of their first year at that particular school (for teacher or student) where conflicts arise between traditional teaching and the PBL-based New Tech philosophy of teaching/learning. Teachers remarked that overcoming this point of conflict at this particular time resulted in questions including: "Can I do this? Can I keep doing this?".   Perspectives varied on how difficult the learning curve was for the first year. There was also much praise for school support in the learning process in the development of project-based activities as demonstrated in the Critical Friend's groups. In Ms. Skinner's classroom, I witnessed the lack of project or cooperative activities, despite comments in the interview about their usage in the classroom. Instructions were focused around teacher-led activities and traditional practicing of techniques. The technology perspective was viewed as booth a boon and possible hindrance. The Spanish teacher remarked that the technology aspect was his current deficiency and a point of needed enhancement and revision in future, but expressed that the use of technology was a huge role in the planning and execution of project. Ms. Muntz, the youngest of the interviewed teachers was also the most technically proficient remarking that "It's a breeze" in regards to the integration of technology into PBL. Mr. Quimby also expressed no major concerns about the use of

technology in the classroom and the in-class observations for both Mr. Quimby and Ms. Muntz illustrated consistent on-task engaged students using technology to complete assigned projects. Technology use in the mathematics classroom was reserved mainly for direct teaching and functioned in place of the traditional blackboard or overhead projector. Students were invited to complete activities on the board as demonstrations to the rest of the class rather than as individual or group assignments. During this time, I also witnessed on two occasions that the math teacher's first instructions to the class were to put up and stow all laptops. This class also had the least amount of PBL oriented work encountered during the observation period and the most amount of direct instruction.

In all instances technology was a necessary tool to complete assignments, provide guidance or to assist with instruction. Technology was not "tacked on" or used as a gimmick or incentive for completion; instead providing a natural in road for completion in the same manner one would find a pencil or paper in a traditional sense. The projects could be re-conceptualized away from using the technology but the use of technology in the classroom enhanced and expanded the learning experience.

Research documents that PBL has a longer learning curve for teachers. They did not feel as prepared to create and implement PBL in the classroom, but once they were more comfortable with the approach, they all agreed that PBL was a much improved approach for use in the classroom because of the level of student engagement and the ability to increase student knowledge and understanding as well as the ability to make

learning applications. As Dewey (1916, 1938) and others (Byrnes, 1996; Eggen &

Kauchak, 1992; Mahmudi, 2011; Phillips, 1995; Saunders, 1992; Solomon, 2003) have

theorizes, active engagement during the learning process enhances student

understanding. The classrooms observed demonstrated this point, as all class, with the

exception of one instance (a traditional lecture) contained active and engaged learners

collaborating with each other to solve problems, complete projects and delve into the

course material.

Topic for Exploration 2: Examples of Typical Teacher Use of Project-based Learning in
Technology-infused Classrooms

Over the observation period, I also witnessed multiple uses of project based

learning activities in use within the school. In three of the four classrooms, I witnessed

active usage of project-based activities. In two of those classrooms, I witnessed the

usage of technology used by both students and teachers as a unspoken request for the

completion of the task. Ms. Muntze's project focus for her digital production course was

the production of a video-based segment called the Spring Fling. I witnessed students

working as a group to determine their individual roles, skill needs, practicing of technical

skills, delineation of group roles necessary for the planning and execution of the task.

The teacher guided the student discussion, emphasizing the need for students to

determine the requirements for completion and what skills and assistance required

from the teacher in order to effectively execute the project. In the second classroom,

American Studies, I was able to observe the initiation to completion of a project focused on U.S. History and the poetry styling of the time. Students were required to review historical and contemporary poets writing and creating artifacts representative of the times. Students self-organized into groups and collaborated to complete the activity. Students were then asked to work in groups to write and perform similar poems. Teachers roamed the classroom listening and making suggestions to learner groups. Overall these two projects had very high-levels of student group autonomy with the teachers guiding and ensuring students were on task via proximity, and being generally available to students if needed. In classroom three, students were observed in the middle stages of a long-term project nearing completion. This project required the students write and illustrate an elementary level children's book that would later be presented in an elementary school class in the district. Students were observed rehearsing the readings and presentation.

The selection, design and implementation of these projects were employed to have students begin the project by researching their topic, and to enhance their depth of knowledge in the subject. As the students' knowledgebase increases so does their understanding, with the hope that curiosity and personal interest increases with the continuation of the activity and experience (Land & Greene, 2000; Solomon, 2003). According to Thomas (2000) and others (Ehrie, 2011; Solomon, 2003), the effects of PBL on the learning process are enhanced because of the real-life connections.

Connection to the community, as illustrated in both the Digital Communications

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and Spanish classrooms, reiterates the need for the student activity to be rooted in the

present and provide a direct appreciable impact on those around him or her.

Furthermore, projects are designed in a space that resembles the context in which the

to-be-learned material is actually used. This form of situated contextual learning

(Jonnasen, 1997; Blumenfeld et al., 1991; Scarbrough et al., 2004) is visible in the

creation process present in the student projects (Spring Fling, Habitat for Humanity,

etc.) of the digital communication course, in which students must explore the subject,

the background material and decide how they will proceed in presenting the material in

an audio-visual medium. This situated cognitive approach aligns with a primary tenant

of project-based learning – that PBL allows for in-depth learning, not superficial or

survey type learning that takes place in most traditional classrooms. Furthermore, the

six "*A"s* from Steinburg's (1997) model hold forth in all PBLs observed as they all

contained: Academic rigor, authenticity, applied learning, active exploration, adult

connections, and assessment practices. As students had to conduct their own research,

connect the projects to the community, and apply the knowledge in order to construct

their end-product, these projects also served to enhance their problem-solving abilities

and critical thinking skills as discussed by Lattimer & Riordan (2011) and Thomas (2000).

Topic for Exploration 3: Teacher Perceptions of Students' Responses to Project-based
Learning

The overall perspective, based on observations and interviews, was that the

teachers assisted one another in developing the course activities and further evaluated

the completion of the project based upon teacher and student feedback. Throughout

the project and after its conclusion, teachers solicited student feedback for use in

revision and development of future projects. The student feedback was utilized to assist

with refinement of future projects and revision to existing content delivery. The

teachers discussed student feedback within the Critical Friends meetings and all

completed projects that were tagged for revisions prior to the forthcoming school year

were required to have the feedback of at least two students.

Additional student input on the learning process ramifications was observed in

Mr. Quimby's American Studies course as student behavior was being discussed by the

teachers (the class had three active teachers present for the day) in terms of taking

student preference into account in order to maximize in-class group and collaboration

time for projects while minimizing direct content instructions needs. Teachers had

listened to and internalized student-learning preferences and redesigned some aspects

of the content delivery methods of the class into video lectures. Teacher instructions to

students were to review the videos answer some content-related questions and come

to class prepared to discuss the content, its relationship to the project through the lens

of American history and English language after presenting their final product for the

project.

Teacher and student comments toward redesign and in-class student behavior

illustrates that students responded positively to learning because they are actively

engaged and experiencing the learning rather than being placed in a passive mode as in the traditional classroom. According to Glasserfeld (1992), these actively engaged students are demonstrating constructivism functioning in the classroom as constructivism expounds the needs of building knowledge through active learners as it has been theorized that knowledge cannot be transferred to a passive learner. Students are actively searching out new knowledge under the guise of their structured, assigned projects that are designed to keep the student active and engaged. Throughout the observation periods, all observed "normal" – that is to say non-exam class times featured students actively engaged and on-task. Engagement could be either individually or as group collaboration working toward a course goal or objective through active research and, ultimately, the creation of an end product for the project. The one exception witnessed was during a test review period, where Mr. Quimby reviewed students on the course content through lecture. Attempts at discussion failed as indicated by observation of disengaged students with their heads on their desks, playing with books, keys and other various items on their persons. Students during this period were not engaged and actively participating in the class. What is of note is that the lecture session was brought on by the lack of student participation in one concurrent project in the class. The American Studies co-teacher specified that this lecture was brought about through student participation in the learning process; that is to say, students had specified that they preferred the project-based collaborative activities and had requested that lecture based content be provided not during class times but rather

through video. This preference also highlights an interesting connection to technology –

that the students had a preferred delivery method for both in-class and out-of-class

material, and more traditional lecture-type delivery was best made available for student

review via video and audio podcasts which were accessible via the student's preferred

digital technology device (smartphone, laptop, iPad, etc.). The student then had access

to this content 24 hours a day and could review the material any time he or she wanted.

This separation of content permitted out-of-class material being reserved for more

knowledge-based content and in-class time focused more on research and active

learning. The in-class project-based learning sessions permitted the students more time

to actively work on their projects leaving teacher's more time for facilitating or guiding

students rather than tell them through direct instruction methods what they needed to

know and why.

As the math class was more focused on a traditional teaching method, Ms.

Skinner appeared to have much more management issues than the other observed

classrooms. This greater exertion of control over the students by their teacher may be

due to the constrains placed on them, thus resulting in the students rebelling and acting

out more against her than witnessed in any other class. The level of engaged and active

students was perhaps the greatest measure of feedback for teachers (beyond grades of

end-products and exams) as the active learners were highly focused moving along the

project in their collaborative groups.

Topic for Exploration 4: Students' Use the Technology Available to Them in Their Project-based Learning Projects

During the data collection period, it was witnessed that many types of technology being used as tools for completions of activities. Included tech devices seen in use included, laptop or MacBook computers, mobile phones, video cameras, portable video game systems, audio recording devices and microphones. For software, students used Google Docs, email, web browsers, the internet, their learning management system and instant messaging systems to complete tasks and to even communicate to group members who were not present in the class – being either at home, the sister high school or currently working on an activity in a different class.

The use of technology seemed to impact the current class schedule by breaking down the need for students to be in a designated class at its designated time. Instead, students were able to attend segments of classes required by teachers (usually at the beginning of the course time) and were later permitted to leave the class to work on class projects – including other class projects, with the expectation and understanding that all work was to be completed by the established deadline. This level of flexibility empowered the student to take an active role in the learning process and reinforce their need to establish agendas and timelines for completion of activities.

Furthermore, student usage of technology played an active role in the delivery of new content, with students requesting, and teachers, by agreeing to produce a series of video-based lectures delivered over the internet focusing on the course content, thus

freeing up in-class time away from teacher-delivered lectures to more active engagement on learning activities. Of the two remaining subject classrooms, one did not make use of any technology in his project activity. This teacher remarked that this was a major personal deficiency in his course and project design. Further, it was a gap that he was actively working on overcoming with the assistance of other teachers and students. In the fourth class, the teacher primarily used technology.

This view of technology squarely aligns with Taylor's (1980) in that the use of computers in the classroom is that of a *tool*. Here, the computer is used a practical appliance with a useful function. The students use the technology throughout all courses and personal technology usage is prevalent throughout all areas of the school including the classroom, halls and public places. Laptops were ubiquitous and each student made use of a school-provided computer with full Internet connectivity and nearly no restrictions. Student interaction with these devices was nearly continuous and rather than the traditional pen and paper, the laptop was the go-to tool of the classroom, becoming the central hub for assignments, communication and collaboration.

Whether or not the students actually liked using the technology was not addressed. However, the use of computers and computer related technology was clearly an extension of what they already know and use on a daily basis outside of the school environment, so by being able to make use of the technology in the classroom, the students were comfortable using the tech and learning about it in more depth. Under

these circumstances the use of a computer was enrichment to the learning environment and student engagement.

The use of the technology further enhanced the PBL aspects by providing a tool able to be used for further research and therefore increasing the amount of resources available to the students at any given time. These increased available resources permitted the learners the ability to delve further into the material and more accurately simulate the real-life context in which the material would or could be utilized, and therefore aligning itself squarely with Tomas (2000). Additionally, the level of technological efficacy of the students was witnessed on a daily basis as students learning how to trouble shoot technology failures, analyze and determine the correct tool for any given instance, as well as become knowledgeable about the shortcomings, limitations and strengths of any given device. While these events well not dismiss the "technology will fix everything" mentality (Robertson, 2003) and should not be viewed in that vein, it does bring about the idea that technology where applied effectively can aid the learner in maximizing resources available and be as effective in the classroom as permitted.

<div align="center">Implications for Change in the Schools</div>

The notion of project-based learning is not new to the educational arena; Kilpatrick (1918) coined the term project-based learning at the beginning of the twentieth century focusing on its purposeful activity and occurrence in a social

environment. Barron (1998) lists four main principles to guide project-based learning all four of which are evident is the observations and interviews at New Tech High School. The 4 principles listed are:

1. Learning-appropriate goals

2. Scaffolds that support both student and teacher learning

3. Frequent opportunities for formative self-assessment and revision

4. Social organization that promote participation and result in a sense of agency

The success of New Tech may be, in part, attributed to the deep design philosophy which follows in accordance, Steinberg's six A*s* in producing an institution rooted in project-based learning and deeply connected to the development of the curriculum while fostering student and teacher growth through collaboration. The results are an authentic, experiential and engaging learning environment for the benefit of student and teachers alike. The question which remains is, if the school's formula is so successful, why is it not being utilized with as much frequency elsewhere?

The full immersion technique of the school may in fact be beyond other schools but the philosophy and processes present in the environment should be replicated in more schools as the study demonstrates that PBL enhances and promotes learning in the classroom. Students are expected to become independent knowledge seekers and take an active part in the learning process, rather than being the passive recipients of information. Additionally, engaged and on-task students resulted in a by-product of reducing the teacher's reliance on control-based classroom management techniques.

Because the design process is collaborative for the teacher, it helps reduce the single classroom isolation present in many traditional schools. The PBL projects are more time consuming to produce but with appropriate teacher –instruction and guidance teachers in traditional schools can make use of these techniques for the betterment of their students and co-workers.

The technology infusion aspect of new-tech illustrates that technology can be used successful within the school context and not be considered a gimmick or merely a hook to grab student attention, but rather a meaningful tool and active participant in the learning process. It is important to note that most of the projects witnessed or described could be revised and completed without the use of technology. Here the technology is a tool that could be substituted with more traditional apparatus. Further topics for research could focus on the transition of traditional school curriculum design to PBL models. From this area there are many opportunities for research in both the content design, implementation, the fostering of collaboration, examining the development of relationships between teachers and students and students and students. Additionally, greater emphasis on the use of PBL in the classroom can be introduced at the teacher education level in order to produce new, young educators, armed and confident with this technique coming out of colleges.

Conclusion

The study demonstrates that PBL enhances and promotes learning in the classroom. In addition, students were expected to become independent knowledge-seekers and decision-makers in their own learning as they move through the PBL process. Through this lens students were able to assist with their own learning both in pursuing and campaigning for their preferred learning styles and playing toward their creative processes. The PBL curricula was viewed favorably by both faculty and students – the latter demonstrated by their willingness, excitement, teacher expectations and constant engagement, while both groups remarked that the their was a steep learning curve, particularly at the onset of enrollment toward the halfway mark of the their first fall semester. The question which remains, is if PBL was and is successful for prompting student engagement, motivation and interest when instituted throughout the curricula at this location, why is not be used as frequently in other, more traditional, schools, as regardless of the technology usage, many if these projects could be designed, implemented and completed in a traditional school environment.

