DIFFUSION OF EDUCATIONAL TECHNOLOGY AND EDUCATION REFORM:
A QUALITATIVE STUDY OF EDUCATORS’ PERCEIVED BARRIERS

By
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To the Faculty of Washington State University:

The members of the Committee appointed to examine the dissertation of
LEANNE K. ROBINSON find it satisfactory and recommend that it be accepted.

_________________________
Chair

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Abstract

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Washington State University
May 2003

Chair: Abbie Brown

The study examines educator’s perceived barriers to technology integration and the relationship to education reform. Educators and administrators from four elementary schools located within the same educational service district in western Washington were interviewed in their classrooms and offices during a three month period. The schools differed in size, location and social economic status and initially reported variances in their Washington Assessment of Student Learning (WASL) scores. The study found that while all of the schools reported similar barriers to the use of educational technology, distinct differences appeared between those schools that had done long range planning during the reform process and those that had not. Specifically, the two schools that coordinated curricula, performance standards and a variety of assessment tools while simultaneously allowing teachers the flexibility to alter the curricula as needed were more likely to state personal responsibility for student learning and were more likely to have overcome barriers to the use of technology. Three hypotheses were generated: (a) When education reform efforts include the integration of curriculum, assessment and classroom instruction, teachers are more likely to take personal responsibility for student learning; (b) Teachers will take more responsibility for technology use when technology integration
is not separate from curricula and/or reform efforts; (c) In order for technology to be used in a school, access to technology needs to be made for all. A model for conceptualizing technology integration is presented. Discussion includes the need to create schools where teachers feel control over both the classroom and the technology, are able to take responsibility for student learning and the use of technology as well as have a sense of accomplishment.
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Dedication

This dissertation is dedicated to Jeff Hegedus,
whose patience and support made it possible.
CHAPTER ONE
INTRODUCTION

Background

In a recent campaign commercial, a candidate spoke of the need to improve education and to create quality schools. Lined up along a white wall behind him were rows of computers with elementary students quietly absorbed in the computer screens. The message to the public was clear, computers and computing technology are not only necessary for quality schools but are indicative of good teaching and student learning. If the state was to have youth who would eventually be competitive in a global economy, technology needed to be at the forefront of funding and government support.

Computing technology has been marketed as the current solution to education’s problems (Rockman, 2000), and the quest for technologically equipped schools has grown dramatically. In 1996-97, an estimated $4.3 billion was spent by school districts in order to upgrade and incorporate computing technology in classrooms (Healy, 1998). By the year 2000, the number of computers in schools numbered over 10 million (Becker, 2000). The International Society for Technology in Education (ISTE), with the support of numerous educational, non-profit, and private businesses (Best, Wheeler, Renchler, & Summerlight, 2000) has published the National Educational Technology Standards for Teachers (NETS) and another set of standards for students. The document developed for teachers provides an outline defining what computer based skills teachers need in order to facilitate school improvement. It is believed that in order to be an effective teacher, one must be able to meet these standards, including demonstrating a sound understanding of technology operations and concepts and the planning and designing of effective learning.
environments and experiences that are supported by technology (PT3, 2000). Educators are pressed to prepare students for the future and are told that without computing skills and the appropriate technological equipment in the classroom, they are ill-prepared to teach and students are likely to fail.

In January of 2002, President Bush reauthorized the Elementary and Secondary Education Act. This bill contains an even larger allotment of money and support for technology from the federal government (Fletcher, 2002). Currently, 48 states have adopted or are developing assessments that align with standards based reform efforts (Stecher & Chun, 2001). Reform and standards have impacted classroom practice and teachers have reacted in multiple ways (Adcock & Patton, 2001). Often technology reform and education reform have paralleled each other as opposed to being incorporated (Peters, 2000), meaning that in many instances, the purchasing of computing tools and related technology as well as a plan for staff development was not coordinated with a building’s reorganization and examination of the curriculum and instructional processes included in education reform. When the two, both education reform and technology integration, have been fully combined with curriculum reform, which includes examining pedagogy, positive results have been found for students (Bain & Smith, 2000).

Even with all of the pressure to integrate the use of technology into the curriculum, the presence and accessibility of computers in the schools has not shown that the technology is being used by educators or that students actually can or do use it (Kalkowski, 2001). Although they are accessible, computers have not transformed the practices of a majority of teachers (Becker, 2000; Labbo & Reinking, 1999) and Willis,
Thompson, and Sadera (1999) have pointed out that integration of computers into the classroom has actually been a slow process.

The diffusion of innovations is the study of the process by which the use of a perceived new idea, practice or object is adopted within a given social system (Rogers, 1995). The study of the diffusion of innovations is present in many research traditions, including: anthropology, marketing, geography, communication and education. Within the overall research arena, less than 10% of the studies of innovations have been conducted in education (Rogers, 1995). While Rogers (1995) provides a generic model of the process of the adoption of an innovation, recent research is showing that alternative models may be more applicable to school systems. These models specifically identify educational technology as the innovation being studied, thus the phrase ‘diffusion of educational technology’ is often used in place of ‘diffusion of innovations’.

The diffusion of educational technology models that have been recently presented are non-linear, implying that many factors are involved in the adoption (or lack of adoption) of educational technology. These include both Rogers (2000) and Sherry, Billig, Tavalin, & Gibson (2000) as well as one presented by James, Lamb, Bailey, and Householder (2000). A holistic model has been offered where relevance, principal leadership, and intrinsic and extrinsic factors, including pedagogical beliefs, practices and exposure to innovations are considered (Dooley,1999). These models vary from the widely cited model posed by Everett Rogers (1995) in that they specifically address educational technology and attempt to identify more specifically factors that will lead to the adoption of an innovation in a school setting. All of the models have been developed
using a limited number of schools. In an attempt to better understand how teachers make
decisions as to how media is selected, a pilot study was conducted by the researcher.

Pilot Study at Wrangle School

In the Spring of 2002 the researcher set out to determine how teachers selected
media for use in classroom instruction. A K-6 elementary school located in western
Washington was selected for a pilot study. Using interviews, observations and field notes
from four general education staff, two support staff and an administrator, the study found
that each teacher cited differing barriers to technology integration.

Results indicated that each individual had different rationales for his or her own
levels of technology integration. All of them referenced pressure they felt for ensuring
that their students perform well on the Washington Assessment of Student Learning
(WASL). The building’s adoption of curricula was a major factor in determining what
media was utilized in the classrooms. While the staff verbally supported the use of
computing tools, few of them used educational technology and instead tended to blame
others or cite circumstances that they felt were out of their control for a lack of use,
although there were individuals within the school who used technology and did not report
the same barriers. Purchasing decisions were left to two individuals in the school, the
librarian and a teacher, with the principal stating that she would just “sign the purchase
order.” The use and adoption of educational technology was not held to the same
standards that all other curricular practices and materials were held.

Teachers in this pilot study related the lack of technology use to some aspect of
the school’s focus on educational reform and to their concerns related to teacher
accountability related to a state-wide performance assessment. The results of the study
provide a foundation for further examination of the relationship between the diffusion of educational technology and education reform. Wrangle school (a pseudonym for the school studied) is one of many who are reacting to state mandates and standards-based testing. While the educators are aware of technology, it has not been included as a thoughtful component in restructuring. Instead, it has been viewed as an aside or supplement by most individuals. In the process of trying to address the needs of students, curricula have been adopted that appear to be “teacher proof,” disallowing deviation from scripted practice. Standards-based assessment and student accountability requirements will continue to be implemented and developed, and schools must continue to grapple with the role of educational technology. At Wrangle School, teacher stress was high and technology was limited. Rationales varied among the educators as to the role of technology and why it was not being integrated (adopted). Wrangle School also reported concerns with low WASL scores. The impact that reform efforts are having on curriculum and the use of educational technology is worthy of further study.

Problem Statement

Research in the integration and institutionalization of educational technology was limited in scope in 1994 (Seels & Richey, 1994) and although educational technology is available, it is not integrated into classrooms today (Becker, 2000). Only 43% of elementary classrooms used computers on more than 20 occasions during the school year (Becker, 2000). Nationwide districts are grappling with education reform and accountability while simultaneously attempting to financially support computing technology and encourage integration by classroom teachers. Currently, there is no clear rationale that explains the apparent difficulty with incorporating the use of educational
technology and whether or not there is a relationship between the level of technology integration and the pressure teachers experience as a result of education reform.

Purpose

The purpose of this study is to examine how educators in several schools throughout Washington State are responding to both the pressure to integrate technology and to simultaneously be accountable for student achievement. The study goes beyond merely focusing on how educational technology is being used but also examines the interactions of technology, education reform, and the presence or absence of conflicting relationships. The researcher sought themes or patterns that occurred in interviews with educators that were then used to develop working hypotheses that help to better illuminate what is happening in terms of the diffusion of educational technology and how teachers may be better supported in the current educational reform processes.

Research Questions

The following research questions guided this study:

1. What are teachers’ perceptions of barriers to the use of educational technology/technology integration and how do the barriers connect to education reform?

2. What are the connections between perceived barriers to the responsibility for computing technology?

Significance

This study has potential significance in several areas. First, it contributes to the limited literature specifically addressing educational technology diffusion, possibly helping to alleviate a fifty year pattern of failed educational technology integration efforts.
which include: radio, film, and television (Saettler, 1990). In addition, the study illuminates future directions for both policy makers and administrators in developing and supporting professional development in education reform and educational technology that effectively support student learning.

Scope and Limitations

Four different sites representing varied subgroups were examined. Variables will included social economic status, size, and WASL scores (Patton, 1990). Educators from these selected schools were interviewed. As interviews are qualitative in nature and the selection of sites is not random, results cannot be generalized. Working hypotheses were generated for further exploration.