The technology usage in the school takes the form of a constant ubiquitous tool – a veritable Swiss Army knife, with a particular utensil available for possible need or situation and the encouragement from teachers and peers to make use of the devices. The technology here is not used to replace the teacher but rather enhance the learning experience by making use of production and communications tools which the students are already comfortable using and teaching them new skills necessary for life in the 21st

century. The technology is used by teachers and students alike and not regulated to one group or the other nor is it used a gimmick or reward for a successful completion of another task and it is not "tacked" on to the lesson. Rather, technology at New Tech is grounded in the context of the lesson and used to add additional creative levels to assignments, enable the students to delve into material at a greater depth or to boost communication and collaboration between students.

The promotion of Project-based Learning and technology infusion as demonstrated by the functionality of New Tech demonstrates the feasibility of both elements working in conjunction within a public school. The buy-in and collaborative aspects of the teachers and students lend to the successfulness of the schools approach by requiring both groups to participate in all aspects of the functioning of the school and lesson design. As the school seeming success illustrates, with the production of the correct environment and the relevant needs of support for teachers and students in terms of curriculum design and technology assistance. The end result – a functioning organism that assists in the creation of its own tools and providing the opportunity of education for both teachers and students alike.

APPENDIX A

INTERVIEW TRANSCRIPTS

Interview 1: Mr. Quimby

	Timespan	Content
1	1:11.3 - 1:41.8	Pre-speech. Interaction between the Interviewer and Interviewee.
2	1:36.5 - 1:47.6	Thank you so much for participating in this study. I have some demographic questions to ask you first. (muttering by Interviewer which was indiscernible).
3	1:47.6 - 1:52.9	Please state your name.
4	1:52.7 - 1:56.8	And what subjects do you teach?
5	1:52.9 - 1:59.7	Mr. Quimby
6	1:56.8 - 2:00.8	I teach the English arm of the American studies course.
7	2:00.8 - 2:02.1	Can you describe that for me?
8	2:02.6 - 2:28.1	yeah. American studies is an integrated US history, English II course. So we integrate the two subjects together so when we're learning about different periods of American history, we'll kind of supplement that with English skills from the TEKS and they'll do a lot of writing and analyzing and those kinds of activities their English with social studies. So, it's all taught/co-taught with another teacher.
9	2:27.0 - 2:28.3	
10	2:28.1 - 2:32.9	Who's your co-teacher?
11	2:28.3 - 2:29.3	███████
12	2:28.7 - 2:32.2	Is the US history teacher in that class.
13	2:32.2 - 2:33.8	How long have you been teaching?
14	2:33.8 - 2:38.8	This is the end of my 9th years teaching.
15	2:38.8 -	Where did you do your undergraduate work?

	2:40.1	
16	2:40.1 - 2:48.7	I did my undergraduate at Chico state in Northern California and transferred to UT Tyler and finished there.
17	2:48.7 - 2:58.9	Oh, I see. So, do you feel like your university preparation prepared you for what you've been doing at New Tech?
18	2:53.9 - 4:15.8	It prepared me for the relationship aspect of working with kids and everything else. As far as the planning project based learning. I, I, I didn't even know what project based learning and, and I was when I went through the program. Now, I am a little bit unique in that I went back post baccalaureate and I was teaching while I was working on my certification. So, a lot of what I learn, I learned on the job as well. I'd taken 2 .. 1 semester of courses then. I got my first job. I didn't have a lot of training going into the job. So, I'm a little bit unique in in that way. But I still took all the courses and didn't learn a lot about project based learning. at all now, I went back for my master's there and that's where I first came across project based learning was in my master's degree at the same school. but, as afar as the relationships going and the discipline and the classroom management . I think they did a pretty good job. of preparing me. But, far as project based learning and kind of rethinking how you approach instruction It was definitely everything I got I had to learn here and on the job.
19	4:15.8 - 4:19.1	Now here are some pretty basic questions. What do you think learning is?
20	4:19.1 - 5:36.9	Well, it's not that basic of a question. I think learning is a lot of different things. it's not just about for me its not about content. Content's an important part of it. It's what the state tests us on. Its what people expect us to do . So, when kids graduate they've learned the TEKS the standard the different subject matter. But, I think for our school, learning is really more than just the content, its teaching kids how to become better citizens teaching kids how to think for themselves. teaching kids how to work with each other. So, the traditional type of learning that we think so much about that takes place in a lot of schools is important and we do that here but I think that learning is anytime you're picking up something something new, no matter what it is, no matter whether it' content related, or learning how to deal with somebody who's mad at you when you walk into class because you didn't do an assignment for your group. Or so, I

		think that's what we're really trying to do here a lot at new teach is teach kids that there 's more about learning than just studying some names for a test or learning how to do an , you know, an equation or something like that.
21	5:36.9 - 5:41.7	Now, to expand on that, what then is teaching?
22	5:41.7 - 7:03.8	Well, teaching looks different in my mind as well. Because it's not just about the content, again, its really about forming relationships with students and teaching kids how to how to kind of function. And how to grow up. and so much more of that is, you know. Not so much more, but the idea of content being the only thing that we teach is just I think that is one the of the problems with schooling. I think We worry too much about content over just life skills. And learning how to be/work with others and learning how to think and problem solve. And do those kind of things. so, as a teacher , what I try to do is is show kids that its more than just about memorizing things for a test or preparing for an AP exam or the SAT or something like that. It's really/What's really going to get our students, you know help them find success is how they -how they they act with other people, how they interact, and do those kinds of things. So.. Teaching is.. it looks different here. So...
23	7:03.8 - 7:11.5	What would you say then the role of the teacher is at new tech verses other schools and all that?
24	7:11.5 - 8:47.9	Well, the role here. Obviously, we don't even call ourselves teachers.. We're facilitators. And so, you know, when you use that word our.... Our role is to facilitate the learning. Sometimes that looks like a traditional classroom. Sometimes you will come to our class and one of us will be lecturing. But, More often not its just working with kids to teach them how to go through a process to get a product or get somewhere we want them to be. and we really want them to get there on their own. We want them to learn the material on their own. We've really gone through a lot of different steps this year to try not to do as much direct lecture. Because we want the to discover a lot of what we want them to learn on their own. So, again, it's kind of like, you know. They say the guide on the side type teaching and we really just try and direct them to the right places and see if they can discover that on their own. Sometimes they don't and when they don't that's where we have to kind of step in and get them in the right direction.

		But, the idea of to me when I was in the traditional school. I didn't like to lecture a whole class period anyway. It was boring for me and it was boring for the kids. And so I wanted to make sure that you know that I was doing something different to keep them engaged. and We get to do that here. Sometimes, in our traditional school. I was kind of the weird teacher somebody that was thinking outside the box or just doing stuff that a lot of people didn't think was engaging kids. Here that's all encouraged and all part of the process, so...
25	8:47.9 - 8:59.0	Can you tell me what kind of an average day is/looks like for you? The structure and what you do?
26	8:59.0 - 11:01.2	Yeah, it all depends on where you are on a project. Um, If we are I would say there's really two distinct, three different types of days. Project launch day. We're really kind of in charge of the classroom that day. Where we launch the project. We give the entry document, we go through our knows and need to knows. We guide the students through making social contracts and driving statements, then we Um, So on those days we're very much in control of the classroom. There are workshop days where maybe we'll give a workshop on some of the materials they need to learn. That looks sometimes very traditional. That does sometimes involve a lecture. Other times it will be another kind of scaffolding activity. We tried to do some simulations this year to help our students learn some of the content. Um. And so, on those days, it doesn't look. - I mean, That depends it can look very traditional or it could look you could walk in and it could look like complete chaos with kids moving around the room and moving to different stations. We had a WWI trench warfare simulation; that we did this year. that, If you'd walked in on that day, what in the world's going on in here. WE had books flying all around and books slamming on the table while they were in the trenches. And everything else. And then the other day is a workday. On the workday, the kids will come in and the kids will come in and we will say "this is a workday" and we give them some guidelines that we want them to accomplish within that class period. But, for the most part they are on their own and we're just moving around the room visiting with groups from time to time and sometimes we just completely step back and let them do their own thing unless they have questions. But we'll will usually go around and check in with groups two or three times a class period. and see where they are and if they are in the wrong direction, you know, we'll sit with that one group and then that's/ there's some

		direct teaching going on. But its definitely on a workday we're never in front of the classroom at all except to say this is a workday and this is what we want you to have done by the end of the class period.
27	11:01.2 - 11:08.1	How much self-direction then did the students have in terms of setting those goals what is their roles?
28	11:08.1 - 12:47.9	I found that um that, the longer that this being the end of our third year that the kids have taken a bigger role in that than they did in the beginning. In the very beginning the firs year we taught in this model we thought we could just tell them "today is a work day" and we thought we wouldn't have to give them any deadlines or benchmarks and/or we just thought they would just know and they didn't' of course. And, they didn't know how to take advantage of that work time or they didn't take advantage of that work time. They would just kind of float around so we realize they would need some more structure so, in the year two we would actually say "Ok today is a workday and at the end of today you need to have this and this done and we're going to come around and check and we're going to give you a grade for doing that". This year what we found and the students we have this year have been here since they were freshman they're juniors. UM we still have to do that but we don't have to do it as much. We just have to say, "today's a workday and we want to come by and see what you've done at the end of the day." And they'll, within their groups will set their own benchmarks to what they need to have done. Most of the time, and not all groups do but a lot of the kids are starting now to benchmark themselves. They know that when theirs a workday we're going to come around and ask to see something that instead of being specific and saying "at the end of the day we need to see this much work done or this paper done or this sheet filled out or whatever it might be, they figure that out on their own. And when we come by and check with them, they tell us what it is we're supposed to be seeing and we see that it's done and that's been great. And I think that comes from three years of freshmen sophomore and junior year that they're able to do that.so, it just comes with time.
29	12:47.9 - 13:13.5	You mentioned that trench warfare project earlier would you… you have any would you go like to go into more detail about that one? Or do you have another project you guys have been here that you are especially proud of?

| 30 | 13:13.5 - 15:37.3 | We've been proud… this year, we've been really proud of all of our projects, we were talking the other day this is our second year we've taught the class and we really only reran one project we'd done from the year before. Um and … so, we've kind of just gone back to the drawing board this year and we've really been happy with all our projects. We've had a couple that were great, um this year we had a roast of Teddy Roosevelt. So, it was like the comedy central roast for the kids or the older dean martin roast if you're a little bit older but um They ,… Teddy Roosevelt, one of the students was Teddy Roosevelt and then all the other kids played people that were somehow affiliated with Teddy Roosevelt during that time period and then they were each responsible for getting up and giving a roast about …about Teddy and their ..they had to connect their relationship somehow and they had to tie in you know, their history with him and they had to use some humor but at the same time it had to be historical and uh so, they were getting speech writing skills and a lot of ELA stuff uh, they were using sort of sarcasm and um humor and then of course all the history stuff they were covering at the time. And it's always fun. They get dressed up and we don't even ask them to dress up. They just kind of all do it on their own and uh, it's always fun. We did this say…that was one project that we reran. The year before we did the roast of Thomas Jefferson and so that was one we rerun. So, this year we've done a lot of great projects that have um engaged kids and let them think about issues and we also tried to connect a LOT OF our projects with the historical period that we're studying but also bring in things that are going on now too. So, we did a World War I project where it was talking about shell shock and then they had to bring it and compare it to Post traumatic stress disorder that the soldiers that are coming back from the Middle East are dealing with now. And so, we're trying to let the kids know you know, that question that you always get, why do I have to learn this… um that there are these connections. That things that happened 80-90 years ago are still happening today and you know why haven't things changed or then, they ask us … hopefully start to ask those questions, why aren't things changing. Why after all this time do our soldiers come home with the same problems everything else? |
| 31 | 15:37.3 - 16:30.4 | We did our first year, we did a medieval times project where we took the kis to Medieval Times in Dallas and told them that there was no historical accuracy to the show and so they had to take notes while |

		they watched the show and everything else and they to come back and write a script that could be used so when kids go there in the middle of the day, they saw all their day time shows to schools, they had to be historically accurate so… And that we had a connection with medieval times, we actually sent them our scripts. They wrote back and thanked us and said they were going to use them. I don't think they ever did, but told the kids anyway that they were use some of the ideas they got for future scripts so… It was a good real world connection that they can see that people actually get paid to do this kind of stuff and so there some of our probably projects that first come to our mind when I think about some of the things that we've done.
32	16:30.4 - 16:46.4	That's really great Thank you. Uh. Just a few more questions. Related to those projects, how do you vet those projects to the school as a collection? (mumbling)
33	16:46.4 - 16:56.5	How do we… we…All of our projects. Uh. When you mean vet. You mean how do we….
34	16:56.5 - 17:00.6	How do you make sure they're of sufficient quality (right) to present to the kids?
35	17:00.6 - 19:41.7	So we run a process at our school called critical friends. It's a It's something we learned from the New Tech foundation when they trained us on using PBL models or methods and the critical friends process, we meet with three separate times that you can come and bring a project or one morning or afternoon session. It's mandatory. You can't run a project without running it through critical friends. But, its our staff and we all meet together for about 45 minutes and we'll bring our project ideas and we go through a protocol where we present and then we listen to the feedback from the teachers. And, it's all… The beautiful thing about it is that I can be presenting something for English or social studies but we can have three math teachers in the room and they know their content really well but they don't know ours and so they can ask questions I'm sure I get this., you know as a math teacher and not an expert in your subject area, you know there's terminology and things we just take for granted, you know that we just assume our kids are going to know and so they'll ask these kind of guiding quesi5tons that really help us rethink the way we approach the project or come up with different ideas or um