Summary

This chapter provided a brief background on the possibility of education reform playing a role in the limited use of educational technology. The introduction of computing technology has not transformed the practice of the majority of teachers (Becker, 2000). A pilot study conducted by the researcher pointed to the need to examine the relationship between the use of educational technology and education reform. The lack of use in light of the amount of money spent on technology was identified as a problem as was the pressure teachers experience because of education reform. The researcher proposed to study the relationship of technology to education reform and teachers’ perceived barriers. Significance may be found in future application to professional development.
CHAPTER TWO
CONCEPTUAL CONTEXT

The following chapter contains a definition of terms and a review of the literature in educational technology. The definition of terms helps to define vocabulary and concepts that exist within the review of the literature.

Definition of Terms

There is often confusion among both the public and educators regarding several terms related to this study. Teachers (and the general public) often equate technology with computers and technology is “commonly thought of in terms of gadgets, instruments, machines and devices” (Muffoletto, 1994). This is not the long-standing definition of technology. Technology has been defined as “The systematic application of scientific or other organized knowledge to practical tasks” (Galbraith, 1967, p. 12).

Instructional technology is defined as “the theory and practice of design, development, utilization, management and evaluation of processes for learning” (Seels & Richey, 1994). Educational technology is a more specific domain of instructional technology. It is a “combination of the processes and tools involved in addressing educational needs and problems, with an emphasis on applying the most current tools: computers and their related technologies” (Robyler & Edwards, 2000).

Computers in the classroom have often been mistaken as “educational technology” (Yeaman, Koetting, & Nichols, 1994). In actuality, computers and the hardware and software that accompany them are types of tools that teachers can choose to use during instruction. Methods of instruction and the materials, or media, of instruction are separate entities. Computers and computing software are media that may be used to
support a method. Although there are many ways in which teachers design instruction, most models follow a similar format.

There are numerous types of methods that can be used and appropriate media should be matched with the appropriate method. For example, methods would include such things as: presentations, doing a demonstration, cooperative learning, using discovery learning, doing a simulation, or using drill and practice. Media is used to support various methods, such as: using graphics, including visuals, slides or overheads and display boards, audio, text, real objects as well as computer software and video (Newby, Stepich, Lehman, and Russell, 2000). One method of instruction is not capable of meeting all of the instructional needs in a classroom, just as one medium cannot support all methods. In theory, computing tools can be used to support and enhance a method that is selected to assist a learner in meeting a pre-specified objective.

Technology Integration refers to the frequency of use and how computing tools are actually utilized in the classroom.

Levels of technology use are described using the Levels of Technology Implementation Framework developed by ISTE and are as follows (ISTE, 1999):

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<th>Level</th>
<th>Category</th>
<th>Description</th>
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<td>0</td>
<td>Non-Use</td>
<td>Perceived lack of access to technology based tools or lack of time to pursue electronic technology implementation. Existing technology is predominantly text-based (e.g., ditto sheets, chalkboard, overhead projector)</td>
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| 1     | Awareness   | The use of computers is generally one step removed from }
the classroom teacher (e.g., integrated learning system labs, special computer-based-pull-out programs, computer literacy classes, central word processing labs). Computer-based applications have little or no relevance to the individual teacher’s instructional program.

2 Exploration Technology based tools serve as a supplement to the existing instructional program (e.g. tutorials, educational games, simulations). The electronic technology is employed either as extension activities or as enrichment exercises to the instructional program.

3 Infusion Technology based tools including databases, spreadsheets, graphing packages, probes, calculators, multimedia applications, desktop publishing, and telecommunications augment selected instructional events (e.g., science kit experiment using spreadsheets graphs to analyze results, telecommunications activity involving data sharing among schools).

4A Integration (mechanical) Technology based tools are integrated in a mechanical manner that provides rich context for students’ understanding of the pertinent concepts, themes, and processes. Heavy reliance is placed on prepackaged
materials that aid the teacher in the daily operation of their instructional curriculum. Technology (e.g., multimedia, telecommunications, databases, spreadsheets, word processing) is perceived as a tool to identify and solve authentic problems relating to an overall theme/concept.

4B Integration (routine) Teachers can readily create Level 4 (Integrated units) with little intervention from outside resources. Technology based tools are easily integrated in a routine manner that provides rich context for students’ understanding of the pertinent concepts, themes, and processes. Technology (e.g., multimedia, telecommunications, databases, spreadsheets, word processing) is perceived as a tool to identify and solve authentic problems relating to an overall theme/concept.

5 Expansion Technology access is extended beyond the classroom. Classroom teachers actively elicit technology applications and networking from business enterprises, governmental agencies (e.g., contacting NASA to establish a link to an orbiting space shuttle on the Internet), research institutions, and universities to expand student experiences directed at problem-solving, issues resolution, and student activism surrounding a major theme/concept.
Technology is perceived as a process, product (e.g., invention, patent, new software design), and tool toward students solving authentic problems related to an identified “real world” problem or issue. Technology, in this context, provides a seamless medium for information queries, problem-solving, and/or product development. Students have ready access to and a complete understanding of a vast array of technology based tools to accomplish any particular task.
Review of the Literature

The review of the literature will begin by examining how educational technology is currently being utilized in classrooms and will be followed with an overview of research in the diffusion of innovations literature. Recent research in the area of the diffusion of educational technology will be presented in order to explain a relationship between teacher thinking and barriers to technology integration.

Current Instructional Uses of Technology

How are teachers using computing tools? In 1988, it was found that the primary use of computers in the classrooms was to teach job skills (Willis, Thompson, & Sadera, 1999). In 1993, Ruberg found that teachers primarily used computers for individualized work or small group activities. None of the teachers in the study used computers with large groups. Forty percent of the teachers used computers to develop instructional materials and only a small percentage used them to manage classroom records, keep track of test scores, and to develop lesson plans. This is a managerial task and has nothing to do with instruction and student learning. When computers were used, she observed that teachers used the computers primarily for drill and practice, simulations and word processing. With the exception of simulations, the other activities are at a lower level in the hierarchy of thinking skills development (Bloom, 1964).

In a 1995 study by Willis, Thompson, & Sadera (1999) it was reported that teachers surveyed had positive attitudes about the use of computers but were not necessarily confident in their abilities to use them. From this study, the researchers drew the conclusion that teacher education programs did not provide adequate instruction in the use of instructional technology. Becker (2000) found that computers were most often
used in computer classes and in business courses at the high school level. In a NCES (1997) report, more than half of the students who used a computer at school only did so to play games or to practice computer literacy skills such as keyboarding (Fuller, 2000).

Most recently, teachers use software primarily for preparing handouts, writing lessons plans and recording and calculating grades. Students use computers primarily for word processing, emailing, and accessing the internet (NCES, 2000; Rockman, 2000). Computers have been add-ons and rarely replace or even supplement any other media or methods. They have been bolted on to current instructional methods (Ely, 1995) and little reform in teaching practice has resulted. Computing technology (media) has not been matched regularly with various methods of instruction.

Many rationales exist within the literature suggesting why a lack of adoption has occurred. These include: inappropriate training or in-service (Kay, 1996; Maor, 1999); collegial jealousy or pre-defined roles (Sherry & Billig, 2002; Reinking & Watkins, 2000; Wood, 2000); lack of appropriate or relevant software instruction (Becker, 2000; Rockman, 2000; Rogers, 2000; Ruberg, 1993; Sia, 1992); teachers failing to find the relevance of technology use or applications to classroom practices (Maor, 1999; Sherry, Billig, Tavalin, & Gibson, 2000; Rogers, 2000); as well as teachers having a lack of space and time within the curriculum (Cuban, Kirkpatrick, & Peck, 2001; James, Lamb, Bailey, & Householder, 2000).

*Diffusion of Innovations*

Everett Rogers (1995, p.5) described the diffusion of innovations as a process where an innovation is communicated through certain channels over time among members of a social system and that it is a special type of communication in that the
messages are concerned with new ideas. Although computers have entered the classrooms, teachers are not utilizing them, and one of numerous questions that can be asked is “Why?” Diffusion has apparently occurred physically but the actual use of educational technology has not been adopted in practice. Fuller (2000) hypothesizes that a more effective strategy in encouraging teachers to adopt innovative technology is to support them, and re-states Rogers’ concept of homophily; effective communication occurs between more similar individuals, thus a change agent would need to be similar to or an actual teacher. If the change agent was a teacher, then teachers are more likely to use the innovation. In examining what promoted the adoption of new technologies in educational settings, Williams, Thompson & Sadera (1999) reported that one-on-one diffusion did work with teachers. When support for teachers was provided by another teacher, a positive effect was found on the incidence of student computer use (Fuller, 2000). However, student use does not account for or even show that an educator is incorporating technology in any way into instructional methods.

One rationale provided is that computing technology adoption failed to occur because the use of technology was pushed by administration or the community: the change agent was too dissimilar, or because the change agent failed to address an aspect in the stages of innovation adoption. These studies somewhat suggest that the problem lies with the teacher and that somehow he/she must be ‘convinced’, or have more training, in order to integrate the use of technology (Fuller, 2000). However, other diffusion of innovation reports offer an alternative perspective. In some instances, even when there was a similar change agent, other educators did not adopt computing technology (Reinking & Watkins, 2000; Wood, 2000; Sherry & Billig, 2002). As two
diffusion of educational technology studies pointed out, the concept of homophily alone does not necessarily account for the lack of integration (Sherry, Bilig, Tavalin & Gibson, 2000; Rogers, 2000).

**Diffusion of Educational Technology**

The field of educational technology has begun to question why teachers have not utilized computing tools. Initially, the argument had been that there was insufficient training and not enough resources. Recently, however, research studies are showing that something more is happening. For example, Cuban, Kirkpatrick and Peck (2001) reported that even in Silicon Valley, where there was wide teacher and community support as well as availability of educational technology, the use of computing tools was not fully incorporated into teaching practices.

Sherry, Billig, Tavalin, and Gibson (2000) reported on the adoption of technology in a WEB project. The WEB project, which ran from 1995-2000, was one of 19 Technology Innovation Challenge Grant winners. Using multiple theories, they identified a circular model of technology adoption as it related to the development of teachers’ expertise with the Internet and Web. The stages of adoption were as follows:

1. **Teacher as Learner:** In this stage, teachers need to be provided time for training.
2. **Teacher as Adopter:** Here, as teachers progress through the stages of task management, they need to be provided with technologically savvy support.
3. **Teacher as Co-Learner:** There is a focus on the development of a clear relationship between technology and curriculum. There is a need for collegial sharing, exemplary products displayed and assessment ideas provided.
4. Teacher as Reaffirmer or Rejecter: At this stage, teachers will either accept or reject the innovation. An awareness of the immediate learning outcomes has to be seen. There is a need for administrative support, an incentive system, and clear evidence of learning outcomes as well as evidence of metacognitive skills.

5. Teacher as Learner: The teacher becomes an action researcher who observes his/her practice. Skills developed become portable and the process begins again at step 1.

In terms of permanent adoption, the important stage in determining whether a technology will be adopted was after training and “collegial sharing” (a similar change agent). Instead, teachers rejected an innovation when learning outcomes were not immediately seen.

A similar but hierarchical model is cited by Rogers (2000) and provides a gestation period and stages of growth for technology adoption. These five stages are:

1. Familiarization: Here the teacher is provided with baseline exposure. This has often been provided in the form of a workshop. Most teachers dismiss the technological innovation because relevance is not seen.

2. Utilization: Teachers actually try the technology. Technology is used for minor routine functions, such as record keeping, but the innovation is not integrated into the curriculum. It is at this stage that most teachers stop.

3. Integration: Computers become a choice of instructional delivery because it is seen as most appropriately handled by the computer. A computer is not simply used for the mere sake of using a computer.
4. **Reorientation:** Rather than learning what hardware or software is in vogue, the emphasis is on the learner and on how the teacher may best facilitate learning.

5. **Evolution:** There is continued ability to grow and change as the needs of the learner change and the learning context changes.

In this model, teachers do not integrate computing technology unless they see that the computer, as a medium, best supports the method. The teacher is willing to change methods and media as necessary to facilitate learning.

Neither of these two models addresses the dissimilarity between the change agent and the client (teacher) as the major stopping point, but both address the need for support and training and highlight the importance of a teacher finding relevance for the learner. Students and student learning are the center of the rationale for adoption or rejection of the technology. Teachers are trained to focus on learning and the learner. If the media and/or method do not appear to have an outcome, they aren’t used. Teachers may not be laggards simply because they don’t know how to use technology, but because what is available for use doesn’t lead to the learning outcomes that teachers desire.

The results of a qualitative study by Levitt (2001) examining science education reform found that when teachers observed students learning, the teachers’ beliefs in the new approaches and commitment to it changed. In some instances, students and student learning are the center of the rationale for adoption or rejection of the media (computing technology) by teachers.

In a series of meetings in which state delegations met and began the process of developing strategies for aggregating information about technology’s use and impact in
schools, it was observed that there was a disconnect between the distinct groups of individuals. Those who fund technology and establish rules, such as principals, district technology and curriculum coordinators and staff development leaders, focused on preparing teachers to use technology, the problems with setting standards and the creation of technology friendly environments within schools. State level administrators looked for ways to collect information that showed how technology made a difference in teaching and learning. Those who actually worked in the schools and classrooms focused on students; they were concerned with thinking skills, authentic learning and collaboration on constructivist issues. A strong belief existed that technology existed in schools to help students learn how to learn (Rockman, 2000). Teachers were not “anti-computers”. They were instead focused on student learning.

_relevant software_

Given the two presented models of educational technology adoption, one aspect that could be examined is the lack of relevance of the software provided for classroom use. When describing educational technology and software integration, Ely (1995) reported that software integration occurs when a teacher utilizes software to enhance instruction in a specific subject. Sia (1992) stated that an impediment to software integration was due to several factors, including lack of quality software, lack of sufficient software, the high cost of hardware and software as well as the lack of teacher training. These factors, accessibility and availability of software, continue to be identified as possible variables in problems with the integration of technology into classroom instruction (Becker, 2000; Rockman, 2000; Rogers, 2000; Ruberg, 1993; Sia, 1992).
When teachers were asked what kind of software was utilized, office tool software dominated (Becker, 2000), possibly because there is relevance to the use of the software. It is easier to calculate grades and manage student records using office tools. Software used by those teachers that were most knowledgeable about computing tools included: (1) presentation software; (2) Web Browsers; (3) E-mail, followed by spreadsheets and data base managers. Only in English and elementary classes was multimedia authoring software used. (Becker, 2000). If innovations aren’t salient, are perceived as being complex or difficult, or if there is a perception of time consumption, they are likely to not be adopted (Bach, 1989). Teachers need software that permits them to accomplish the tasks they have identified as important (Rockman, 2000). If there is not relevance, teachers will not adopt, nor should they be expected to.

Several researchers have identified gender issues with current educational software: Only 39% of characters in math software are girls in the elementary level and at the high school this drops to 13% (Willis, Thompson, & Sadera, 1999), and the interest in computer technology and the appeal of educational software decreases for girls as they age (Knupfer & Rust, 1996; Willis, Thompson, & Sadera, 1999).

When a group of teachers were asked how software was selected, they said their decisions were based on what was available in the electronic network, recommendations by colleagues and what was listed in software catalogues (Ruberg, 1993). In a recent analysis of what occurs when designers of multimedia are provided feedback during usability testing, it was found that most did not fix the problems identified by the possible users (Sugar, 2001). In the one study where an alternative to traditional educational software was identified, the developers included students in the creation process. It
wasn’t until the software was developed that teachers were included (Char, 1990). Teachers haven’t been involved in the design and development of available educational software.

**Teacher Thinking**

Zeichner (1994), in a paper on teacher thinking, describes several traditions of research on teacher thinking and highlights that much of the research has focused on top-down assumptions in educational reform. He concludes that more collaboration and less “othering” should occur between researchers and educators. This notion has been elaborated on in other research and writings (Day, 1991), including a paper presented at the American Education and Computing Technology (AECT) conference (Moallem, 1996). Moallem encouraged instructional designers to examine the context of any design; the design of materials (media) should be created from a teacher’s frame of reference. Carlgren and Lindblad (1991) noted a difference between “innovations governed by ideas” and “innovations governed by reactions” (p. 514). When teachers focused on ideas, their practice changed until intentions were realized. If, however, teachers based the decision to use an innovation on the reactions of someone else, e.g. reactions from parents, students or colleagues, thinking did not develop; there was no reflective thought. An assumption was made that initial intentions (goals) would be met. However, unlike innovations governed by ideas, there was not necessarily follow through to see that it happened. The relationship between a teacher’s knowledge and actual practice is complex. Teacher beliefs take years to develop and this knowledge is a result of several factors including individual experiences and circumstances as well as formal training (Schon, 1987; Verloop, Van Driel & Meijer, 2002).
How a teacher views the relationship between his/her knowledge and any innovation is an important factor in whether or not an innovation is utilized (Verloop, Van Driel & Meijer, 2002). Three models of technology integration diffusion of innovation have been presented. These include both Rogers (2000) and Sherry, Billig, Tavalin, & Gibson (2000) that were presented at the onset of the study, as well as one presented by James, Lamb, Bailey, and Householder (2000).

**Primary and Secondary Barriers**

The notion of concerns being dependent upon experiences has been referenced as “primary and secondary barriers” (Judson & Sawada, 2000; Prater, 2001; Ertmer, Addison, Lane, Ross, & Woods, 1999). Both primary and secondary barriers are explained as being both intrinsic and extrinsic (Ertmer, Addison, Lane, Ross, & Woods, 1999) which is similar to the research on teacher thinking by Carlgren and Lindbland (1991). Primary barriers include: lack of access to computers and software, insufficient time to plan instruction, and inadequate technical and administrative support. Secondary barriers include: beliefs about teaching, beliefs about computers, established classroom practices, and unwillingness to change (Ertmer, Addison, Lane, Ross, & Woods, 1999).

**Connecting Barriers and Teacher Thinking**

A teacher’s pedagogy, or beliefs and practices of teaching have been related to secondary barriers and differ depending on the individual teacher’s pedagogy (Maor, 1999; Pugalee, 2001; Judson & Sawada, 2000). As opposed to examining the diffusion of innovations in a quasi-linear fashion, there is support for examining adoption in a more holistic fashion. Dooley (1999) has offered a model where relevance, principal leadership, and intrinsic and extrinsic factors, including pedagogical beliefs, practices and
exposure to innovations are considered in examining the diffusion of educational technologies.

Computing tools are a failing innovation. If an understanding of why technology has not been integrated can be identified, the failure of future innovations may be alleviated and perhaps more importantly, options may be developed that would allow for appropriate and effective use of the technology that already exists within the public schools. Utilizing a holistic paradigm, the state of the diffusion of educational technology in relation to education reform should be examined further. Understanding if the phenomenon at schools such as the one presented in the pilot study is unique or if the problem is broader in scope may help to re-direct two separate reform movements into one that is more consolidated.