		sometimes even, we've gone in with a critical friends with one idea for an end product come out with a completely different idea on that. So, we have to do that process before we launch our project and so that happens 2 or 3 times a week, so there's plenty of opportunity for you to bring a project to critical friends and Um. That's the main thing and of course, our administrator, Tabitha, is always in our classrooms she always knows what is going on which is great because she will give you feedback too if she sees something that's not working. She'll let you know and then she talks to the kids after a project, or during a project and we do too. A lot of times, we'll talk to our kids after a project to.. What about this? What did you learn? What did… you know…. Do you feel like you can take a test on this and do well on it? Of course, we give them test still too with the projects but uh, was there an area that was kind of weak in content or was there an area you thought we didn't develop enough with this project. And our kids have learned now that they can be honest with us and tell us what they think and a lot of times their feedback is great. And sometimes they give use feedback that they… maybe we can't use as well but um for the most part, the feedback we get from fellow teachers, administrators and students helps us know if our project worked or not. And, that's when we make the decision to run it again next year or throw it away and start over.
36	19:41.7 - 20:10.8	You just mentioned the test that you all do And, given that we're in Texas Say that state testing seems to take a pretty prominent place but there's a lot of other Texas standardized tests, The SATs and ACTs the Pre-AP the AP test. What ends up being the role of testing at New Tech?
37	20:10.8 - 23:05.7	Well, because like you mentioned, I mean because we're in a environment that testing is key, still we have to… we can't ignore that fact. And so, we give tests during each of our projects gonna quizzes and tests and uh they don't always weigh in as much as a project would weigh in but they're scaffolding activities that go in and uh and because, and our kids have to be … they have to know how to take a test in this environment uh. In this community test scores are important too. AP scores are important to a school, to a community. SAT scores everything else. So, we don't do a lot of test prep in this school um. Last year, in our course our AP scores were probably not as good as they could have been because we didn't just teach to an AP test like a lot of times happen in AP courses, and so we thought we

| | | needed to stay true to the model. We still had kids do great on the exams, we probably just didn't have as many as other schools you know in similar situations but our we feel like our main goal is more, sorry the mike is... We feel our main goal is not to prepare our kids to become great test takers and while that may still benefit them some at the college level, especially in their first couple of years, uh, its so much more than just taking tests. We want our kids to get out there and be able to solve problems and work with other people and kind of like I mentioned before. So we don't do a lot of test prep here. I know for TAKS this year um I spent about two days going over the TAKS test. UH, at various times for the English TAKS. For the Social Studies, we did a little more prep but it's was not anything like we used to do in traditional schools it was through games and um quiz shows and type things - simulations like that where they didn't even realize they were learning-you know doing TAKS prep. Uh, with Social studies, we had to do a little bit more, because, you know you don't always get to all the content that is going to be on the test by the time the test rolls around, so we had to do some scaffolding activities and some things with some of the TEKS we hadn't gotten to yet and that we may not get to. But we really do very little test prep. At least in our subject. I can't speak for some of the other classes, but as far as the AP test was concerned. We don't do a lot of timed writings and everything else but yet our students do fairly well. And, when it comes to SAT and ACT I know our score/scores are comparable, if not better than some of our other schools in this area or with some other backgrounds with some other demographic backgrounds so, I think the fact that we don't do a lot of prep in the classroom shows that a lot of what we do here works even though we're not just drilling kids for tests and everything else. They're learning to think and figure things out on their own which I think is a good thing. ..Interviewer mumbling Yea, it's good |
| 38 | 23:05.7 - 23:41.1 | That makes sense. Now to take off on that. Do you feel that this different paradigm on schooling that y'all engage in here creates any sort of conflicts between this larger state of Texas paradigm of heavily tested ah very service level knowledge acquisition verses what you were just talking about critical thinking, creative types of process. Does that wind up with any conflicts in the community with any parents, with some of the students or with the larger state as a whole? |

| 39 | 23:41.1 - 28:10.6 | Early on in our community, our parents were real worried about their kids. And I don't blame them. I mean, we were a brand new school and um it was a method that no one really knew about especially in this community, was especially in this community and so they were really worried, so I would get a lot of phone call from parents uh about you know "is my kid going to do well on the SAT?" "Is my kid going to be able to get AP credit?" is, our, you know is our kids going to even pass the TAKS? You know, cause we even that first year we weren't doing a lot of um TAKS prep and everything else, and ah so, there was fear I think from parents and even from some kids. They're like" I don't know, am I really learning anything?" and then we would when a kid would say that to us, we'd talk about certain issues so they could talk to us about what they'd learned and they would start to see-ok I am learning. Learning just looks a lot different in our model, it's not I have a little piece of paper in front of me and I fill out the blanks and I fill in the boxes and I get an A at the top which means I learned. It's sometimes, you don't realize the learning you're doing until you reflect upon it and look back. So, there was some conflict, I think I hear less of that now, in my third year here than I still get some of it sometimes from parents when they're worried and concerned about whether or not their kids are going to be ok when they get to college and all of that. I think for the most part, especially with our first senior class and they've all taken the SAT or ACT and their scores are high they've all started to get into their colleges now, I think, I don't know this for sure, the majority of our seniors that applied to a four-year college were all accepted into some four-year college they wanted to go to and so I think that has eased some of the burden within our community. I talked to some of my friends that aren't in education or I've talked to some of my friends that teach in more traditional schools, while they all think it's really cool what we do, they they still have a lot of questions and they wonder whether or not it works, and what it means long term for our kids and will they be at a disadvantage or advantage and uh, there's that fear. That kind of unknown um. State wide, I think you know if you talk to a lot of our legislatures, and I'm actually related to one, um they wouldn't get, they get it, I mean, we've had people come through and they think its great they walk, they see kids engaged, and everything else and To develop policy -state-wide policy that would implement some of what we do and de-emphasize some of the testing and the traditional stuff you know I don't think that is ever going to happen. You know currently, right now, the landscape we're in, it's just too easy to give |

		kids a test and get results that quick and uhm that way its easy to measure and so, um I but again, I what I found is - hopefully, this school, this model replicates or models similar to it replicates and it spreads a little bit more and as we're not the only school. When we started there were only three schools in Texas doing this and at least, you know, with our model and now I don't even know what the latest numbers are. I think there's 8 or 9 or maybe 10 schools in Texas are doing it now. So maybe if it spreads, more people will hear about it. I know in our community, I don't hear nearly as much negative about New Tech as I did in year one. From people outside our school community or within, even our parents within our school. So, I think the longer its around, and the longer people see what our kids are doing the better it'll be. But, there's definitely a disconnect and when I talk to people outside of education, they always have questions. And, its always comes back to testing and how are they going to do when they get to college. Because its not the same. What are they going to do when they're in a lecture hall that's 400 kids and the professor just lectures and they have to take three tests and that's all they do in the class and I think they'll be fine. I think they'll figure out who to study with they'll see people that ask questions and they'll approach those people instead of being intimidated and they'll form study groups and they'll learn how to approach professors which I know that was something which was really difficult for me in college when I first started is I was intimidated by the professors but our kids are not afraid to approach us and talk to us about issues and so, I think all of that will help them navigate that part where.. That's where kids really struggle when they get to college. They just go off into a hole and just start to struggle and they don't get any help and I think our kids will be fine in that area and so…
40	28:10.6 - 29:22.1	That gets to another area you were just mentioning about communication and kind of the role of communication in a setting like this. There's a philosopher uh, talks about four types of communicative action. The first step is the strategic, which is effectively imperative, you will do this. In the educational setting we tend to see that a lot in traditional schools. Do your worksheet and turn it in and basically, you can e3ither choose the do it or not do it. The second is what you were just talking about which is constative communication which is this back and forth, the dialogue even sometimes even argumentation Um and then there's normative communication in which you establish the rules and the goals of the

		space and then there's the identity based communication-liturgical. Ummm You mentioned a lot about this type of constative communication. This back and forth between the students and the instructors uh, In terms of the kind of power relationship with the students, how do you balance that in the terms of how you communicate with them in the space like this?
41	29:22.1 - 32:14.7	Its um I think some facilitators here struggle with that a little more than I have. That was something I had, that was a strength I had when I was in the traditional school. I learned quickly, after some first couple years struggles that it was really all about relationships and building those relationships with kids and um, I think that um for the most part, that's the key to our school. I think that when you see. Interviewer begins to choke and dialogue back and forth about needing a drink, just getting over it too, etc. I think that's the strength of our school really. That our facilitators here and our administrators here are able to have that open dialogue with our students in a way that they don't run the show, they don't, its not a, that's what a lot of people think when they hear about a lot of things that go on here. Our kids don't run the show here but we're open to listening to what they have to say. About the structure of the school, the structure of a class or even about the structure of an assignment and I've assigned certain activities that at times kids will say, you know what about this? Um and then it becomes a conversation. You know, why do you think that way will be better than what I was thinking? And, if they can kind of answer that question in a way that um I think what they're saying makes sense then I .. sure, why not, lets do it that way. Or, lets do it either way, you chose. And so being able to have that dialogue is really important. Um I don't know if. It's not what a lot of people are used to when they think of school, and its not even some teachers that have taught for a while are used to. So, I think it takes a little time to get used to being able to do that here. But, most of our facilitators by now have learned that that's the best...that's what really makes this school tick. That's why our kids love coming here. That's why we don't have a lot of kids that are absent. It's not one of these.. you read studies, I've read a lot of ...I'm doing some work with some urban schools and what the culture's like on some of those campuses and it's just like prison. And, Um these kids come in and they feel like right away, they've got a muzzle on their mouths and they're not allowed to express themselves in any way or talk about their feelings and that really affects the culture on that those

		campuses. And I think in the opposite way that that what's made this campus so unique. That they're able to um they're able to have a say in just about everything. They don't always get their way, but they have a lot of say and they know they'll listen to them. And I think that is fairly unique in education so. I guess. Does that answer the question?
42	32:14.7 - 32:33.3	Oh Yea. Do you have any issues with especially new kids coming in and having trouble understanding the rules as they're communicated? Because you have some different ways of doing things, the trust card (yea) and its just very different than schools that I've been into.
43	32:33.3 - 35:06.3	Yea, We had, I mean definitely, in our first year. I don't think we really knew what the total trust card thing was going to look like. We had ideas, but until we implemented it into motion, we didn't know what it was going to look like. I think kids took advantage of it. We weren't as strict with holding kids to making sure they had their trust cards around their necks and a lot of times, kids that didn't have their trust cards were getting the privileges that kids that had them were and that was our fault. As facilitators. It was just there was so much that we were working not hat first year. As the years have gone on, I think we've still had some trust card issues. We'll have some kids that will try to take advantage of the system. But, discipline at the school is not really a problem. I think when teachers first come in I think our newer teachers at time have struggled with that more at the beginning of the year anyway with just allowing kids to have that freedom. Especially if they've taught before. Um allowing them to uh kind of get up and roam around the room or roam around the building if they need to for something and the time was appropriate. But, what we've learned and what the kids have learned and what the new teachers have learned is that there is still a time and place. Just because you have that trust card on doesn't mean that I can just get up in the middle of a workshop or something like that and just walk out the door and talk on my phone. There's a time and place for that which is what we're trying to teach you know. As adults that's what we try to do too. I 'm not going to take a phone call in the middle of a staff meeting but, if I have a down moment in a meeting, I can step out and take that phone call real quick. We're trying to teach those things and uh we don't have a lot of new kids that've come in. I think our freshmen struggle with that in the beginning. I haven't taught the ninth graders since I've been here, but I see that about Christmas time, they figure it out, the

		trust card thing pretty well also. I would say the biggest challenge is with teachers. You know in the beginning. Uh, it was with me. At first. Well, at first we kind of had this idea that we're just going to let them you know we're just…it all …what we kind of had now is what we thought would just happen naturally. And, at least for me, I didn't realize we were going to have to just teach the kids how this all works. How the trust cards work and uh, in three years I think we've done that and the kids … to learn Um the biggest challenge comes from our end as a teacher. Giving up some of that control that we've had. But know that in the long run, it all works. So.
44	35:06.3 - 35:25.4	Two more areas. One is related to that. The norms for group work. In a lot of schools they don't talk, they sit in rows, they're not allowed to talk and in this setting, it's expected that they talk that they work in groups. How does that work for you?
45	35:25.4 - 39:59.7	It's been the hard. That to me was the hardest part of project-based learning is teaching collaboration. UM to your students. I mean that first year. It was just constant. I mean, not just one group, not just two groups you know four or five groups in a class always had issues with at least one group member. And, they would come to us and they'd want us to fix everything and it was just like if I did a group projects in my, when I was a traditional teacher you know then you end up facilitating the whole thing in a way that you know. That you do…You're doing all the work. You're getting them to all come to the table and of course we want them to all learn how to do this themselves and so you, we found that you really do have to teach collaboration and it's really hard to teach. Cause a lot of adults can't collaborate well together and quite honestly, some of us can't collaborate all that well together. And so, teaching collaboration has been a difficult thing. That's been the hardest part of the group dynamics. I have seen a huge improvement especially right now, like I said, I teach juniors that have been here since their freshman year. We'll have very few of those issues and we find that. I just had one yesterday that um they police a lot of it themselves until it gets to a certain point and then they bring it to us but its all documented. I had a student come up to me and she had a sheet of incidents with a group member with warnings and dates and little initials where the kid had actually signed that yea, I screwed up, yea, I didn't do my work today, and so it made it really easy for us in that position that to say, we talked to them, why weren't you doing your work? And the

student was kind of like , well, I just kind of like wasn't like, I was just kind of being lazy. And so, it was easy for us to talk about well, she wants to fire you and she wants to do the project on her own and she wants you do to it on your own. It was just two groups well, two people in the group. And, he was all right with it because it was documented. He wasn't like mad. Um we've had students that get mad you know before early. But usually, if the kids have managed it themselves, like that, they kind of know that eventually, it might come and of course our job is just that we don't want it to get that far and I think we've done that like two or three times this year where we've had groups actually get fired. For the most part, they control it themselves and they'll come to us and let us know that something's happening. So, we can be aware of it and watch it from a distance. But a lot of times now the kids um manage … its been good that they're learning how to be collaborators and I think that'll obviously do well for them. It'll be great for them when they are at the college level cause I know especially, you know, the last couple years of college you do a lot of group projects and everything else, and I think they'll really excel in that situation. But its definitely, you can't just put kids in a group with four or five or two or three and expect them to work together. I think that's the biggest ah ha for any person coming into a situation like this. Or anybody that wants to do something like this. You have to teach collaboration and so we've done team-building exercises within groups. We've worked on communication, we worked on ways for them to keep in touch each other - with each other when they're not in class that it isn't just a text message or an email- a nasty email that's sent at midnight, you know all caps, you know all exclamation points. You know, there are other ways to approach that when you're upset with a group member and you send that nasty email or that text with exclamation points and that generally tends to make that other kid on the other end of that email or text want to shut down and not do any more work and it makes them mad. They're different ways to approach it. They've really learned how to address issues and problems and be more respectful with their classmates. It doesn't always happen thay're kids and they get mad and they start thinking about their grades and other things but, really, for the most part, they've learned to be collaborators. And, I think our seniors have to … if they when I'd taught, I'd taught the seniors when they're 10th and 11th graders And I think they've learned too and I don't know with the lower grades but I've heard that you know, as they've come in, they don't get it at all. Then, the second semester, they start to