Summary

Chapter Two presented a conceptual context for the rationale of studying the relationship between the lack of educational technology diffusion of innovation and teacher thinking. Teacher thinking has been influenced by education reform. Several rationales for the lack of adoption were presented, as were current models of educational technology diffusion of innovations models. A rationale was posed for including teacher thinking as a component as has been briefly stated within the literature. The concept of primary and secondary barriers was highlighted and related to teacher thinking. A holistic paradigm is proposed as a framework for further examination of the diffusion of educational technology and the relationship to education reform.
CHAPTER THREE

METHODOLOGY

Methods

Theoretical Underpinnings

Clark and Estes (1999) have proposed a four-stage model for describing how research can be conceptualized and conducted in order to develop authentic technology (p. 252). Authentic technologies are “educational solutions resulting from systematic analysis that identifies the problem being solved, selects and translates appropriate, well-designed research and applies it to design culturally appropriate educational solutions,” (p. 243). In this study, it is appropriate to realize that authentic technology is referring to teaching strategies, not simply mechanical devices (computing tools). The stages in authentic technology development are:

1. Descriptive Scientific Research Stage: Constructs definition and hypothesis generation are the key descriptive goals. Variables are identified, and constructs are developed. At this stage, the researcher attempts to describe measurable variables after identifying issues, conducting observations and asking questions that come from the identification of a real world problem.

2. Scientific Experiments and Theory Development: Both quantitative and qualitative methodologies are used as theories are built and checked through experimentation. Confoundings are identified and eliminated. Theories are advanced and move closer to authentic technology.

3. Generic Technology Development: Based on the strongest paradigms. Attempts to identify the active ingredients, or causal agents, are made.
4. Specific Technology Development: Technologies are translated for specific settings, people, and tasks. Proposed solutions are contextualized.

This research project proposed is most aligned with the beginning stage of this model. The diffusion of educational technologies is still at a descriptive stage.

The researcher initially proposed to examine possible relationships between the integration of educational technology and education reform. In order to better understand teachers’ reasoning for selecting or not selecting media, both interviews and observations in a naturalistic setting were done. The theoretical underpinnings supporting the planning of this research were interpretive. The Interpretivist paradigm focuses on understanding and holds that there is no universal truth that can be used to explain human behavior.

Emphasis is on context and understanding individual situations (Wrangle & Guba, 1985; Willis, Thompson, & Sadera, 1999).

Constant Comparative Method

The constant comparative method is effective with multiple research sites. Analysis and data collection occur in a pulsating fashion. Initial interviews are completed, analysis is conducted and theory is developed. Another interview then takes place, more analysis, followed by modification of the theory. Generally, the research steps are as follows (from Glaser & Strauss as reported in Bogden and Biklin, 1998):

1. Begin data collection
2. Look for key issues, recurrent events or activities in the data that become categories of focus
3. Collect data that provide many incidents of the categories of focus, with an eye to seeing the diversity of the dimensions under the categories.
4. Write about the categories explored, attempting to describe and account for all the incidents in the data while continually searching for new incidents.

5. Work with the data and emerging model to discover basic social processes and relationships

6. Engage in sampling, coding, and writing as the analysis focuses on the core categories.

Utilizing this framework, the research proceeded as follows:

**Initial Data Collection**

Initial data collection occurred in the pilot study at Wrangle School. The pilot study identified a possible relationship between the pressure to have students perform well on the WASL and teachers perceived barriers to the use of and responsibility for educational technology. This hypothesis served as the initial framework. The focus of the study was to determine if the phenomenon at Wrangle is occurring in other settings and to more succinctly illuminate any possible relationships.

**Additional Site Selections**

Three other sites from separate districts were selected from the same Educational Service District in western Washington. The sites were selected purposively and a stratified sample was used (Patton, 1990), meaning that the four sites represented four different subgroups for comparison. Two of the schools were located in rural settings, with one of the schools being a rural school in a larger district. The schools were asked their WASL scores prior to final selection and schools self reported variances in their WASL scores, with one of the schools having exceeded the state average in percentage of students passing. One school with a low SES was located in an urban area with lower
WASL scores and one school located with a high SES located on the edge of an urban area is included in the sample. Access was granted through a key individual at each site that knew the researcher from past professional experiences. He/she was contacted at each site and the purpose of the study was explained. The gatekeeper then recommended individuals to interview. Snowball sampling (Patton, 1990) was utilized, as those interviewed often recommended others to interview. Semi-structured questions similar to the pilot study were asked and observations were made of the classroom setup and equipment available.

Interviews occurred between March and May of 2002. Each interview lasted between forty-five minutes and an hour and a half. All of the interviews occurred within the individual teacher’s classroom or the administrator’s office at the school site. Interviews occurred at Wrangle on two separate days and at East Lake over a two day period. Interviews at Woodland and Sandal Creek were conducted before, during and after school on differing days. Following the transcriptions of the interviews and during the analysis, the contact person at each school was contacted to answer specific questions via phone and email.
Table 1

Enrollment and WASL Scores of Selected Sites, 2001

<table>
<thead>
<tr>
<th>School</th>
<th>Location</th>
<th>Enrollment</th>
<th>% of Free and Reduced Lunch</th>
<th>% Passing Reading WASL (66.1 state)</th>
<th>% Passing Math WASL (43.4 state)</th>
<th>% Passing Writing WASL (43.3 state)</th>
<th>% Passing Listening WASL (72.4 state)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wrangle</td>
<td>Urban</td>
<td>370 K-6</td>
<td>56.8</td>
<td>48.8</td>
<td>23.3</td>
<td>27.9</td>
<td>58.1</td>
</tr>
<tr>
<td>Sandal Creek</td>
<td>Suburb</td>
<td>444 K-4</td>
<td>10.3</td>
<td>63.2</td>
<td>40.9</td>
<td>43.5</td>
<td>71</td>
</tr>
<tr>
<td>East Lake</td>
<td>Rural</td>
<td>263 K-6</td>
<td>34.4</td>
<td>55.8</td>
<td>30.2</td>
<td>23.3</td>
<td>72.1</td>
</tr>
<tr>
<td>Woodland</td>
<td>Rural</td>
<td>304 K-6</td>
<td>44.4</td>
<td>73.2</td>
<td>39</td>
<td>43.9</td>
<td>80.5</td>
</tr>
</tbody>
</table>

Table 2

Selected Sites and Teachers Interviewed

<table>
<thead>
<tr>
<th>Wrangle</th>
<th>Sandal Creek</th>
<th>East Lake</th>
<th>Woodland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principal</td>
<td>Administrative Principal</td>
<td>Principal</td>
<td>Principal</td>
</tr>
<tr>
<td>SFA Coordinator</td>
<td>Intern/Reading Specialist</td>
<td>Title 1 Teacher</td>
<td></td>
</tr>
<tr>
<td>Transitional First</td>
<td>Kindergarten</td>
<td>2/3rd Grade</td>
<td>2nd Grade</td>
</tr>
<tr>
<td>2nd Grade</td>
<td>3rd Grade</td>
<td>4th Grade</td>
<td>3rd Grade</td>
</tr>
<tr>
<td>6th Grade</td>
<td>4th Grade</td>
<td>5th Grade</td>
<td>4th Grade</td>
</tr>
<tr>
<td>PE Teacher</td>
<td></td>
<td></td>
<td>6th Grade</td>
</tr>
<tr>
<td>Counselor</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The International Society for Technology in Education (ISTE) has developed frameworks that provide progressive descriptions for teachers who do not integrate technology to those teachers that fully integrate technology. These frameworks were converted into a survey and each teacher was asked to identify his/her current level of
technology integration. The survey was not presented in a linear manner; each category was randomly placed in a non-linear sequence (see Appendix B).

Data Analysis

A methodological log was kept that outlined the research process and was used to keep researcher notes during the analysis. Field notes were kept during site visits and notes regarding observations of the site and individual classrooms were recorded. Each individual was told of the purpose of the study and were provided with a Subject’s Bill of Rights and consent form. The study had been approved through the Office of Graduate Research and Development at Washington State University.

The individual subject interviews were transcribed verbatim. The interview guide served as the initial framework. Using inductive analysis (Patton, 1990) the researcher repeatedly read the responses to the interview questions and looked for patterns or emerging themes and a cross-case analysis was conducted of the responses to the interview questions (Patton, 1990), grouping responses by individuals to same or similar questions. As the classroom teachers and support staff had differing roles within the school than those who served in an administrative capacity, the interviews were separated into two groups: administrators and classroom teachers. The teacher interviews were reviewed first.

Each interview was read multiple times and the researcher looked for themes within each broad category. A list of themes was generated and the interviews were again re-read and the researcher identified and labeled selective sections of the interviews that corresponded to the potential themes. For the teachers, the following themes were identified: primary barriers, secondary barriers, school climate, favorite parts of
teaching, frustration/needs, teaching practices, accountability and technology specific responses. These themes then served as categories, and the responses were read again and sub-categories were looked for within each theme. The researcher then created an organizational chart and returned to the interviews, coding the specific parts of each interview that related to each specific category.

Using large pieces of chart paper, the researcher listed the major themes and the corresponding subcategories. These pieces of chart paper then served as an organizational display for the actual coded selections from each interview. The interviews had been photocopied and each school was given a unique color so that the schools could be identified within the organizational chart. A colored line was drawn through each interview that corresponded to a key so that the identity of the respondent could be determined as the analysis was being conducted. In addition, a second colored line was drawn through each interview identifying the level of technology integration that the teacher reported on the technology integration survey (Appendix B). The interview selections were then cut and taped onto the charts.

As the interviews were being sorted, the researcher further separated responses by grouping the responses of those who had high integration scores on the technology integration survey and those that scored lower. In addition, the researcher separated the responses to both primary and secondary barriers into two groups: those who saw an identified barrier as an obstacle that they could not or would not overcome and those that were attempting to or had overcome the identified barrier.

The same process was used for the administrative responses, although the categories were changed slightly, as administrators had different perspectives and
answered slightly different, although related, questions than the teachers. The following two figures provide a visual representation of the charts that were developed for the analysis:

Figure 1

Matrix Used to Categorize Selections from Teacher Interviews

<table>
<thead>
<tr>
<th>Primary Barriers</th>
<th>Lack of Access</th>
<th>Time to Plan</th>
<th>Equipment/Hardware</th>
<th>Training Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obstacle</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overcame Obstacle</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Secondary Barriers</th>
<th>Beliefs about Teaching</th>
<th>Beliefs about Computers/Technology</th>
<th>Willingness to Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obstacle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overcame Obstacle</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>School Climate</th>
<th>Positive</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Integration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Integration</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Favorite Parts of Teaching</th>
<th>Frustrations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kid Related</td>
<td>Practice Related</td>
</tr>
<tr>
<td>High Integration</td>
<td></td>
</tr>
<tr>
<td>Low Integration</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Teaching Practice</th>
<th>Integrated Curriculum</th>
<th>Subject Specific Curriculum</th>
<th>Flexibility with Curriculum</th>
<th>Structured Curriculum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language</td>
<td>High Integration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Integration</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integration</td>
<td>Math</td>
<td>Content Area</td>
<td>Assessment (Specific Tests)</td>
<td>Accountability (Reporting to)</td>
</tr>
<tr>
<td>-------------</td>
<td>------</td>
<td>--------------</td>
<td>----------------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High Integration</td>
<td>WASL</td>
<td>ITBS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low Integration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Integration</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Integration</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Integration</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Integration</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Primary Barriers**

<table>
<thead>
<tr>
<th>Lack of Access</th>
<th>Time to Plan</th>
<th>Equipment/ Hardware</th>
<th>Training Skills</th>
</tr>
</thead>
</table>

**Secondary Barriers**

<table>
<thead>
<tr>
<th>Beliefs about Teaching</th>
<th>Beliefs about</th>
<th>Willingness to Change</th>
</tr>
</thead>
</table>

Figure 2

Matrix Used to Categorize Selections from Administrator Interviews
After all of the interviews had been coded, cut, and pasted onto the charts, each chart was examined by the researcher who looked for relationships between responses of individuals within each category. The researcher also looked for patterns within and between schools, between those who rated themselves high on the integration survey and those who rated themselves as lower on the survey. The color-coding of the interviews between schools made it easy to identify patterns between schools. The researcher then drew some initial conclusions, but, to be sure, an individual profile for each school was developed. The profiles included a summary of the schools responses to each theme as well three years of WASL and ITBS trends, demographics, and teachers interviewed.
These brief profiles were then compared to each other to assist in confirming the researcher’s initial findings from the organizational charts (See sample in Appendix G).

Limitations

Often constant comparative studies seek to reach “theoretical saturation”. However, data saturation is beyond the scope of this study, as only a limited number of schools were selected. Instead, the study will conclude with the constant comparison of the four sites. The data generated will add to the developing description of the current situation of educational technology, as referenced in the theoretical underpinnings (Clark and Estes, 1999). Observations were made of individual classrooms, although there was not the opportunity of observing all of the teachers interacting with students. The intent of the research is not to generalize findings to other areas but is to instead generate working hypotheses for further study.
CHAPTER FOUR

ANALYSIS

Introduction

In order to better understand what is happening in terms of education reform and educational technology, four schools were selected based on location, WASL scores, access, and varied sizes. Before going to each school, the researcher was not aware of the demographics, including comparable Social Economic Status (SES). The researcher also did not know WASL trends. Each school had similarities as well as differences. Each school, as all schools, was unique and presented different barriers. Two of the schools were more likely to overcome obstacles to technology integration and were more likely to take responsibility for what was happening with both the students and test scores as well as the use of technology. The following chapter will provide a description of each of the schools. Subsequent chapters will examine each school’s perceptions of assessment and accountability, the role of curriculum and its use in the classroom, the use of technology, and how reform was approached within the individual buildings.

The Settings

The following descriptions were developed from field notes taken during the time that interviews were conducted at each of the school sites.

_Sandal Creek, May 8, 2002_

After twisting through a heavily treed area, I made a right hand turn into the entrance of Sandal Creek. Red, white and blue plastic drinking cups had been shoved into the chain link fence, creating a huge American flag that stood out in contrast to the clean and neatly mowed
play area. I drove through the parking lot, looking for an empty spot and couldn’t help but notice that only shiny new and clean cars took up the spaces. The single Toyota Corolla hatchback stood out. The school building appeared new, exceedingly tidy and manicured. Sandal Creek is located in a suburban area within commuting distance to a large computer software employer. Inside, the same manicured look continued. Children’s artwork was neatly displayed on the walls and everyone dressed in nice clothing. I introduced myself to the secretary and was sent to the staff lounge where I waited for my contact person to finish meeting with a group of first grade teachers. The staff had apparently spent the day meeting in teams with the reading coordinator, who was discussing reading strategies and working to assist the teams with problems that they were facing within the classrooms. Sandal Creek appeared to be representative of a typical suburban school that served upper to middle class white students.

_East Lake, May 6, 2002_

When I arrived at my early morning scheduled time at East Lake, no one was there, although the front doors were open, the office was deserted. The school was small and located within the heart of an equally small community. Very tired and faded, old homes were located across the street and the asphalt playground was cracked. Several portables stood at the edge of the play fields. The inside of the school had been freshly painted and the office was crowded. A teacher who had not been on my
interview schedule offered to allow me to interview her while I waited for another teacher to arrive. East Lake had only 243 students and is one of six elementary schools in the North Coast School District. Unique to East Lake is a program called Vision’s. The Vision’s program has three separate multi-age classrooms and has a large parent involvement component. The students in the program are not necessarily from the draw area and are in the program only through parent request. Parents are required to be involved through volunteerism, which may take place within the classroom or through fundraising. The district had set parameters, ensuring that the population of the classrooms matches the population of other district classrooms, including special education students and ethnic diversity. I learned later that there were often conflicts between the students in the Vision’s program and those students that were part of the general classrooms and that the principal had to work hard to maintain and develop unity with the differing groups.

Woodland, May 10, 2002

Woodland was built in the early 1940’s and must have looked much like it did when it was originally built. The circular bus parking lot was narrow, and big steps lead into a brick building surrounded by large maple trees. I arrived at 8:35 and was greeted by the principal who promptly gave me a tour of the school, pointing out a new computer lab that was housed in an old classroom, a large leveled book collection that the staff had been putting together in an old storage closet, and the newly
re-organized office. At 9:00 when the buses began to pull in to the parking lot, the principal asked me to wait in the office and she took what appeared to be her usual position at the front of the building, greeting students as they entered the building. As I sat in the office I couldn’t help but notice an old display case with student art and tacked up samples of student work. Flyers for parents and a suggestion box were located at the office entrance. Several students entered the office, seeking a hug from the secretary and parents entered and removed parent volunteer badges that were hanging from a hook. A parent came in with a large project and asked if there was a place that she could display her child’s work and the secretary promptly began looking for a safe display area.

Woodland was not a fancy school. No major remodels or renovations had been done in years, with the exception of adding more outlets and wiring to the classrooms so that modern technology could be used. There weren’t expensive cars in the little parking lot, and the building was crowded, although organized.

*Wrangle, March 28, 2002*

The three story brick building sits on top of a hill in the middle of a residential area just on the edge of town. A bulletin board covered with news articles of smiling faces greeted me in both English and Spanish, highlighting the accomplishments of both Wrangle staff and students as I walked through the front doors. Posted in the hallway were advertisements for t-shirts from a school produced play. Two well-
dressed teachers stopped their quiet conversation and smiled as I past them on my way towards the office before resuming in hushed tones. The secretary warmly welcomed me and I was invited to wait for the counselor who had not yet arrived. She smiled and said, “She often straggles in with her kids.” Sure enough a few minutes later, Jane, the counselor, walked through the doors and kissed both of her kids before shooing them outside with the other arriving students. Jane, an acquaintance, had made the interviews at Wrangle School possible.

Jane had a list of contacts for me in her office. I had told her of my interest in media, and she arranged interviews and observations with several staff members who could give me an overview of the curriculum and thoroughly highlight the climate of the school. “At 1:00 you get to see the play.” She laughed. “And, if you really want different reactions, just ask people what they think about it”! Briefly she explained that the play had been an ongoing event, and took up most of the first semester in both the fifth and sixth grades. Part of the heated discussion within the school was the relevance or justification behind spending so much time on such an activity. “We only had four kids pass the WASL last year,” were her parting comments as she left to begin her day.

Demographics

Two of the schools were larger, with Sandal Creek being located in a fairly affluent neighborhood and having an exceedingly low free and reduced lunch count, indicating a higher social economic status (SES) in comparison to the other three schools.
Sandal Creek was also the only school that was K-4, as opposed to K-6. All of the schools were located within the same Educational Service District in western Washington.