		kind of get it. I know when the juniors came to us we did…this is the least amount of collaboration like workshops and teaching facilitating that we've had to do this year than we've had to do the first two years because the kids kind of came up to us and they had a lot of these skills already. So. It's been nice.
46	39:59.7 - 40:10.9	The last question gets to one of the big words in your high school Technology. What's the role of technology in New Tech?
47	40:10.9 - 44:10.0	Ah, it's really important. Uh its all around us obviously, our kids have laptops. They have cell phones. They all have iPods and when you walk around a room like this, the NT Fuze room, the computers and cameras everything else. It's a big part of what we do uh. I think the common when I tell. I used to… When I first got hired here I describe the school; we do this project-based learning and every kid gets a laptop. And I found, through the last 3 years that I don't mention that laptop anymore. You know, I don't tell people Ah…. If they ask me more questions then it usually comes up but what I found is that the technology now has just become a tool and its just another part of our school like a locker is or a backpack or a text book and we definitely use the technology um I think we can do a lot of what we do here without it but although…its, I mean, its impor… you know the research and that the the the idea of letting kids go out and get information on their own that's obviously the biggest aid with having a laptop or having a one-to-one student to computer ratio but really, what I found, more than anything is its another tool that we can use, that they can use that helps them learn. And so, a lot of the teachers here aren't when they were hired weren't huge experts in technology, um I felt comfortable using for.. I use computers sometimes in the traditional school and tried to use technology as much as I could with the limited resources that I had but I was by no means an expert. And I think a lot of the other teachers here probably felt more uncomfortable with computers and the great thing here is you don't have to be an expert. You don't have to be an expert with computers to teach in this school. Because the kids, they use, they figure out ways to use them on their own to solve problems. And I know that the project that we're using right now, they're writing screen plays and the software that they use, that I tell the students to use was actually suggested to me by a student a couple of years ago. I'd never heard of it and this student came up and said, "there's this great free program that helps you format a screen play. And you know, it's called cell

		text? Yeah, and so he said, "You gotta go check this out", so I did and I'm like, this is great, cause, I was going to try to figure out how to teach them how to format it in word and everything else and that was going to be a pain because I was probably going to get four or five different you know variations of that format and using Celtx. And that was all done you know, that was a student that told me about it. Told me it was free, told me where to download it. I went and played around with it for 30 minutes and thought, this will work and we dish it out to all the kids. So now all the kids use Celtx for these project and not just in our class, in some other classes too. And so, it's totally student driven and so our kids use the technology, again, but its not it by no means defines our school. I know we have New Tech is in our name and technology is a huge thing here but its so much more than just the technology like I said, as I describe the school to people, UMMMM it becomes less about that laptop that they all get and more about just the collaboration and the 21st century skills which is kind of a buzz word that I guess is a little bit annoying. But all those learning outcomes that we have, the oral communication, the collaboration, the critical thinking skills, the global awareness, all those other things that we measure students on in this school, they're so important. And the technology just helps them get there. It just kind of opens the world up to them instead of just one text book for each class, they have unlimited amount of knowledge but, at the same time they have a lot of crap out there that they have to deal with too and so learning how to disseminate all of that stuff that is out there and … the technology is great but I think if it all went a way, we can still probably make this school run without it. But, it definitely helps, it makes things a lot easier.
48	44:10.0 - 44:16.0	To sum up New Tech, the whole school as one word, what would it be?
49	44:16.0 - 44:59.9	uahhh… community, family I think we're all really close, I think um there's definitely a feel here where we're all. The relationships we all have with our students and each other. The staff. Its just kind of … We work really hard at what we do. We know that what we're doing is different and so the kids know that what they do is different. They have to work a little bit harder sometimes than they might if they were just sitting in a class with rows and a worksheet, so , I think because of all that, we know that we're kind of part of something special. There's a strong sense of community. I know Tabitha likes to

		call it family, and I would, I can't disagree with her. I think we have a real tight knit group here. So.
50	44:59.9 - 45:03.0	Is that it?
51	45:03.0 - 45:04.4	Thank you so much for participating in this.

Interview 2: Mr. McClure

	Timespan	Content
1	0:00.0 - 0:01.0	
2	0:00.5 - 0:21.3	This is part of our research at the University of North Texas. Looking specifically at the types of instructional methods that y'all use here. How that influences you. How that influences the students. What's the role of technology in the school. and just, what the culture is like in a school that's doing something innovative. That's kind of Non-Texas to a certain degree?
3	0:21.3 - 0:23.0	Sure, non-tradition.
4	0:23.0 - 0:30.2	First thing I'm going to ask are just some demographic questions just so we can know who you are and first off, what is your name?
5	0:30.2 - 0:31.9	My name is Mr. McClure.
6	0:31.8 - 0:33.4	And what subjects do you teach?
7	0:33.4 - 0:35.5	I teach Spanish III, IV, and V.
8	0:35.4 - 0:37.3	Excellent, how long have you been teaching?
9	0:37.2 - 0:39.6	22 years
10	0:39.6 - 0:41.7	How long have you been at New Tech?
11	0:41.7 - 0:45.2	Since its inception. For 3 years.
12	0:45.2 - 0:48.8	Um, where'd you go to school?
13	0:48.8 - 0:51.7	High school or college?
14	0:51.7 - 0:52.7	college.
15	0:51.9 - 0:56.8	I started out at OU and then transferred over to the University of Central Oklahoma.
16	0:56.8 - 1:05.0	Um, You feel like your University experience prepared you for what you do at New Tech?

17	1:04.9 - 1:18.6	Well, I think real world prepares you. Uh, definitely. I graduated 23 years ago. It was a different world then. So, no, it didn't prepare me for this.
18	1:18.6 - 1:28.4	Um, I guess the first simplest question that is difficult to answer is, what do you think learning is?
19	1:28.3 - 1:43.5	Learning is about collaborating. Uh, learning is finding out new information and actually being able to apply what you're learning to you life and to your world and to your environment.
20	1:43.5 - 1:47.4	So, what's teaching or facilitating? Either one of them.
21	1:47.4 - 2:08.0	Um, facilitating is uh, also learning. Its uh, being a little bit of a commander of a ship of learning and making sure that everybody is learning how to apply learning to themselves.
22	2:08.0 - 2:11.4	Um, What's it like to be a teacher at New Tech?
23	2:11.4 - 2:29.9	It's crazy to o be a, a teacher at New Tech. Every day is different. I was a traditional teacher for 18 years before I switched over to New Tech, and um, it's definitely a, a, a different lifestyle here.
24	2:29.8 - 2:33.0	What makes it different?
25	2:33.0 - 3:00.2	Well, the environment itself is completely different. There are no bells. There are trust cards worn around necks so that allows students to leave the room. Um, we don't get upset with gum chewing or drinks in the classroom. It's truly a collaborative environment. Um, we trust the students. They trust us and uh, we build that relationship up.
26	3:02.1 - 3:11.5	Um, how is that different than some of your other experiences as a teacher and if you were to compare the two, what was the other environment like?
27	3:11.5 - 3:53.8	Sure, in the, the traditional environment, Uh, I had a file cabinet that was a trusty old file cabinet that I could go to for everything that I needed. And, Uh, I really didn't have to prepare myself for class. Um, in this environment, everything changes. So, instead of giving them a vocabulary list of 50 vocabulary words they have to learn and then reproduce on a test, um, I'm working with them on the kind of vocabulary they need to learn in order to produce a project or a

		product. and uh, through that, they're actually using the vocabulary and hopefully, its something they will continue to learn after they leave new tech.
28	3:53.8 - 4:08.7	Um, it sounds like, from talking to a lot of other folks, that the students have a lot more responsibilities here at new tech. What's it like to give the students the responsibility for their learning?
29	4:08.7 - 4:46.4	It's crazy at first. When you first walk in, it looks a little bit like a zoo and uh, you see kids Skyping and you see kids gaming. But really, it's all about multitasking uh, making sure that they can work together collaboratively in groups and making certain that they're getting a job done. That they're learning at the same time. So, at first look and at first glance, it looks a little crazy. But, when you really uh, spend some time here and you uh, start talking to the learners about what project they're working on and what they're doing, um, I think it blossoms, you understand what we're all about.
30	4:46.4 - 4:57.8	Group work is a big facet of the project-based learning that y'all do here. How does that work?
31	4:57.7 - 5:29.1	Well, they uh, They have to write social contracts. So, they uh, come up with a set of norms for their group and its up to me, being the facilitator that they are following through with those group norms. Many of my groups will have an assigned role. So, they'll break down the group a little bit. So, somebody will become the vocabulary czar, someone is the verb czar. Making sure they're scaffolding along the way.
32	5:29.1 - 5:39.3	Um, Can you tell me about a project that you've done here that you're just especially proud of that you feel was extremely effective. You were engaged, students were engaged.
33	5:39.3 - 6:18.1	Sure, I have a couple of projects that I'm really proud of. Um, there's a need of our elementary schools in the Coppell School District for Spanish. Due to funding they eliminated the Spanish teachers in the elementary schools many years ago. So, um, my Spanish III students write elementary school books for the students in Spanish. They develop little Spanish lessons and we work with elementary schools within our district and we go down and read the books to the children and teach them a little Spanish along the way. So, in essence, we've become, or my learners have become, um a replacement for the

		Spanish teachers that were once there. Um
34	6:18.1 - 6:19.7	This is provides a community service as well.
35	6:19.7 - 6:47.0	Right, a lot of community service, giving back to the community. Um, the second project is a project at the end of Spanish III where they have to write their own resume in Spanish, their own cover letter in Spanish and then they go on a 10 minute interview with outside evaluators who are only Spanish speakers. So, it really prepares them for real life. They can choose whatever profession they're interested in. So, their vocabulary is very specialized and it uh, helps them.
36	6:47.0 - 6:55.4	Um, What was it like for you when you started at New Tech coming from a more traditional environment the first few weeks. What was that like?
37	6:55.4 - 7:38.9	Well, Um, I jumped into this environment because I had zero technology proficiency. So, um, I didn't own a laptop. I didn't really didn't know much about the computer. And , Uh, I remember the first summer, the very first day I turned to the, my other Spanish teaching partner and said, where's the on button for my laptop? because I had no idea. Uh, so its, it was a crazy adjustment that I had to make but knowing I was moving into the 21st century, I needed to do that immediately. I needed to become more up to date and less of a dinosaur of a teacher relying on that trusty file cabinet.
38	7:38.9 - 7:50.3	In terms of the methods, what was it like to shift this very different, social types of instructional methods?
39	7:50.3 - 8:22.4	It was very difficult at first. Um, and actually I wanted to quite the very first year. But, I knew that I needed to stick with it. That I needed to figure out how New Tech worked. Um, a lot of it is about giving up control. Um, teachers in a traditional environment tend to have a lot of control within their classroom. And, when you give up a little of that control and you actually trust your student or your learners, um, sum really great things start to happen.
40	8:22.4 - 8:31.9	Have you, as you give up control, maintain boundaries. How do you maintain norms, how do you communicate those?
41	8:31.8 - 8:57.1	Well, they still view me as an authority figure. So, they

		know that I'm still the captain of the ship but they have a say, ship, say so on which direction the ship is traveling. So, um, we talk, we have an open line of communication. Um, they know they can email me at any time. Uh, I really try to maintain good communication with my students.
42	8:57.1 - 9:10.1	You mentioned a little bit about the technology. For you, as a teacher now, three years in at New Tech, what role that technology play for you as a teacher versus the role that you give the technology with your students?
43	9:10.0 - 9:40.4	Well its a huge role now. Everyday, and with every project that I'm planning or looking at, I'm always thinking about, what role does technology have within this project? What is uh, what's new out there that I can bring into my classroom that's going to excite my students. How can I use Facebook in my classroom. That's the big thing these days. So, what's new, what's evolving, I'm constantly reading or listening to the kids to figure out what's out there that I can bring into my classroom.
44	9:40.5 - 9:48.8	Um, do you have any challenges from doing group work with these kids?
45	9:48.8 - 10:12.3	Occasionally, there are some challenges. Just uh as in every classroom, even in a traditional classroom there are challenges. Um, definitely making sure that the social contract is being followed. If there are uh, some issues, uh, typically it is within a weak social contract, or the fact that learners are too afraid to give each other warnings or to fire each other during a project.
46	10:12.3 - 10:18.7	have you, you have any challenges with distractions or misuse of the technology that the students use?
47	10:18.7 - 10:36.8	Occassionally, but with that open line of communication, if you just go up and say, hey, I see that you've been gaming for the past 10 minutes and I have a journal that's due. Possibly could you work that journal in at the same time? Can you put that on pause? So, it's a, its a balance.
48	10:36.7 - 10:42.8	That makes a lot of sense. Uh,
49	10:42.6 - 10:51.1	Yeah, you go ahead. But if you could, one last question. If you had one word that you were going to use to describe New Tech, what would it

		be and why?
50	10:42.8 - 10:43.8	I have a class starting
51	10:51.0 - 11:01.7	That's a hard question. We're different. Different's my word.
52	11:01.7 - 11:03.2	Why?
53	11:03.2 - 11:25.5	because we approach learning in a different way. We're not all about books or all about worksheets or running to a locker. We're really about figuring out what makes the kids tick. Figuring out how, what we're doing is going to help them get along in life.

Interview 3: Ms. Skinner

	Timespan	Content
1	0:00.0 - 2:02.5	
2	0:00.0 - 2:04.5	Setup First off, I would like to thank you for participating in this. This-Just to give you some background and what you heard, in general is going on. This is a research project that the University of North Texas I am the primary investigator, ▉▉▉▉▉▉. You will forever just call me ▉▉ that way you will be comfortable. (she laughs) Um, We're focused on the project and problem-based learning methods and uh, the atmosphere at the school, the technology use, and teacher attitudes and significance towards this innovative culture and school that y'all have here. Because in the other piece of the (unintelligible) I'm going to ask you some demographic questions just to know who you are and then I'll ask you some questions about basically New Tech and your experience at New Tech., working with students, and Benefits, clear benefits that you see from the methods used here as well or is there any challenges that come up, um, either with students or parents or (unintelligible). First question. What is your name?
3	2:04.5 - 2:05.7	Ms. Skinner
4	2:05.5 - 2:07.3	And, what subject do you teach?
5	2:07.3 - 2:09.1	I teach PreCalculus and Algebra II.
6	2:09.1 - 2:10.9	And, how long have you been teaching?
7	2:10.9 - 2:13.9	This is my 8th year teaching.
8	2:13.9 - 2:14.9	How long have you been a teacher here at New Tech.
9	2:14.7 - 2:16.3	This is my first year at New Tech.
10	2:16.3 - 2:18.1	Now, Where'd you go to school?
11	2:18.0 - 2:25.8	College, I went to the University of North Texas, WooHoo, Go Eagles. And I went to Dallas Baptist for my masters.