### Table 3

**Size and Social Economic Status 2001/2002**

<table>
<thead>
<tr>
<th>School</th>
<th>Grades</th>
<th>Population</th>
<th>Free and Reduced Lunch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sandal Creek</td>
<td>K-4</td>
<td>578</td>
<td>12.6%</td>
</tr>
<tr>
<td>East Lake</td>
<td>K-6</td>
<td>247</td>
<td>42.3%</td>
</tr>
<tr>
<td>Woodland</td>
<td>K-6</td>
<td>286</td>
<td>44.7%</td>
</tr>
<tr>
<td>Wrangle</td>
<td>K-6</td>
<td>401</td>
<td>61.8%</td>
</tr>
</tbody>
</table>

### Table 4

**Ethnicity (in percentages) 2001/2002**

<table>
<thead>
<tr>
<th>School</th>
<th>White</th>
<th>Hispanic</th>
<th>Black</th>
<th>Pacific Islander</th>
<th>American Indian or</th>
<th>Alaskan Native</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sandal Creek</td>
<td>87.3</td>
<td>5.8</td>
<td>1</td>
<td>4.6</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>East Lake</td>
<td>88</td>
<td>6.4</td>
<td>1.6</td>
<td>1.6</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Woodland</td>
<td>76.5</td>
<td>3.4</td>
<td>2</td>
<td>1.7</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Wrangle</td>
<td>56.6</td>
<td>37.1</td>
<td>2.2</td>
<td>2.4</td>
<td>1.4</td>
<td></td>
</tr>
</tbody>
</table>

### Washington Assessment of Student Learning (WASL) Scores

When the researcher first decided to visit these particular four schools, each contact person was asked what the WASL scores at his/her school were. Interestingly, what they said the scores were like was very different then the WASL scores that were reported publicly by the Office of the Superintendent of Public Instruction (OSPI). The
staff at Wrangle perceived that their WASL scores were low. Sandal Creek staff wasn’t concerned and said they were okay. Both Woodland and East Lake said they had good scores, but that the scores were very influenced by the particular group of students. East Lake pointed out that in 1999 75% of the students passed the reading section of the WASL, but in 2000/01 the number had dropped to 55%. In 2000/01, 25% of the students in the fourth grade class were classified as special education students and those scores were included in the WASL results. Both East Lake and Woodland, who have relatively small numbers of fourth graders, saw that problems might arise depending upon the make up of the class.

The researcher attempted to determine if any differences existed between the individual school’s WASL trends. As the demographics differed, with some of the schools having a lower SES, statistical analysis, such as using an ANOVA, couldn’t be run without violating basic assumptions, as the groups are not equal. Factoring out the covariates wasn’t possible, as there aren’t percentages available for the impact of SES on the WASL.

In order to determine if there were actual differences in the WASL scores, all of the schools and the scores were listed. Each year the schools were ranked from the lowest to the highest scores for each of the three categories, receiving a 1-4 depending upon the rank. The totals for each score were calculated, providing a total. The lower the score represents the lowest ranking. As the literature suggests, it is predictable that Sandal Creek, with a higher SES and predominantly white population, scored the highest. Wrangle, with the lowest SES and the most ethnically diverse has the lowest scores.
Given the outcome, the researcher determined that there seems be no real difference in the scores.

Table 5

WASL Reading Rankings

<table>
<thead>
<tr>
<th>School</th>
<th>1999</th>
<th>Rank</th>
<th>2000</th>
<th>Rank</th>
<th>2001</th>
<th>Rank</th>
<th>Final</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sandal Creek</td>
<td>69.7</td>
<td>2</td>
<td>63.2</td>
<td>2</td>
<td>61.1</td>
<td>3</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Woodland</td>
<td>75</td>
<td>1</td>
<td>73.2</td>
<td>1</td>
<td>44.7</td>
<td>4</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>East Lake</td>
<td>75</td>
<td>1</td>
<td>55.8</td>
<td>3</td>
<td>72.5</td>
<td>1</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Wrangle</td>
<td>58.9</td>
<td>3</td>
<td>48.8</td>
<td>4</td>
<td>60.4</td>
<td>2</td>
<td>9</td>
<td>4</td>
</tr>
</tbody>
</table>

Schools were ranked from highest to lowest using the WASL Reading scores. A rank of 1 was assigned to the highest score and 4 to the lowest. Rankings were then added for all three years and a final ranking was given. A rank of 1 was the highest and 4 the lowest.

Table 6

WASL Math Rankings

<table>
<thead>
<tr>
<th>School</th>
<th>1999</th>
<th>Rank</th>
<th>2000</th>
<th>Rank</th>
<th>2001</th>
<th>Rank</th>
<th>Final</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sandal Creek</td>
<td>38.9</td>
<td>3</td>
<td>40.9</td>
<td>1</td>
<td>61.1</td>
<td>2</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Woodland</td>
<td>47.9</td>
<td>1</td>
<td>39</td>
<td>2</td>
<td>44.7</td>
<td>3</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>East Lake</td>
<td>42.5</td>
<td>2</td>
<td>30.2</td>
<td>3</td>
<td>72.5</td>
<td>1</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Wrangle</td>
<td>19.6</td>
<td>4</td>
<td>23.3</td>
<td>4</td>
<td>33.4</td>
<td>4</td>
<td>11</td>
<td>3</td>
</tr>
</tbody>
</table>

Schools were ranked from highest to lowest using the WASL Math scores. A rank of 1 was assigned to the highest score and 4 to the lowest. Rankings were then added for all three years and a final ranking was given. A rank of 1 was the highest and 4 the lowest.
Table 7

WASL Writing Rankings

<table>
<thead>
<tr>
<th>School</th>
<th>1999</th>
<th>Rank</th>
<th>2000</th>
<th>Rank</th>
<th>2001</th>
<th>Rank</th>
<th>Final</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sandal Creek</td>
<td>37.2</td>
<td>2</td>
<td>43.5</td>
<td>1</td>
<td>42.6</td>
<td>2</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Woodland</td>
<td>68.8</td>
<td>1</td>
<td>43.9</td>
<td>2</td>
<td>32.4</td>
<td>4</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>East Lake</td>
<td>30</td>
<td>3</td>
<td>23.3</td>
<td>4</td>
<td>50</td>
<td>1</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>Wrangle</td>
<td>16.1</td>
<td>4</td>
<td>27.9</td>
<td>3</td>
<td>35.4</td>
<td>3</td>
<td>10</td>
<td>4</td>
</tr>
</tbody>
</table>

*Schools were ranked from highest to lowest using the WASL writing scores. A rank of 1 was assigned to the highest score and 4 to the lowest. Rankings were then added for all three years and a final ranking was given. A rank of 1 was the highest and 4 the lowest.*

Table 8

WASL Listening Rankings

<table>
<thead>
<tr>
<th>School</th>
<th>1999</th>
<th>Rank</th>
<th>2000</th>
<th>Rank</th>
<th>2001</th>
<th>Rank</th>
<th>Final</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sandal Creek</td>
<td>71.6</td>
<td>1</td>
<td>73</td>
<td>2</td>
<td>68.2</td>
<td>4</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Woodland</td>
<td>64.6</td>
<td>4</td>
<td>80.5</td>
<td>1</td>
<td>69.2</td>
<td>3</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>East Lake</td>
<td>70</td>
<td>2</td>
<td>72.1</td>
<td>3</td>
<td>70</td>
<td>2</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Wrangle</td>
<td>69.6</td>
<td>3</td>
<td>58.1</td>
<td>4</td>
<td>73.5</td>
<td>1</td>
<td>8</td>
<td>2</td>
</tr>
</tbody>
</table>

*Schools were ranked from highest to lowest using the WASL Listening scores. A rank of 1 was assigned to the highest score and 4 to the lowest. Rankings were then added for all three years and a final ranking was given. A rank of 1 was the highest and 4 the lowest.*
Table 9

Final WASL Rankings

<table>
<thead>
<tr>
<th></th>
<th>With Listening</th>
<th>Without Listening</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Score</td>
<td>Rank</td>
</tr>
<tr>
<td>Sandal Creek</td>
<td>25</td>
<td>1</td>
</tr>
<tr>
<td>Woodland</td>
<td>27</td>
<td>3</td>
</tr>
<tr>
<td>East Lake</td>
<td>26</td>
<td>2</td>
</tr>
<tr>
<td>Wrangle</td>
<td>38</td>
<td>4</td>
</tr>
</tbody>
</table>

Schools were ranked from highest to lowest using the WASL Reading, Math, Writing and Listening scores. A rank of 1 was assigned to the highest and 4 to the lowest. Rankings were then added for all three years for a total score. A final ranking was given for each section. All of the sections were added together for a final score and an overall ranking was given. A rank of 1 was the highest and 4 the lowest.

Technology Integration

All of the teachers interviewed rated themselves on the Technology Integration Survey with the exception of a counselor, the principals, and a P.E. teacher. The researcher divided the Technology Integration Scale into four sections: Non-use/Awareness, Exploration/Infusion, Integration and Expansion/Refinement. Interestingly, respondents often checked two boxes on the scale, sometimes indicating how they would like to be using technology and how they currently used technology. This happened three times at Sandal Creek; teachers checked the Non-use/Awareness option and then starred the Integration option. The ISTE survey lists “perceived lack of
technology” as the lowest level, although at Sandal Creek the availability of technology was indeed low and it wasn’t attributable merely to teacher’s perceptions. There was little access to computing tools. The transcripts from interviews where this occurred were marked so that they could be identified in the analysis.

Table 10
Technology Integration Ratings

<table>
<thead>
<tr>
<th>School</th>
<th>Total People Interviewed</th>
<th>Non-Use Awareness</th>
<th>Exploration Infusion</th>
<th>Integration</th>
<th>Expansion Refinement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sandal Creek</td>
<td>4</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Woodland</td>
<td>5</td>
<td>2</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>East Lake</td>
<td>5</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wrangle</td>
<td>6</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

A technology integration survey was given to each educator interviewed, with the exception of administrators. Each individual was placed in one of four categories with Non Use/Awareness being the lowest level of integration and Expansion/Refinement the highest level of integration. The number of individuals from each school was tabulated for each category.

All of the schools had a varying range of responses to the interview questions. Each school had creative teachers and traditional teachers, technology using teachers and teachers who didn’t use technology. All of the teachers cared about student success,
attempted to do their best, and were dedicated to the profession. Each school cited similar primary and secondary barriers, expressed frustration with the WASL testing, and expressed similar frustrations with time. What differed between the schools was how the building addressed assessment and accountability and the teacher’s willingness or ability to confront both the primary and secondary barriers. The interviews with the administrators gave a picture of what was expected from the staff, and highlighted how the buildings were dealing with long range planning and reform. These interviews, when contrasted with the educator’s from the prospective buildings, highlighted some definite contrasts and provide a rationale for further investigations into three hypotheses. The following chapters will address the following themes: a) how each school viewed the role of curriculum; b) how each school addressed assessment and accountability; and c) responses to both primary and secondary barriers.