12	2:25.7 - 2:35.3	Ok, that's great. Um, Do you feel like your training at the university prepared you for New Tech?
13	2:34.2 - 2:52.7	Absolutely not. Um, I was, At the university I was training how to teach math and taught how to explain why mathematics works and how to explain all the formulas and operations and different things and there was some-there was hands-on learning and activities but it wasn't full blown projects that we were taught how to make.
14	2:52.7 - 3:03.0	So, here's a question that is probably easy but maybe not. What do you think learning is?
15	3:03.0 - 3:42.7	That is not an easy question. I think learning is going out and doing and trying and experimenting and, and see what your result is. It may not always be right. You're going to fail along the way. But, I think that, that's important to uh, you know, trying, doing, experimenting, and failing are all important parts of the learning process because you can see what works and what doesn't and just I think its neat that they get to go and explore different things. They get to play with mathematics, they get to do it. some of it's, you know the boring, rote, paper pencil stuff. But, I think it all has its place to help um, get to every way that a student learns because they're all different.
16	3:42.7 - 3:46.0	So, if that's learning, what's teaching?
17	3:46.0 - 3:55.4	Teaching is providing the tools and your expertise to get em to that place and to give them a direction when they are totally floundering and they have-they don't know anywhere to go.
18	3:55.4 - 4:00.2	Um, What's it like to be a teacher at New Tech?
19	4:00.2 - 4:38.3	Being a teacher at New Tech is very different from being a teacher at my other places I've worked. Here it seems like, instead of wearing a thousand hats at a traditional school, I'm wearing about a million. I have to pretty much do everything from start to beginning and the emphasis is on projects, so we don't have any resources or anything that we want to pull or use. We pretty much have to go out and find. And so, we have to write the projects, plan the projects, teach, facilitate, assess, grade, all these different things that uh, add to the project that you don't do in the traditional classroom that take hours, and hours, and hours of time.

20	4:38.3 - 4:41.7	What was it like the first few weeks you were here?
21	4:41.7 - 5:24.3	Um, I did not like it at all. Uh, the boundary lines are a lot different between student and teacher in this school and the structure is completely different. I prefer a structured environment and I saw mainly chaos and that was one of the hardest adjustments. My classroom has always been, you know, controlled chaos, because I believe in group learning and helping each other instead of sitting there being quiet. But this had a whole new dimension because you had the laptops that have pretty much no filters on them so they can pretty much facebook whenever they want or video game and then they have their cell phone so like you're fighting... Teaching math is already hard because the kids don't want to do it but then you're fighting all these other things and its like, the stack that was stacked against you was just, was got exponentially bigger.
22	5:24.3 - 5:30.6	How do you enforce rule? Or, how do you establish rules in your classroom that...?
23	5:30.6 - 6:17.0	It took a while with this group just because they are so used to, (in a high pitched voice mimicking students) Oh, wow, we're all good and we're buds and... It took a-it just took me laying down the law and saying this is what I expect and this is what I'm going to hold you to and being consistent on what I wanted. If we're not using laptops for a learning purpose, you're not messing with them. Screens down, they're put up. If we're having a workshop or a discussion, your phone's put away. Just like it would be in the business world because I see that as rude. um. Different things like that. So, we had to talk about what cell phone and computer etiquette is in my classroom and this is my expectation. So, it was clearly defining those expectations multiple times. But all, and also being like, ready to discipline or call them out if they didn't follow them so they didn't just think, (mimicking) oh, I'm getting away with this, I don't really have to do it.
24	6:17.0 - 6:28.4	What role would you say you took of the groups believing groups? What role would you say communication and collaboration play as you teach everything?
25	6:28.4 - 6:59.3	They have to have it. I mean, there's, those, there's those kids that are shy and quiet and don't want to communicate what they, seems like they find their own shy and quiet ones that also don't want to communicate. They're more comfortable with each other so there's

		different groups that now naturally form in the classroom and those are the groups the kids like to be in. And, Um, I kind of don't like to rock the boat. Cause, if they're working, I'm ok with that. I'm not going to knock a kid out of their comfort zone just for the sake of, "Oh, you need to learn". Just because they get that all day. And, they're already dealing with math and 90% of them HATE math, so.
26	6:59.3 - 7:00.9	Why do you think that is .....?
27	7:00.9 - 7:27.2	Well, some of it's cause it's always been hard for them. Um, they've had negative experiences in the past. Um, I have some kids who've been told, "you're not good at this and you're never going to good at this". and so, I'm overcoming 12 years of negative opinions towards math. So, it's been my job to make it more interesting, to show them how it's relevant, to show them how its not scary or mean and if you mess up its ok. You're not going to fail, it just means we need to try again.
28	7:27.2 - 7:36.0	Have you challenged the kids that don't wanna communicate, don't wanna work in groups, don't wanna um, collaborate. How do you challenge them to do it?
29	7:36.0 - 8:26.6	I really don't have kids that refuse me. I know that sounds weird but I have a relationship with them where its-that's built on respect. Like, Hey, I'm asking you to do this and I'm asking nicely, so will you work with me here? And they're like O.K. and they just do it. So, I haven't met a lot of defiance or a lot of you know, push back from them on that. They're certain kids they don't wanna work with just because of, they've worked with them before and they know the kid doesn't do their work or the kid's late or there is just a distinct personality conflict. And in those cases, I'm like, if its a personality conflict or their like enemies, and I'm like, we're not going to deal with this in my class. So, we'll just keep that separated. But, if it's just like the kid doesn't wanna do their work, and "this kid's lazy and he doesn't get it and he doesn't wanna do it". I'm like, try to encourage him and I'll work with you and let's see if we can work together and have your group be successful.
30	8:26.6 - 8:39.4	What kinds of benefits; cognitive or social, what kind of benefits do you see from the approach that's taken at New Tech?
31	8:39.4 - 9:07.8	I think it gives a lot of kids um a way to um, learn in a different way

		that they don't learn in a normal classroom. And when-cause when you get into high school its usually its just paper and pencil, take notes, sit down, be quiet. And I've always disagreed with that no matter where I've taught. I don't work that way. Because, not everyone learns that way. Um. I think with the different-the laptops lend themselves because you can do more things on the fly and say, let's look this up. Let's talk about this. But it just lends itself to more diversity and the way you teach and the way the students learn. And, I don't think that's just to New Tech, I think that also depends on the teacher and teacher's philosophy of education.
32	9:16.6 - 9:24.8	Can you see anything getting lost from having smaller environment, verses a uh larger high school environment?
33	9:24.7 - 10:05.7	I actually miss the larger high school environment a lot. I think its cool with the smallness, everyone knows each other. But, at the same time, everyone knows each other. There's no secrets. There's so much drama. Everyone is in everyone's business because there's nothing else to do. I'm miss like, I mean like, I miss the sports, and the pep rallies, and the band, and feeling that sense of like school pride that's, you know, tied to the sports. and um atmosphere. A lot of the kids have that cause as you know, we're paired up with CHS and CHS has all that but if you're not in it, you don't see it, it's kind of like there's a different type of school spirit and. I know, I miss the camaraderie and know what the school fight song is and the cheers. And I have no clue. I miss it.
34	10:05.7 - 10:30.7	Um, Given that you do math and This is Texas. What role do standardized tests play here at New Tech where you and the kids. You've got TAKS test, you've got AP, PreAP, end of course exams. You've got tests all over the place. How does that work for you?
35	10:30.7 - 11:55.1	Um, Well, they're a necessary evil, I guess. Most of my kids uh, this is a more affluent area so the test scores aren't usually that big of a deal which is. which is a nice change from what I'm used to. But, I told the kids, like, you know, we're going to do some old school stuff. I'm like you're gonna have a TAKS form I think, after , once the second semester started. Look, you've got 5 questions every day. Suck it up and deal with it. and that's pretty much what I told them. I was like, when TAKS is over, we'll be done doing this. But, I'm like you gotta pass this junior year. We can't take any chances. And uhm, I didn't stress them out about it. It wasn't like always in the front of our mind,

		Oh its TAKS we're gonna do it, we're gonna do it. Um, That was really impressed with cause I didn't harp on it a bunch. But the week before TAKS they're like, can we just do TAKS all week? Can we please? I said, OK, that's what you wanna do. That's what you're asking for. We've got time in the schedule. Let's do this. And, I think that helped ease their, you know, their feelings that just because it's their junior year and it's the (whispering), We gotta pass this year. (Normal) I don't teach AP or, I teach PreAP but it's not tested. Um, I don't feel stressed from those. I feel stressed about the ACT and the ACT in math. That's what their "You need this-to teach this cause it's gonna be on the SAT" and I'm like, but it's not Algebra II curriculum. I don't teach SAT, I teach Algebra II. And so, just getting the kind of ???esty and aspect and working with them, you know, during tutoring on the other topics they wanna cover for their own. That's just kind of how I handle that.
36	11:55.1 - 12:05.7	Um, Given that this is New Tech high school and technology is in the name. What role does technology play for you if it's going to....?
37	12:05.7 - 12:47.6	Um, I guess, where at, where I'm- The school I came from we had a lot of technology like they do here. So, it's kind of the same, to me, I've always been in a school with technology. Um, I think, since there's more ease with the video cameras, uh, they do a little of some more multimedia that I'm not used to doing and there's some different websites that I've learned along the way like Animoto and Write on Glass and different ways to interact with the web page uh, that have been kind of cool but I haven't seen anything I'm not used to. Cause, I'm used to having a computer lab in my classroom where I came from so I didn't really see a huge shift as maybe some other peole have.
38	12:47.6 - 12:54.3	Do you see some different ???alities that the kids use here because they're-they have more freedom to use what they wanna use?
39	12:54.3 - 13:21.4	I've seen, I've seen like they do a lot of their presentations on this thing called Prezi. And I'm like, Alright, that's cool. I didn't know about that before. And they, I guess since they're so used to being on the computer all the time that they go out and they seek out so much more stuff. And so. that's been kind of cool. It's like, Oh, what do you've got? How do you do this? How do you do that? and, uh. Some of the kids Photoshop abilities are amazing because that's a class that's offered, and then they get to work with which is neat.
40	13:21.4 -	Do you see any distractions from these kinds of technology?

	13:24.7	
41	13:24.7 - 14:08.0	Yes, Um, I guess we're supposed to have LANSchool and uh be able to monitor the the computers from our computer but all year, mine hasn't worked. So, It's kind of like I get to walk around and monitor and, and its, I guess, just watching nonverbal behavior. I can immediately look across the room. be like what kids doing what they're supposed to. And not just by the look on their face but they're looking at their laptop screen. If there's a smile, you're not doing math guys, you're gaming. Because they don't smile when they do their math and different things. So, it is a distraction. It's just, It's just one little click and I can be off task and opens up their whole world to whatever they wanna do.
42	14:04.9 - 14:07.3	How did for instance the teachers here verses the other school differ?
43	14:07.3 - 15:01.1	I think its pretty much the same. But it could just be how I run my classroom. Just because a lot of my students are challenged in math and so sometimes it-we had to have a lot more instruction. and I'm like, you don't understand this concept so we're going to have to practice this because, really, that's the only way you're going to get better at it and if you just look at it once or twice and you're still clueless, showing you a third time and just letting you look at it a third time is not going to help. You're going to have to pick up your pencil, use paper, which I know, it's New Tech, that's because the kids'll always tell me, It's New Tech, we don't use pencils and paper. And I'm like REALLY? It's math. You can't take notes on your screen. Give me a break. Um, that's been the huge battle. Um, But I just see it, I teach, I facilitate, I walk around, I interact with them. Some days its like, Hey, Let's just learn this? and some days it's like you're working or you're working on a project. I just walk around a monitor and I just kind of fulfill whatever they, whatever role they need me to fulfill, so
44	15:01.1 - 15:38.8	Um, In terms of the method and what's expected of you as an instructor vs. what the dominant paradigm of what instruction is in the state of Texas tends to be work. Uh, everyone sits in rows and needs to be quiet and take the test. Um, Do you have any challenges in terms of parental perspectives or student perspective, especially when they're starting out, in terms of how New Tech does things vs. the way that everybody else thinks things should be done?
45	15:38.8 - 16:08.5	I guess, I don't... I was never one of those sit down, shut up and take notes teachers. So, I don't know if I can answer that question fairly,

		but, it took them a lot to get adjusted to me because their math instruction they were used to before they got to me was totally different. But, they all admitted, I didn't learn that much, or I didn't do this and they didn't have um, somewhat like the foundations they needed. so, it's like we gotta do some foundation building guys, we gotta do this. And so, they're like, But we do need that. So, they sucked it up and did it.
46	16:08.5 - 16:15.2	So, what did you see their previous instruction being? Where-what was, what was indicated as the kind of instruction they received (too soft to decipher).
47	16:15.2 - 16:48.6	I've heard a bunch of different things from the students and I've never witnessed anything and it's all hearsay. Um, but I could tell that they were used to chillin and doin what they wanted and it was never, Let's get this done please. And to me we've got a whole huge thing of math to get through. And, if you're weak in an area, we have to build that up before we can move on and I was like give me a chance to do that so you can be successful in your ACT or SAT, senior year and whatever you want to do in life and college. Let's just, let's do this for the bigger picture and they're like, OK.
48	16:48.6 - 17:00.2	Um, If you were going to sum up what New Tech is in a word. What word would that be and why?
49	17:00.2 - 17:30.3	I'd say flexible. Cause there are things throwed at us everyday and we never know what's going to happen. and you just have to roll with the punches. You never know how a kid's going to react to something or take things and I think, kind of like with any other school, it's just you never know what a kids going to bring to the class that day. If your lesson's going to be awesome or if it's going to, you know, totally fail. Or if your project is going to be good or you technology is going to work. It's just kind of like. What's going to be thrown at us and just roll with it. So,
50	17:30.3 - 17:32.0	Thank you
51	17:32.0 - 17:35.0	Thank you so much for this. We really, really appreciate it.
52	17:35.0 - 17:36.2	Not a problem
53	17:36.2 -	Thank you for having us in your classroom. I need to add that it was

	17:40.4	really amazing
54	17:40.4 - 17:43.3	You're welcome. It was fun. They asked a lot of questions after you left.
55	17:43.3 - 17:50.6	Anytime they want, we can come back and answer questions. We're more than happy to have them observe us.
56	17:50.6 - 17:58.5	It's funny while you were in there. They were like cool. (muttering) Yeah, you better be good, you're gonna make me look bad. They were like, OK, we'll be good.