Too Hot, Too Cold, or Just Right?: The Role of Curricula

When reviewing the interviews, the story of Goldilocks and the Three Bears came to mind. Goldilocks found some porridge too hot, some too cold, and then gobbled up the porridge that was just right. In the case of the four schools, the Goldilocks analogy could be used to describe how the differing schools used curricula. One school, Wrangle, had been so worried about low WASL scores that teachers were required to follow a tightly structured laid out reading program that took up and influenced all other subjects and the entire workings of the school. The school was in the process of adopting more tightly structured programs. In direct contrast was Sandal Creek, where virtually no curriculum existed. The school had frameworks and guidelines, but no formal materials
to support the teachers. In both schools teachers were frustrated. Both East Lake and Woodland had taken different approaches to curriculum. They had both guidelines and frameworks in place as well as supporting curriculum. Teachers were given the flexibility to use the materials as necessary to meet guidelines and improve student learning.

**Wrangle**

When the WASL and state mandated reform began in 1994, Wrangle school became concerned with the low scores that students received in the area of reading:

Four years ago…...it was a site based decision [to adopt a highly structured reading program]. I could see the benefits….I also saw in black and white that our kids were not learning to read. We were at 36% readers at grade level, so at that point it was a priority… (P.E. Teacher, Wrangle, March 28, 2002)

We are all on the same page now. We had an old basal reading series that we didn’t particularly love, and it was also the time period of whole language, and there were many of us that moved those directions. In the meantime our population changed here, and we were (are) a poor school. Our kids had such different needs. We, as a staff, did our soul searching. Everyone decided we weren’t teaching enough kids to read well enough. (SFA Coordinator, Wrangle, March 28, 2002)

The principal reflected on the adoption of the reading program:
It [the curriculum adoption process] is a district process. For instance, the SFA was first piloted at Wild Creek and they felt it was very successful and they brought that information to the administrators….The District had several meetings with Madison and representatives from the SFA program….You have to have 80% or higher to adopt. They [the SFA people] come and do site visits. That has been a very strong structure. It is a very research and data driven program. (Principal, Wrangle, March 28, 2002)

The solution to the reading problem was to adopt a highly structured program.

Teachers described the program as structured and followed the specific steps that were outlined in the teaching guides:

It is a structured program that we are working with….They have scripted materials for me to use. (Second Grade Teacher, Wrangle, March 28, 2002)

The teachers in the school felt bound and stressed by the mandates of the reading program. It influenced much of what happened in the classroom:

The curriculum is so crowded. This year I think I have shown one video period. Not because I don’t think it is important, but because of the time, because of the pressure, because of the reading program and math. I don’t know if it is good or bad. I don’t think it hurts for a child to see a
video once in awhile if it goes with the curriculum. *Transitional First Teacher, Wrangle, March 28, 2002*

I wish I had more time in the day to teach what we are being expected to teach for one thing. I wish I could veer from the hard and fast philosophy we are living with now….I would like to branch out and be a little more creative. It is the way I used to teach. Now we have to stay with the party line. It is boring for me and it is boring for the kids to a certain extent….I know there needs to be some sort of accountability…but I wish they were less centered on the teachers. *6th Grade Teacher, Wrangle, March 28, 2002*

The researcher had asked the initial contact person for copies of the site based plans that had been developed for the Student Learning Improvement Grants (SLIG) that were given by the State of Washington in the early 1990’s. These monies were part of a larger state mandated reform effort and were to be used to restructure and improve schools. In order to receive the SLIG Grants, each school was required to develop and provide the State with an improvement plan. The grants were awarded for three consecutive years. When Jane was asked, she told the researcher, “That was over ten years ago. No one knows what happened to them”.

*Sandal Creek*

At the opposite end of the spectrum was Sandal Creek. At this school, very little structure existed:
Our curriculum in this district is based on hodgepodge, pretty much, and I hate to say that and mean it negatively, because I appreciate part of that, being that I can be creative and put together my own things. Basically I’ve made all my curriculum and we are given certain things to teach in a binder, so there’s a math binder for teachers, there’s a reading expectation that is taught at each grade level, uh, there’s a social studies topics and science topics. Basically you design everything you teach, how would you teach it is never explained. There are suggested resources and suggested activities, but pretty much curriculum is up to me and the time is definitely up to me. *(3rd Grade Teacher, Sandal Creek, May 8, 2002)*

The reading coordinator, who was also an administrative intern, highlighted the problems with the lack of curricular materials:

...for new teachers it is really hard [the reading program]. The program itself is really hard to follow because, the way it is set up, there are two different books. It is just hard logistically because the materials that come with it, well, there aren’t any….philosophically they [the teachers] like it, but it is not helpful as far as providing resources. *(Reading Teacher and Administrative Intern, Sandal Creek, May 8, 2002)*

The teachers were frustrated with the lack of available structure:

We do have like a communication notebook which says ‘these are the criteria’ this is what the kids need to know……but it is very loose and
we kind of have to just…we don’t have a lot of materials at the kindergarten level and so we kind of had to graph and pick and choose and really think about what the kids need to know. Plus we have First Steps philosophy that, I mean it is a good program, it’s a philosophy into teaching but it doesn’t give you materials, it just gives you support strategies, support for what kids need to know at each stage and it’s developmental, so it’s not by grade……and then the math, we have a calendar which shows which kinds of things should be taught or kind of month by month, but it is pretty loose, so you have to make all the materials. Social studies, again, is a district thing, we have a kit that we can use or not use. We also have a story program that we can use or not use.\n
(Kindergarten Teacher, Sandal Creek, May 8, 2002)

Actually I am sitting on a committee right now that is trying to purchase a curriculum. We are all frustrated with the hodgepodge.\n
(Third Grade Teacher, Sandal Creek, May 8, 2002)

When the researcher asked the Sandal Creek contact person for copies of the site plans developed for the SLIG Grants, she didn’t know where they were, as she hadn’t been there from the beginning.\n
Two schools: one, Wrangle, was very structured, the other, Sandal Creek, was very unstructured. The remaining two schools were more “mediated”, combing frameworks and adopted curriculum.
The principal did discuss how the district went about adopting curriculum and the role of the frameworks.

What has happened is we developed frameworks. Bob, [The Curriculum Director] brought in people who had expertise in research that backs up the, whatever area that we are trying to adopt…..we look at what works with kids, have teachers take a look at it and representatives from each of the buildings give input.  (Principal, East Lake, May 6, 2002)

The teachers each responded to how they implemented the curriculum:

…I think the District wants us to use that curriculum, but I think also what I’ve heard is that it is a tool, you know, it’s one piece of it.  (Second/Third Grade Teacher, East Lake, May 6, 2002)

Like I said, in major areas, they [the District] do have priorities where you can teach.  Now the way you get there, obviously, is up to the teacher and up to your classroom.  There are other teachers in our district, in our school, that don’t stick closely to the adopted reading curriculum, but they do hit the major component parts of it.  (Sixth Grade Teacher, East Lake, May 6, 2002)
For me, the major focus the last couple of years is just getting comfortable with the new curriculum. The science, math, I mean social studies, reading and math are all new in less that five years. *(Sixth Grade Teacher, East Lake, May 6, 2002)*

When we first got this curriculum we went to workshops where they told us that an hour and a half a day to do this program right. Of course, coming back to may room and I think “an hour and a half”. …then we went to the math, the same kind of workshops “you need to have an least an hour and a half to do this math correctly and that just doesn’t happen. You can’t do it that way. So, we kind of pick and choose what we’re going to focus on and I think what I prefer to do is look at life as a whole and where does this really fit into that? Where do skills fit into all that? *(Fourth Grade Teacher, East Lake, May 6, 2002)*

Teachers felt that they had materials and guidelines available. As with the previous two schools, East Lake did not respond to a request to see the student learning improvement grant plans.

*Woodland*

Of all the schools, Woodland was the one place that was able to discuss the entire process of education reform and the development of the curriculum. This is due in part to the fact that the principal had been at the school for ten years and had been involved in the original House Bill 1209 planning; the law that established school wide reform in the
state of Washington. The School District had also done long term planning. During the interview, the principal pulled out several visuals of how the school had pictured the role of assessment, curriculum, instruction at the beginning of the reform process through the present. As the staff’s knowledge grew, the picture changed. For example, the staff put together a visual to explain how they viewed the different components of a school (Figure 1). This was modified with the adoption of the Essential Academic Learning Requirements (EALRs), Washington State’s performance standards, and changed again when they began to really focus on instructional strategies (Figure 2). Taking to notion of assessment guiding instruction, their vision further evolved. The school presented a final model that combined the EALRs with several components of instruction, including assessment and curriculum (Figure 3). Curricula is not separate from, but integrated in to a larger picture.
Woodland staff developed a visual representation of their conception of how various components of the school were related to one another. This is the initial conceptualization.
With the adoption of the EALR’s, Woodland adjusted their conceptualization of how various components of teaching were connected.
Woodland continually updates a visual representation of how the staff views various components of the school and curricula. The 2002 conceptualization places assessment components at the heart of the school and equates the EALR’s with ‘life-blood’, driving decisions made in all of the instructional areas.
The curriculum adoption process at Woodland was outlined:

We have a curriculum Director and we have a board approved cycle of how things are adopted. The cycle sometimes gets short-circuited if we run into budget crunches because sometimes there’s money to pay for it and there’s not money to pay for the materials, so we have to make some decision. The Curriculum Director requests people who are interested in serving on a curriculum committee and they know that its going to be at least a two year, two and a half year commitment and it is hard work……. they spend almost a year doing research on best practices, on common practices that are available and just the whole research based process of examining what’s out there as far as strategies and purchasing and then they look at what they believe in those strategies would be appropriate for our students and what we know by data where their strengths and weaknesses are. Then they go into matching up the frameworks with our students, best practices, and they end up with this kind of screen then that they can use to examine curricular materials.