Interview 4: Muntz

	Timespan	Content
1		
2	0:00.0 - 0:18.2	Am I looking at you or the camera. OK.
3	0:18.2 - 0:23.0	I'm not going to explain everything since you already know (right). I'm going to get some demographics from you first. (OK)
4	0:23.0 - 0:25.0	Ms. Muntz
5	0:25.0 - 0:26.7	And, what subjects do you teach?
6	0:26.7 - 0:42.8	I teach our NTFuze Level I and Level II class. Which is our broadcasting and film course. And I also teach, team-teach a modified virtual business and communication class. Which is our Freshmen technology business course.
7	0:43.0 - 0:45.1	Do you have any other responsibilities at New Tech?
8	0:45.1 - 1:05.5	I am our school's advocate. Lots of responsibilities, lots of hats. Um, Um, our school's advocate meaning, I get to spend half of my day helping with techno, not technology integration, I get to spend half of my day helping with integration of PPL in the classroom. So, I do lead teacher meetings, and I'm kind of like a lead teacher, is what, is what you would, in the tradition school call it.
9	1:05.5 - 1:07.3	How long have you been teaching?
10	1:07.3 - 1:28.5	This is my 6th year teaching. I taught three years middle school in Oklahoma. I taught at a low-income school. We were 76% free and reduced. Very high African American population. And, came to Coppel and had quite the culture shock because it's the complete opposite. I've been in Coppell three years since New Tech opened.
11	1:28.5 - 1:30.9	Um, Where did you go to school?
12	1:30.8 - 1:44.5	I went to a little university, called Cameron University in Lawton, Oklahome and I have great experience there. I have a business, a bachelor's in business there and then I have um two master's degree in education from there.

13	1:44.5 - 1:49.7	Um, Do you feel like your university prepared you for New Tech?
14	1:49.6 - 4:03.8	I think I'm pretty lucky. and I would say yes. I chose to go into teaching after working in the business world. I worked in banking, retail banking for three or four years. I worked in marketing as well with the banking industry. I loved what I did. I worked with a wonderful company. Um, but I wasn't fulfilling, being fulfilled in what I did. So, I decided, yes, I'll give teaching a try. My mom was a teacher, my grandma was a teacher, so I'm a third generation educator. And, um probably said no to education in the first place because of that. Wanted to find my own way first. And decided, yeah, let's give education a try and so I got into program, a masters of arts in teaching in which I - it was a very intensive year of study and uh we did, I did 48 graduate hours in a year. and basically you lived and breathed school. Uh, weer able, I ws able to do my student teaching in that environment and I had some very progressive professors. I think becuase education is so big. It's one of the largest em em employers in Lawton and Lawton is one the highest paid districts in the state of Oklahoma. Lawton also has connections with the military. It's a large, Fort Sill, Which is l, one of the largest artillery bases in the United States. So, there are a lot of things that help um make Cameron progressive in education that I think some other universities that small would not have that opportunity. So, I did lots and lots of intensive study in things like multiculturalism and how do you relate that things in PBL. Not PBL itself but technology integration was huge in my studies. I took as many technology integration courses as I could. um, and I also had a mentor teacher. I taught social studies in Oklahoma. I had a mentor teacher who was extremely progressive. And, um, she was one among probably a hall of coaches who sat and you know, we called it the movie hall. But she was very progressive in what she taught and she pushed me to be better. So, I think between my business experiences and going through training in the environment in a business that was very progressive in their trainings, um and then coming into the program that I chose was a good choice. So, Do I feel prepared? Yes. I felt prepared for this environment.
15	4:03.9 - 4:07.5	What do you think learning is?
16	4:07.5 - 4:23.8	Learning is life long. It is taking information whether it is through experiences, whether it is through tak-tactile experiences, whether it's reading a book, whether its talking to someone , and talking to kids especially, and finding out what, what they're experiencing, that is

		learning.
17	4:23.8 - 4:25.2	Then, what's teaching?
18	4:25.2 - 4:29.9	Teaching is... teaching or facilitating? Teaching specifically?
19	4:29.9 - 4:30.9	Either of them.
20	4:30.2 - 4:42.7	Cause I will argue that there is a difference between teaching and facilitating. And teaching I believe is the giving of that information. Facilitating is helping other people realize what they're learning.
21	4:42.7 - 4:46.4	Um, What's it like to be a teacher at New Tech?
22	4:46.3 - 6:58.2	It's awesome. I feel in the tradition classroom, I was innovative in the traditional classroom. Um, you were one among probably probably in my department I had a great department. Out of 15 in your department, maybe two or three stood out as being outstanding teachers. Then you come to an environment at New Tech and your among some pretty high-flyers. So, you're no longer the one among the many to shine. You're actually among pretty equal peers as far as being innovative teachers. So, teaching and being a facilitator here is awesome. In some ways in can be very humbling in some ways. I think every facilitator we've had come through our door the first year feels like a failure. At least the first 6 months of teaching here. You feel like you're a first year teacher all over again. Um, all of those struggles and all of those indecisions that you made and "am I doing the right thing?" That all comes back. Um, but, I also believe, I am no longer the person that has to close the door and I'm by myself. I have a collaborative group that I consider my close friends now. Um, I can go to them about anything. We can discuss any type of topic to do with PBL. It can be about classroom culture. It can be about management. Anything I feel like I'm struggling with I can go to anyone of my peers and have a collaborative environment and that is a really cool environment. Because you don't get that a lot. Another thing that I like teaching here. I was always bored in the traditional classroom. Even though I felt like I was innovative, Um, by the end of the day II could give that lecure with my eyes closed and I was unengaged. There would be days, and I'll admit it that you'd throw in a movie, educational of course, but that you just needed a break so you could grade and you don't do that here I'm engaged 100% of my day. There's very few days that I get to unplug and sit back. Um, sometimes

		I'll sit back and watch the kids interactions, but for the most part, I am completely engaged. I can teach this same subject all day long and it's not boring because it is not the same. It's very diversified based upon on my student population and what they need from me that day.
23	6:58.2 - 7:15.9	How is the level of control learned, the level of responsibility as a facilitator verses a learner. What is that like here verses other places that you've been and other new challenges?
24	7:05.9 - 8:05.7	I think that there is a big challenge in classroom management n the facilitators side of that. Class...Discipline to me comes very natural. I've never had any issues with classroom management but when I came here, I really had to question things for a while. And then I realized, I'm not doing anything different. In fact, my classroom management needs to be better in this environment. The responsibility of the kids, the kiddos that come here are huge. I mean, they take on a whole lot and ask a lot of them. My expectations have grown for my learners. I expect more from them and I don't only expect it, I demand it. And they are able to meet the challenge. I think that's one of the biggest differences from the traditional classroom and coming to New Tech School.
25	8:00.7 - 8:14.8	Based on your knowledge of educational theory, what's the difference between project based learning and problem based learning?
26	8:14.8 - 9:30.2	That's a great question. And, I will tell you that when you start researching the differences project based learning and problem based learning is that you're going to get a WHOLE LOT of people spouting off that really don't have a clue about what they're talking about. I don't know if there really is an educational theory definitive answer to that. I will tell you what we had to do on this campus is define it for us. Um, And so, on our campus, if I'm doing a problem based activity, that is a shorter activity. It is usually a problem that I'm suggesting and there's usually one to two set answers. A project based project. A PBL project is going to be more intensive. And a PBL unit I'm looking also at the um different learning outcomes. A lot of times on problem based you can't go as deep and you don't always focus on all the learning outcomes that you need to assess. Where as a project, I have more time, I go deeper. I'm usually also allowing for some diversification of end product from the kiddos. So, my project at the end is going to look different than if I did a problem. A lot of time a problem base is going to be pretty cookie cutter at the end. Not

		always, but more so whereas a project is going to allow for more diversification and differentiation of your end products from your kiddos.
27	9:30.2 - 9:37.1	OK. Um, Can you tell me about a project that you've done with your kids that you're especially proud of?
28	9:32.1 - 12:44.0	Yes, and I will tell you that I have taught digital portfolio I course before and I've had some great project there. But, this year, teaching NTFuze course has been an interesting challenge. I will tell you my first semester flopped. Um learned lots of lessons that first semester about how to make things different. Talked to the-my kids in classes and said, what can we do to make this better, and listened and put a lot of those challenges we've worked out some pretty good projects. So, my list of projects to say, I probably have two. One from last year with my NT FUZE level II course in which we worked with an organization called Touch A Life and community service is such a huge component of what we do here at New Tech, that I challenged my kids to make a 10 minute documentary on basically educating the community about Touch of Life, what they do and who they serve. And so, they took photographs that Touch of Life provided and they also sent a camcorder with the founder, Pam Cope to Ghana. It's quite interesting, she's not a uh, you know, not used a camera whole lot. Kind of got the stop and the start button mixed up. So we had a lot of the, you know, the floors of the bus. But, we, we got some pretty good footage and they were able to interview her and create a documentary and then we had a Touch of Life film festival in which we show cased, we had a night where um, my digital portfolio one kids in a sharp tank project where they actually created items for uh, prototypes for the school store that would be sold in order to raise money for Touch of Life. We had uh, photographers who had taken beautiful photos. We had those enlarged and we kind of make it a touch of life night. We had live music. It was a lot of fun. It was a community service type of project. The kids learned a whole lot about how to time manage. They also learned how hard it is to have a whole bunch of people to do a project. So, when you have that, how do you organize that. I think it was a great learning experience. And then this year, one of my favorite projects is called the Artivist Project. In which I just finished with my Level I kiddos. And they were to pick a social, um, an organization or a social issue in which they wanted to educate the community on. Very similar to the Glimmer of Hope project from

the year before. And they could . The difference was, I didn't necessarily want them to make a documentary. I wanted them to teach the community through film that is non-traditional. So, we looked at lots of different types of film and how do you get a story across without it being someone in front of a camera with a microphone talking about it. And, they came up with some pretty good, good stuff. And so, that was quite enjoyable. And we showcased that one evening during our open house. We didn't have a whole lot of parents come, kind of the time of year. But I think it was good for them and I'm hoping to grow that project for next year.

Interview 4: Muntz (Continued)

	Timespan	Content
1	0:00.0 - 0:13.5	I'm always behind a camera. Lol. Yeah, it's not my favorite.
2	0:13.5 - 0:22.2	Ok. So, what do you see as some of the benefits that you take at New Tech for student learning.
3	0:22.2 - 1:15.6	Student learning. Student engagement is huge here. Um, kids don't get to unplug. Sometimes, that's the reason why they don't like coming here. Is because we do force them to really think outside the box. I think the other benefit is the learning outcomes. We're producing kiddos-I just sat through two capstone projects-presentations from our seniors. And let me talk about oral communication and thinking on your feet and critical engagement and all those things that we're asking from them? They-Their presentations were very well defined, they were able to speak through what they've learned they were able to reflect in a way that is um, different than what you'd get from other-sometimes I would even say adults. So, I think that the learning outcomes and what they're learning through their social skills that are going to help them past this environment is going to be a huge advantage to them.
4	1:15.6 - 1:41.2	In terms of the rules, the school rules, in terms of when we walk in we see the guidelines that you're supposed to go by but there's an openness here about the way things are, its a very socialized like place. How do you, how do teachers at the school establish rules? How do you establish norms of behavior? What

| 5 | 1:41.2 - 5:15.6 | That's an interesting question. The first thing that we do in the summer, um in our professional development and we work a lot in the summer and we agree as a staff, it's a 100% concensus. We do not leave that room until we have a hundred percent consensus. Even if it means it's 2 o'clock in the morning when we're at our Chicago training last summer, Um, thinking can we make 30 more minutes to come to a decision. Because we believe that if I leave that meeting and I didn't agree with that and it was passed anyway, I'm not going to enforce that rule. And its very imperative in this environment that we're all on the same page. So, we spend the summer really, rethinking our trust card system which is our disciplinary system. How we want that to look like. Are we going to give our trust cards to the kids day one because that's part of trust, respect, and responsibility? Do we wait to give it to the freshmen? Um, how do we go about deciding who's taking a trust card? How we're going to communicate with, with each other that someone's taking a trust card? um, so we really think through that process in the summer. And then the, the first week project when the kiddos step into our building in August. They do not go straight to class. They go to a small group in which we go through a 1st week project with them. Our freshmen are learning what is PBL, our seniors are going through a project to pick our community service partnership for the year. And then our juniors are working through um, college achievement know that they are fixing to start putting in all those applications and that being a major part of their junior year. And our sophomores ran through a recycling project last year. So, we spend time in those first three days of school hammering out, what are our rules to live by. Modest is hottest. The Grandmother Rule. The kids come up with the names of those rules. They come up with a consensus of what our school rules are. Our rules are pretty broad. So what that allows me as a classroom facilitator is I can make my own expectations for my own classroom. In the real world, I know I'd approach Tabitha Grandham as my boss different than I would a to, a ta, approach Amanda Zair whose our assistant director differently because they have different personalities to, say in the classroom. I'm not big on tardies. I don't follow tardies a whole lot. If you're five to six to seven minute late, minutes late, then I'm going to notice and we're going to have a conversation. But, for the most part, I'm not a stickler when the su, when the, the, the second hand is one the zero you should be in class. I mean, I feel like you gotta get there. and be on time but be reasonable about it. But, I'm pretty strict about leaving my |

classroom without a trust card on. That's one of the first things you're going to hear me ask a learner. Where's your trust card. um. Whereas another facilitator, you know, may have a bigger class or a different situation so it may not be as easy for them to check it, with that. Whereas tardies, they may be really strict on tardies. So, learners in this environment have to learn how to navigate different bosses. And I think that is very much the real world. So discipline here can be, it, it is very interesting. We do allow lots of freedom. That is one of the things you will hear learners talk about the most is freedom. How much freedom they have. But there, with freedom also comes major responsibility. And we just have to kind of ingrain that in them from the get go. Our seniors are harder to police with trust cards but there have also been seniors for three years and our first year, we were so busy looking at all the parts of PBL we probably didn't manage the trust card system very well and we're seeing the consequences of that three years later. Whereas our rookies this year, our freshmen, we have done a really great job of making sure that they're following that disciplinary system. And so, therefore we're having less issues of enforcing it.

| 6 | 5:15.6 - 5:45.8 | Um, communication and collaboration are some of the big focuses here. How do you prepare students to do that. How do you - There's a big .... component to that. How do you treat others? How do you organize roles within groups? How do you collaborate effectively? How do you get students to understand that role? |
| 7 | 5:45.7 - 7:56.6 | I think they live and breathe it. And therefore they have to figure out pretty quickly. If I don't adapt, this is going to be my life for a while and I'm not going to like my life. Um, So, throwing them, kind of you know, by fire, we learned pretty early on as a freshmen team. Um, our second year we figured this out. First year you're just surviving. Second year we figured out that, as a freshmen facilitator, if I really concentrated this six weeks on benchmarking and I explain what benchmarking is. Taking the project as a whole and breaking it into pieces and really establish how you do that in a project whereas Ms. Austeburger, who is the math facilitator really worked on oral communication. And then our biotech ethics facilitator really worked on social contracts and how do you write a social contract. And, how do you, kind of, use those group norms. We really used our strengths cause benchmarking is my strength. The biotech ethics facilitator, his strength was social norms. Um, Ms. Auteburger is an awesome |

communicator. We used our strengths to ingrain those in the classroom. We also teach learning outcomes. So, there may be a day you walk through my classroom and I'm teaching something that isn't related to my subject. Um, is usually its answering a need to know. The kiddos have about how do I present this format. Or, how do I manage a social contract. And, it takes some, usually, the first six weeks to figure some of that out. A lot of times, it gets mundane to them to write a social contract their freshmen year until they have someone in their group that doesn't work. And then they realize, that social contract they navigated? They didn't navigate it as well as they thought they did. And now, they're stuck. And so, it kind of hap- It has to happen through their experiences to realize, ok. this is what's happened. Now I understand. But they-the biggest part that we do past that point is communication and reflection time. So, instead of just saying, it didn't work out and just moving on, as a facilitator, you have to sit with that group and navigate and discuss and talk about what can you do differently. Well, why did this happen and really pull that information for the- our learners. Without that reflection piece, they will keep repeating the same thing over and over without actually learning what they need to learn.

8	7:56.6 - 8:08.8	Were there any times when you or the other teachers just have to say, alright, this is the way things are going to be. You can either choose to do it or not choose to do it, but this is the way it is.
9	8:08.8 - 8:51.5	Very rarely. Um, Sometimes we'll bring in someone else to d, sometimes you're just done. Sometimes, you're done with a group. You've worked with them and obviously what I'm doing is not working, or we'd be having more success. So, I may bring in Mrs. Brannom. I've gone in to navigate with groups, um, sometimes, you just need to send it to someone else. Maybe they need a fresh perspective. Someone who hasn't been sitting through this the whole time to say, Hey, have you thought about this? And, sometimes you do have to-ultimately you are the facilitator and um but that's very rarely that we have to go to that realm to say, this is what you're doing and this is what I need you to do. Most of the time you can get them to work it out.
10	8:51.5 - 9:29.3	On One of the students that we talked to the other day, s I asked, how do you use your responsibility for your learning here? For you as a student versus they as a facilitator. They said its about 60% the facilitator is responsible for my learning. 40% of its me. That's quite

		unusual in many schools and I can see that that can present some challenges. Are there any challenges that you have experienced at- kind of students having a lot of more responsibility for their learning than traditional schools.
11	9:29.3 - 11:28.2	I think you really have to think of that, if you divided our student body by their freshmen, rookies, sophomores and juniors and seniors. I think your juniors and seniors probably have even more than 40% responsibility. Freshmen and sophomore probably a little more guided because they're- they -they're also learning the process and all these learning outcomes that we're throwing on them. It is hardest, it is a very hard thing to do as a teacher, to give up control. That is the number one thing that teachers struggle with their first year in a 21st century school or a New Tech school like we are. And it happened for me probably not until January. I didn't know, I didn't know if I could, I love the environment, I loved the kids, I loved the teaching, I didn't know if I could handle giving up the control. Um, And I've come, cause I'm a type A, I'm a type A personality. It's really hard for me to give up control. But, I've come a complete full circle. I now give up control very easily to the kids and can help them navigate how to take more control. Um, but I had to learn through that process. So, I would say, just being secure that the kids are going to learn what they need to learn, and are they learning what they need to learn? I mean, you always second guess yourself. And so, I think, we had to learn to add in reflection time for ourselves. Reflection time for the kids. Not only in content but also in their social skills. And that helps with knowing that I am giving up control but it's ok because they are going to pick up the slack. Does every kid that walks through our door?, Or, are they all cookie cutters when they leave? No, Do we have kids that struggle, yes. Um, and I think that that is every school in America. But, I do think we are helping them prepare themselves to leave our environment and be successful. Um and improve the skills that they have, you know, brought to us.
12	11:28.2 - 11:43.4	Do you have any, you mentioned some of the kids have some challenges when here. What about the parents? How do the parents feel about New Tech? Do you have any challenges with the parent perspective of the New Tech kids.
13	11:43.4 - 14:10.6	I think that we are extremely lucky to have Tabitha Branham. Because, she is an amazing oral communicator, No. 1. No. 2, she gets it. She is able to convince someone just about of anything. But what she does,

she is very proactive. And you have to be in this environment. We have 6, 5 to 6 parent educational meetings before, in the spring when we start the recruitment season and basically, for a kid to put in an application with New Tech, they have had their parents attend two. And the reason we do that is, not because we want to have them jump through more hoops, cause we don't. We want them to be informed and to make sure that this is the best place for their kiddo. Because it is a year commitment before they can change their mind and go somewhere else. So, It is really important that they understand. Mrs. Branham also does a rookie meeting at the beginning of the year and she's extremely transparent, and she says, your kid is not going to like us come October. So, be prepared for them that first semester to come home and say, I don't like it. Or, I don't understand, I'm not learning anything. And when they do, this is what you need to be able say back. Ok, talk it through with them. She gives them techniques on how to question their kids in a different way. We had a tour guide tell us one time, I was programmed for the first 8 years of my life, or all of my schooling to sit in a desk and get information. I had to come to New Tech and deprogram myself to then relearn school differently. So, parents need to understand, this is a transitional process. It's not going to happen, for some kids it does, they love it from the get go. But, I'll tell you, with a lot of kids we hit what's called the October wall and facilitators, that's when I have my resignation letter ready (chuckling), you know, just kidding. But uh, you know, I mean you're just at that place where its a hard, it's hard. This is a hard place to be. It's hard on your kids, it's hard on your staff and you have to work extremely hard and there's a fatigue that happens about October where you think, Can I do this. Can I keep doing this? And the kids feel that as well. So they need to have parents who are supportive and who understand how do I help my kids? That's what parents want. Its not that they're coming up to school to complain. It's that they don't know how to help their kid. So, Tabitha is great about giving them strategies in order to help their learner make it through that- those kind of tough times. To figure out how to navigate.

| 14 | 14:10.6 - 14:15.0 | That kind of begs the question. What happens if Tabitha's not here? |
| 15 | 14:14.9 - 15:01.2 | Um, I think we have to as a staff-One of the things that Tabitha has done to make us - the longevity, is No. 1, we're associated with the New Tech network. We have a coach. Kevin Ganther is our coach. We |

		can call him, um, I think he is one of the best coaches in the network. I may be biased, but he is someone to help us navigate that. The other thing is, she gives a lot of responsibility to her staff. That is dispersed among us, so I think that there are enough of us that could pull the weight. Would I be sad? Yes. I mean, I can't tell you that I wouldn't be sad um, to not be able to work with her because I think she a phenomenal educator and I've learned, I've grown so much being under her. But, I do believe that this school could continue.
16	15:01.2 - 15:06.3	What kind of support have you had from the district?
17	15:06.3 - 15:55.0	The district support. Especially in the first year, just realizing that some of the professional development that the rest of the district was doing, we just could not add one more thing to our plate. They were very forgiving that first year about our not attending every single professional development. Maybe doing something in-house stuff that we needed to do to make the school run smoothly. Um, the other things the district has done, Um, they are starting to see the successes we're having and starting to implement that across the district. Um, last year the theme of the district was Engagement and there were multiple parts of engagement and one was PBL. So, I think that realizing that we're successful and taking that and supporting us in that way has been good, and um, that's been a good thing from the district.
18	15:55.0 - 16:03.7	How much do you think having a small population adds to the benefits and allows you to do PBL.
19	16:03.7 - 17:19.6	Um, my personal opinion, 500, we're pushing it. Most New Tech schools are 400. Of course we're Texas and we like to push everything bigger. So we're at right under 500 kids and I think that's probably a limit. Um, Do I think you can have a big school and have schools within schools, yes. And be very successful with PBL. yes. Do I think you can have a huge high school? It would be hard. Um, I think it would be hard because relationships can be so important. It would be hard to have a disciplinary system if you're not all on the same page. I just think that having that small environment is part of what make us who we are and is part of school culture. If you blew us up to 2500, we would be more of a traditional school in a non-traditional building. And, and, you have to be very careful of that. So I think that small number is extremely important. Small learning communities. I think you can do it in a big high school. I just think that you have to be very

		considerate of that and think through how-what that looks like and-on an organizational scale, um and I think you are going to have to develop those small communities and give them a autonomy that you're not going to have in a large high school. You have to have the ability to make decisions. Um, that's essential.
20	17:19.6 - 17:35.9	You mentioned some of that October wall um and you've been out working with the more traditional schools some previous to that. How similar is that October wall to just what people face when they go out and work for the first time?
21	17:35.9 - 18:01.5	Um, I've never experienced anything like this. Um, I think it's completely different. I think that your facilitators have mis-modeled work but the amount of work they do is tremendous. You take about 40, you average about 40 hours of project development for one single project. And when you go project to project, that can be a pretty difficult thing.
22	18:01.5 - 18:09.3	Um, Given that technology or tech is one of the them words in the school name, what's the role of technology here
23	18:09.3 - 19:19.5	It's a tool. It is not, sometime a new, you know having New Tech as your name, people assume that we're like making small programmers. You know, to take over the world. um, We're not. We have kids here who aren't, you know, the most tech savvy kids. I do believe that kiddos inthis generation, know technology not as an educational tool. They know it as entertainment. So, to teach them, How do I use technology in a way that can further, um, my progress, or what I'm learning is really important. So, it is a tool. Are there days that we de-plug. Yes. There are days that I want to have face-to-face time. Where laptops are down. Your discipline has to be different in a one-to-one campus. Because you're going to face different things. The kids are going to want to be on their laptop and not make eye contact. I want to give a warning but I do it through email, I don't even turn to the person next to me and say, you have a warning. So, you have to really learn to navigate, that it really is a tool. It can't be all about the technology. It can't be all about the content. It can't be all about one thing. It has to be this mesh of all these skills that we want our kids to learn to be successful.
24	19:19.5 - 19:28.5	Do you think the kids identify, have a personal have a vested interest in the tech projects that they do?

25	19:28.4 - 19:58.4	I do, I also think that as we're growing and we're constantly pushing ourselves to be better educators, we're learning how to take their advice and having them help build projects. Our specially junior and senior year, we're really wanting them to help build design projects and what that looks like, cause then they have more acceptance of what they're doing and understand. Repeat that question again.
26	19:58.4 - 20:11.9	Do you feel like the students get a sense of identity, a sense of identity, that it becomes their identity with these projects that they do, that this was part of them instead of some school work that's separate.
27	20:11.9 - 21:27.0	I do, and I think that's because of the retention of knowledge. Um, and the reason I say that, if you ask a senior, What was your favorite project and why. They might can tell you something from their sophomore year. And they can probably tell you what they learned and what standards they learned. And, I would compare that to a traditional school kid who probably doesn't remember when they learned that skills except when the teacher told them they had to learn that skill. I do believe it becomes part of what they do. But, the more we progress in figuring out student choice and, and allowing learners to have more choice in their end products. The more they're able to dive into their interests. So, instead of saying everyone has to make a short film, or everyone has to create a report, we're learning that there are components that very much need to allow choice. Where a learner can choose that, If I'm going to be a graphic designer, they may decide, hey, I'd rather take this topic and design something um with graphic design, and present it that way. So, we're learning as we grow, how do we make that happen and still stick true to PBL and the content and all those other things that we have to do as educators here.
28	21:27.0 - 21:42.5	um, given that there's still got to be some sort of s, some sort of criteria for judging the quality of an individual project and things like that. How, and what process exists for students to critique one another.
29	21:42.4 - 22:20.0	Um, rubrics are huge here. We grade everything pretty much through a rubric. um, the kids also, the learning outcome collaboration. 90% of the time is a grade given to, from a peer. When we have a collaboration rubric, they go in and grade off that collaboration and

		give feedback and that's usually something we require in that. Sometimes also, just having them, when I'm having them present, I'm may also may have them have a content rubric. And they're actually grading. Did they hit this content, did they do that, so they can help each other as they're developing their projects.
30	22:20.0 - 22:26.8	Do you ever teach the rubrics? How much of a roll do they have in the establishment of the rubrics?
31	22:26.8 - 23:22.2	Out learning outcomes rubrics, just so that we aren't ready to share feed off by the time we have to write 10 rubrics per project are created over the summer. And we refine those every year. The only one a facilitator has to write is the content rubric. And what that allows is I can pull pieces of rubrics together. It just helps me with my time management. um, I have had kids, learners sit with me and help me with rubrics, all the time. Especially in the advanced column. I have a tendency to have really high expectations and so my high expectations that would normally be proficient for a lot of people, I put in the advanced and so I have learners sit with me and we talk about, What do you think about this? and in fact the other day, we were sitting on the floor, ya'll were in here filming, we were sitting on the floor out in the hall and I pulled out a rubric and I said, I really wanted to re-evaluate this. Help me with this. And I had two kiddos, we sat and brainstormed some ideas and I, I came up with some things to change for next year.
32	23:22.2 - 23:55.1	Excellent. um, Have you had any conflicts or any sort of challenges that have emerged uh, as a result of the methods that New Tech uses versus what the rest of the state uses? versus the rest of the district, versus an, the perspectives of those folks here who think that teaching and learning is supposed to be a particular way and that's not necessarily the ....
33	23:55.0 - 25:03.7	I think that opening a second high school in a one high school town has some consequences that happen. So, I think in the very beginning, people didn't understand what we do here. Um, So, educating our community has been huge. Conflicts, as far as, I, I do think, sometimes the biggest con..barrier to education in, in, and really good educational values is other educators. I mean, its a sad thing to say, but I think that when you have a profession where you have so many people in charge, all the time, you're going to have a tendency to have people who think they know it all. Um, and so, I do believe that most

		of the educators that come into our building are excited and ready to take some of the components of what we do out of here. But, I would also say that it scares a lot of people. I think that change is scary and the idea of that control part, letting go of that control, really scares a lot of teachers and educators who think, I don't think I can do that. Um, and I, until they experience it, I, you can't really tell if they are able to do that.
34	25:03.7 - 25:14.2	Um, Do you think there can be any tweaks to say, teacher education programs to allow for teachers to be more prepared for this kind of learning?
35	25:14.2 - 26:22.4	Absolutely, this is the way education is going. And, if we don't we're going to be in big trouble. Um, some of the things that we're currently doing is we have brought in different local universities. They come and spend an afternoon. They're actually building a PBL unit and then they come in and spend an afternoon or a day here and they're able to ask questions and find out information and see what it looks like when it is happening. Theory is great, and as an educator, we have been around a while, theory is really great. But, until you see it happening, you're going to get a lot of education, educators who are saying, I don't think I can do that. But, if they can see it and visualize it, it's a lot easier for them to adapt that. Absolutely, I think that educate. teacher education programs need to really step up to being open to different types of educational theory and realize that just because you saw it 20 years ago doesn't mean that its not different or it's not innovative or its not what's best for kids. I think that we have to always challenge. If what we're doing is not best for kids, then, we're not doing our jobs.
36	26:22.4 - 26:32.1	Um, vex or how do you ensure the quality of the projects that teachers do at school?
37	26:32.1 - 27:57.0	Critical friends is huge. We set um, before a project is run, it is to get through a critical friends process in which we can help each other build that project. um, sometimes, it takes time. it's like the kids. You have to let kids fail and that's a horrible thing to say, but sometimes kids need to fail because when I fail, the first project that I ever launched at Coppell um, first time I was ever in Texas was a flop. The seniors, when I say the name of the project, they say, Ohhhh, that one. It was horrible but I learned so much through that that I would never take that experience back. so, we have to let kids fail sometimes. Well, you have to let your staff fail sometimes. Sometimes

		you need to let them launch that project even though you've given them advice to say, you know I don't know about that. Sometimes they have to experience it and sometimes they have to fail. because that's how they're going to learn to be better at what they do. so, one of the ways is through critical friends and the other is just that we're a collaborative group. Um, we respect each other and we're able to have time to sit and talk. And whenever, in a traditional school, would I get out of my department? You don't. You're stuck in your department. But, because we all teach in the same prototype or the same format, I'm able to go have a conversation with the physics teacher even though I don't have a clue content about what he's talking about. Or, the Spanish facilitator, or the math facilitator or the English, I can go speak to anyone about the process of PBL and we can speak, we speak the same language.
38	27:57.0 - 28:13.5	Fantastic, um, If you were going to use a single word to ....part, choose a single word, but a single word that like is representative of New Tech, what would that word be, and why?
39	28:13.5 - 28:43.5	Um, single word. I think creative. And the reason I think creative is, this environment allows for your learners to be creative and it allows for your facilitators to be creative, it allows for your school administrators to be creative. It's an environment that is open, that is challenging but also allows you to express things that are definitely outside of the box.
40	28:43.5 - 28:46.4	
41	28:46.4 - 28:57.1	Standardized testing. That's the last thing we got. What's the role of standardized testing here?
42	28:57.1 - 30:07.3	We're required by the state to take TAKS and now ESC's and AP testing and we have, anything you can think of, we've been testing these last two weeks and we're about ready to be through. I'm sure the kids are done. Um testing isn't, it's a measurement. We do still have testing in classrooms. You will launch a project and a lot of times you will have a formal assessment at the end as well, not only of the presentation but also maybe a test or a quiz. Ultimately, its still what education is. Um its still about measurement. So, we do still use that testing here. Our scores are awesome. I mean our kids critical thinking skills, I will challenge that most of those tests are about critical thinking and we're teaching about critical thinking. So, our scores are

		extremely um competitive. Its a, we're an exemplary high school. its our second year as an exemplary high school. The second year we could have exemplary status. So, we're absolutely up there with our test scores. I think the averat, average ACT is, and you can probably get that more from Tab, but I think its a 27. Uh, our kids are doing great on standardized tests.
43	30:07.3 - 30:20.3	Do you as a school, use any of the test scores as a diagnostic. Do you try and figure out where kids are having challenges and where to bolster your curriculum in teaching?
44	30:20.3 - 31:17.2	Absolutely, um, one thing about this process on the facilitator end. I know my state standards better than I've ever known my state standards. Because instead of following a book, I'm looking at my state standards and figuring out where do they fit in together, where I can teach in a way that is authentic to my kids. and so, therefore, I know my standards. So, when we get those test scores back, the office is looking at them, we're diving in and looking at them, seeing that these skills are low. Well, I can associate those skills with a project. So that tells me that A. that project didn't go over as well. B. that I need to introduce it in another project and so maybe I need to introduce it in multiple ways. Uh, maybe my scaffolding, which is a lot of times the workshops and things we do sometimes to teach the material. Maybe its not as rich as it needs to be. Um, and so forth. And so, Yes, we absolutely use the data to help us figure out where we have weaknesses and how we can improve those weaknesses.
45	31:17.7 - 31:35.6	Ok. just one other thing. I'm sure there will people out there who will watch the documentary that will come out of this and read the research and they'll be concerned that well, Coppell, its .... top performers. What's the makeup of the school in terms of the students in it.
46	31:35.6 - 32:55.8	We are just under 500 kiddos and we are a choice high school. So, if you took a sliver off our high school down the street, it would be us. Our main sub-pop, would be our Indian and Asian population followed by African American and then Hispanic. Our socio economic is a little bit middle class to upper class. But, I will also challenge that I've worked in both environments and I will tell you that kids are kids. Um, they face the exact same issues, it just looks different. Um, it may come out in a different way, but its all about fitting in. It's all about navigating all the emotions they are feeling as a teenager. Knowing

		what they're going to do with their lives. All of those things that the kids that I taught were in a low, low income area, are the same as these kids face. They just look or manifest themselves a little different way. I will tell you that we are one of a few New Tech schools that, most New Tech schools are in lower socio economic areas and most of them are in not high performing areas. It's usually a way of um helping to build test scores, is by adopting the New Tech model.
47	32:55.8 - 33:46.1	Um, something that we've heard from a lot of the other students and facilitators, is that in their time at New Tech, they get to build a rapport with the students. Does that bring in, and I've heard this from other persons (I can't hear myself) I've heard this from other teachers that we've interviewed elsewhere. That sometimes you know school's done but my students still want to be able to get in contact with me. They want to talk to me during the summer. Well, I don't want them to get in contact with me. Where does, how does that affect your level of privacy and maybe .... security. (OK)
48	33:46.1 - 34:20.1	Um, every kid in the school has my cell phone number. And, I've had one prank call in the last three years and I knew who it was so it wasn't really a prank. So, they much are respectful of the fact that they have information and our personal information. They pretty much can google it anyway and find anything they want. I mean, especially state employees. A lot of our information, which if they knew how to research, which our kids do, they can go out and find it. They're respectful because they respect you. Our rapport with kids here are completely different. I had the seniors, I had about
49	34:20.0 - 37:09.5	four seniors texting me last night. Uh, Ok My capstone is not working and this is not working, what do I do. Sometimes I even had a kid who went back to Coppell high school who still texts me. I say, I say its Muntz's text, helpline. But she texts me for information because she's stuck on something. Sometimes I'll spend hours with kids with information they need help with. I think to be in this environment, you have to be open to A. making a fool of yourself by either dancing in the talent show or you know dressing up for spirit days or you know staying up all night at a lock in, which is not a pretty thing but I can do it. I challenged myself, I can now stay up all night. Um, or doing those things just to build those rapport. Because what happens it's not any different than the old idea of going to all your athletes games. Except now we expand it to every kid in the school. I want to have a connection with every kid here, because when I go to them and say,

		You're not pulling your weight or what you're presenting to me is not your best. They're not going to disappoint me. So, instead of it being always about me telling them this is this. We build a mutual respect. They don't want to let me down. They do not want to let Ms. Branham down. They don't want to disrespect us because they know, at the end of the day they care about us more than they ever have any other teachers. And so, we use that like we use positive reinforcement. We use that to our advantage in classroom management sometimes. But as far as privacy, um, there are some, most, I phone number, that's fine with me. I don't want them all to know where I live cause I don't want them showing up when I'm trying to (chuckling) work or do something at my house. But, some people know where some other facilitators live and its not a big deal to them. They're respectful of also knowing that there are .... tutors on this campus that they don't want to give out their phone number and our kids are fine with that. They understand that there's some level of um privacy that we can have. But I will tell you that that level is hard to manage in this environment because they get to know you so well. Especially when you have kids multiple years. I've taught kids all three years. So, by now, they can call my bluff. They don't work as well anymore. Or sometimes they'll come in and lunch and just take food off your plate. sometimes, because they feel that comfortable with you. Um, the positive of that, that's the con. the positive of that is when they're facing things in their life that are astronomical, that they don't know if they can handle, they know they have people they can talk to. They know they can text me or they can call me and they they're going to have a support system there that not every kid is going to have. And that is, if we're really in the business of educating kids not only with content but also in their emotional values, we have to be open to going a little bit above and beyond what is normally acceptable to make sure they have that support system.
50	37:09.5 - 37:42.5	I don't think kids believe in our views. Almost all of them use the word family and that's very different that than the way that I was taught to teach originally where it was more of a business model. School is where house, you are the foreman and they all sit there and they will pluck chickens or whatever it is they're supposed to be doing. Um, How do you establish this feeling of family versus, I'm the boss and you'll do what I tell you to do.
51	37:42.4 - 40:38.0	School culture and building school culture is a very fine line. One

thing, they get to know each other pretty well is through talking. Because I'm not, I'm no longer the sage on the stage who is talking the entire class period. I may be a small workshop and I'm moving between the groups and I'm talking to every single learner, all the time. How are you doing today? How's it going? Well, ha, how did you learn through that process and was that a valuable experience for you? And, I'm asking their opinion. You ask a kids opinion and you're going to build their rapport with you right away. Because they don't think anyone ever listens to them anyway. Um, The other thing we do is we do lots of team building things. Whether its through clubs. Are. We have all kinds of clubs here. We have um, what's that game. Catch Phrase Club, we have Dummle club, we have all kinds, if a kid wants a club, they have to have 15 members and a sponsor on staff and we'll do it. And, because we believe that, part of coming here, they are missing out on some of the big high school experiences and we believe we need to build in that school culture as much as we can. Networking groups, where it's our advisory time or meeting with kids and we're discussing things. And sometimes its just doing goofy competitions. or sometimes it's doing really important community service work. Or, sometimes, it's just sitting and talking and um having time together. That is a way to build school culture. we do lots of goofy things, like amazing race to introduce our community service where kids are running around the building. We do those things that you need to do like dress up for spirit days. um, talent show video. We do also a introduction every year. We have a staff video and it is our introduction every single year. Like last year we did the, Don't stop, Believe in Glee but we changed all the words for New Tech and we did you know our dancing number. This last year was a little bit more serious because we had uh, seniors so we wanted it to be special. We chose, We choose a theme every year. Last year was Don't stop believing. This year was One day starts today, and we used the theme song from waiting on Superman, um, so we kind of choose a theme and we kind of stick with it. We do lots of team building with our kids. We act goofy when we need to act goofy. And, we, you know sometimes just walking around and goofing off with them during the day to know that someone cares about them. It's ok if they mess up because we're still going to love them no matter what. We're still going to have that hard conversation and we're going to talk about it but we still love them. And, I think that does build a family atmosphere and we are a family and with our first graduating class of seniors, talk about all of the, the, the reflection that we've thought of,

		of all the things that have happened over the last three years, it's been fun. So, it's a fun place to come to work.
52	40:29.9 - 40:38.1	How interesting. So, thank you.
53	40:38.1 - 40:40.0	Oh, you're welcome.

APPENDIX B

SUBJECTIVITY STATEMENT

Description of Research

The purpose of this research is to examine and identify the aspects and relationships in play, which are used in the daily operations of a technology-infused high school campus with a curricula based around project-based learning. As technology is rapidly changing the face of education, and students must prepare for a life in the digitally connected online 21st century; schools need to address the changing and evolving environment that their students and teachers are currently living in. These changes in communication and access to information are requiring teachers and administrators to evolve their instructional methods to better fit the learning and teaching styles needed. In order to examine the functionality of a school appearing to meet these needs and times, I am endeavoring to bring a visual exploration conducted through video observations and direct interview to provide illumination into the inner-workings of the school environment for teachers and students.

My Journey

The question of "how I got here" comes to mind when considering precisely how I arrived at the decision to conduct this research. For a century now, documentary films, in various capacities have been utilized to investigate and report on various subjects around the world, from far-off cultures and locations, historical perspectives and the interworking of the human –made and natural phenomena. As our lives have become even more connected the ease of transmission of data increased the ability to collect,

visualize and report on topics have become much more available and the equipment

needed to produce such an investigation more compact and mobile. Where once

researchers had to have large film and research crews with the functioning technical

knowledge to utilize cameras, film stock and sound-syncing equipment, most of these

technologies have evolved to the point where any one can make use of these tools for

data collection. Furthermore, the reduced size of the tools (particularly the cameras and

microphones) has reduced the necessary size of the research team. Therefore, this

project is now much more accessible in terms of data collection for researchers to

conduct.

With my background in film/video production and my interests in technology-

infused classrooms to prepare students for the future, I am able to bring the

technological skills and research curiosity needed to execute this study, in the hopes

that I will be able to witness the inner workings of a school which is bucking the

traditional methods used in schools and replacing them with the assistance of

technology.

I have long been a proponent of technology in schools. The genesis of this

interest may have begun in my grade school experience and continued through my

university years. As a child I was exposed to the use of a computer for word processing,

creation of art and entertainment, all of which were used in my elementary school

environment in order to better assist learning -at the time the primary focus of the

learning was better keyboarding and spelling, the former a skill I developed quickly and

would use continuously for the next 30 years, the latter became more and more reliant on the technology for accuracy. However, both skills were taught in a combination of drill and practice routines that combined the learning, practicing and identification of objects (words, letters and symbols) with a game-based interface which entertained the players and motivation through competition (scores on certificates were printed out and posted on the walls of the classroom). My later years in secondary skills lent more to the development of interests in digital art and entertainment. During my university-based academic career technology was front and center with video production, digital photography and digital darkroom techniques, word processing and video-game-based entertainment. My professional career as an educator was hallmarked with the use of technology in the classroom – and less for the whiz-bang appeal that it produced from the students and more for its effectiveness of delivering material, organization and management. The lack of overall computers in the classroom limited what I was able to do on a daily basis but highlighted the effectiveness of technology as a tool for learning.

My research interests have included the use of games and simulations for teaching – particularly for Social Studies and Science where technology-driven games assisted students in learning content and collaborated with each other to develop projects which further their learning to depths far beyond the requirements of the school or state. This research study represents an opportunity to examine the use of technology in a school at a level far beyond a single classroom or lesson. In this environment technology is used to a greater capacity than previously possible or

typically encountered in a traditional school environment. Instead of one or two

forward thinking teachers with an interest in educational technology pushing the

envelope in their school, here is an entire academic community unified in their usage of

technology as a tool for students and philosophically fused with the usage of

collaboration in project based learning. The combination of these three items provides

an opportunity to study what I can hope to be an emerging inclination in teaching and

learning.

Assumptions brought to this Research

Going into this study I have the following assumptions:

1. Technology will be used as more than just a gimmick it will play an actual part in the learning process

2. Technology will be used by the student not just the teacher

3. Lecture will be used to a minimum, the products of the project-based learning will be the focal point of the learning process

4. Technology will be used as a tool for learning but will not replace the teacher

5. The teachers and students will have a greater level of technological efficacy than typical traditional schools

6. Teachers and students will have a clear understanding of the benefits of both technology use in schools and project-based learning

My expectations for outcomes from this study are 1) to highlight the functionality of

technology and project-based learning in a public school environment – if it functions

here why Can't it function elsewhere? 2) A better understanding of how the school

functions – in other words what is needed by the teachers, students and administrators to keep the school functioning and successful. Finally, to use the information found in this school environment to propose revisions to existing traditional schools whether from the technological or project-based learning standpoints.

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