(Principal, Woodland, May 10, 2002)

When discussing how the curriculum was used, teachers were given flexibility:

When we adopt a new curriculum, then we use it, and that is honoring the board directive or inclusive curriculum work. It’s honoring the efforts that the team has made to do the research, to do the feedback, they do lots of work coming back to the buildings and taking information,
doing surveys, and then the obligation also is that if we do an adoption, we're going to make sure that we staff development; that is huge.

(Principal, Woodland, May 10, 2002)

…and if all of that work has been done [the curriculum process] the curriculum is critical; how its adjusted and adapted and delivered to the students is totally a professional obligation and responsibility of that classroom teacher, but they need to be able to know the curriculum well enough to how to adapt it. I would encourage all teachers the first year to use the curriculum closely….they are going to have to do some adapting and they’ll probably have to work with the special education teachers …but over time, as they become familiar with the materials, they know how to make those adaptations and differentiate within the classroom setting. Again, we don’t teach to the book, we teach kids and you have to figure out where they are and it not just where they are for this year, it is where they are today……we check every day on how they are doing.

(Principal, Woodland, May 10, 2002)

Curriculum adoption was not separate from assessment at Woodland:

….we check every day on how they are doing, even if it means that you collect the papers in order to check problems 5-12 for every kid, just as your spot check…a system to the spot check, to see how they do, where I am going tomorrow with the lesson, am I backing up? Am I going
forward? Do I need to have these kids go work on an extension so I can get others over to do a little tune-up… (Principal, Woodland, May 10, 2002)

Summary of the Role of Curricula

In conclusion, the role of curricula varied between all four of the schools. One school, Wrangle, used curriculum as a way to get all of the teachers to teach the same thing in a structured and mandated way in hopes of improving the reading performance of the students in the school. At the opposite end of the spectrum was Sandal Creek, where teachers were given guidelines and frameworks, but not supplied with supporting curricular materials. In the middle were two other schools who, to varying degrees, combined frameworks and guidelines with the curriculum, and teachers were given the flexibility to use the materials and the curriculum in a way that each felt best for improving student performance. Intertwined in the discussion of curriculum, two other themes emerged: Assessment and Accountability.

Assessment and Accountability

As with curriculum, the role that assessment played in classroom instruction and in varied dramatically between the schools. All of the schools gave the WASL. In Sandal Creek, this seemed to be the predominant assessment. At Wrangle, in addition to the WASL, assessments were given to place students in reading groups. At East Lake and Woodland, however, assessment was more balanced, combining state, district, school and classroom assessments.
Assessment

Little relevance seemed to exist between assessment and classroom practice. Assessments were primarily used for groupings or to determine if progress had been made. Only one teacher spoke of using classroom assessments to inform instruction:

…and just walking around. I never ever sit at my desk. I am constantly assessing every minute of the day. There is constantly knowing where they are and knowing what their trouble is and being able to work on that. *(Transitional First Teacher, Wrangle, March 28, 2002)*

The Reading Coordinator and the principal explained their views on assessment and how it was used to make decisions about placement in reading groups.

So I take this information from the teachers, the student scores on their reading assessments, plus I look at the kids’ ITBS scores, their WASL scores,…we used to give the Gates, but now we are giving levels tests. So, all of those pieces matter. *(SFA Coordinator, Wrangle, March 28, 2002)*

The principal felt assessment was important:

…just the research that is available data, the scores, being able to have kids tested, methods…I hate to say this, but I think that test results are really important. It has brought us to a different level, to different expectations for kids…. *(Principal, Wrangle, March 28, 2002)*
There was never discussion about altering instruction based on the outcome of the assessments.

\textit{Accountability}

The principal spoke about how kids were targeted based on the assessment results and explained her view of assessment:

\textit{...I have been involved in this leadership team...We have been asked to look at their score sheets, identify a list of kids. These are our hot list kids and we have 195 students reading at or above grade level, and we identified ten, and I told Betty, our facilitator, I want ten more, this list isn’t good enough, so we have identified twenty children and then I am going to go around and I am saying, “Okay, who can team up with these kids and make sure that they are reading. And I am going around and looking at team score sheets weekly, and it just raises the bar. (Principal, Wrangle, March 28, 2002)\textit{}}

\textit{...as I explained to someone the other day, I don’t want to be K-Mart. They [the students] are going down hill, they are losing it, and we don’t need to have the state come in, and we don’t need to have monitors come in and see what we are doing. We can do what it takes to improve student learning. (Principal, Wrangle, March 28, 2002)\textit{}}
The ongoing pressure to show improved reading scores caused stress for the staff. The teachers felt that the assessments were used to hold teachers accountable for student learning:

I know there needs to be some sort of accountability, but I wish that this accountability, the accountability issues and the ed. reform issues were less centered on the teachers and the need for schools to make some arbitrary improvement and the politicians who actually come up with this stuff would actually point their finger at where the real issue is, which is in the home. (Sixth Grade Teacher, Wrangle, March 8, 2002)

Sandal Creek

Assessment

In contrast with Wrangle, Sandal Creek teachers had limited formal assessments. Although some teachers spoke of classroom based assessment, the administrative intern spoke of assessment as something that was developing, “People aren’t familiar with what different assessment tools to use and to know where the kids are at”.

Teachers had created their own classroom assessments:

Well, I’ve been doing all my own assessments so it has been, the kids are doing much better, and it’s been really fun… (Kindergarten Teacher, Sandal Creek, May 8, 2002)
I am constantly assessing. I’m constantly checklist, just a lot of observation, I’ll just step back and listen….(Third Grade Teacher, Sandal Creek, May 8, 2002)

One teacher spoke of creating assessments with another teacher, but this was not mandated by the District, and was used to mark student progress within the classroom.

Accountability

When asked about the relationship between assessment, and accountability for following the frameworks, one quote summed up the findings:

There is no accountability. (Reading Teacher, Administrative Intern, Sandal Creek, May 8, 2002)

East Lake

Assessment

East Lake had a mix of classroom assessments, both school wide and district assessments, in addition to the WASL.

In our school district, three times a year we have writing assessments. We have twice yearly broad assessments of students’ math abilities and then we use a program called STAR reading and STAR math that gives us assessments several times a year. (Sixth Grade Teacher, East Lake, May 6, 2002)
We do a reading fluency within the building; we do that four times a year. I do comprehension questions with reading, I also do summaries. We do Six-Trait writing assessments that the district evaluates those for the buildings. (Fourth Grade Teacher, East Lake, May 6, 2002)

Well, hopefully the assessments that I do for the district are what I am also doing in my class anyway, I mean, like the writing and they have to know how to do a paragraph. (Second/Third Grade Teacher, East Lake, May 6, 2002)

…it is kind of the teacher’s responsibility. (Second/Third Grade Teacher, East Lake, May 6, 2002)

The principal discussed how assessment had been part of the initial reform efforts.

When I came on board, initially it seems like the staff thought of the SLIGs money and all of the funds that we had, as kind of an opportunity for fun activities for kids. They were learning related, but it was more of, ‘Oh this would be some fun to do with the kids’, and I kind of ended up battling with them a little bit with trying to get them thinking properly and it just so happened that the district needed to have an assessment team and I don’t know when it was, I guess it was in ’97, and so I ended up in a kind of strategically did this because I thought it could help us, but we, uh, in our building, did it as a team and that has been, I
felt like, we started to get going in the right direction, as far as focusing academically and trying to coordinate some huge improvements with the students…… teachers that had that training in assessment, we started developing some building assessments and we found that how to get the teachers teaching what we could teach, and so what we tried to do is establish assessment that were highly related to what they were doing in the classroom, that were highly related to what the kids were doing, what we were trying to get the kids to get to, where we were trying to get people to get to and um, what could I say, so we have three building assessments that we do. One in math and writing, and we’re still trying to work out the kinks, it’s not perfect at all, but we are doing it. and reading, some of the reading fluency, which after we did it, the whole district adopted, do you remember that, and the writing too, I mean we were highly involved in that 6 traits writing assessment. I think we; I never really thought about it, but I think we kind of spearheaded a lot of that, probably through Barb because she was on some of those committees and so she would share what we were doing and they would say oh, anyway it happened, so those are the three things that we’re doing right now and trying to work through it, but by developing the assessments, what ended up happening here is that teachers started to see the connections…(Principal, East Lake, May 6, 2002)
Accountability

Accountability was present, although it was low key. The principal did not require the reporting of scores to her, although she was aware of the results of the district assessments:

They have frameworks, but what I found is that they can cover the material fairly well and in reading. What I’ve asked the teachers to do is to work more individually with children because we have some that are from a very low level to a high level and they cannot be teaching them all the same thing. (Principal, East Lake, May 6, 2002)

The principal was aware of the stress experienced by the staff and was especially concerned about the fourth grade teachers:

I see stress on my teachers, but at the same time, I, because I’ve seen their stress, I don’t push on it, and I don’t felt that it needs to be a fourth grade stressor and so the primary teachers have worked really hard together to do what they can to prepare kids for the WASL, and so I would say that its not the WASL that is stressing them as much as just feeling that the responsibility of making sure the kids are ready for it. (Principal, East Lake, May 6, 2002)

...so what we try to do is we take a look at how we’ve done the last four or five years and then if we see that there is basically a gradual
incline, then we know we must be doing something right, but you can’t measure apples with oranges. (*Principal, East Lake, May 6, 2002*)

**Woodland**

*Assessment*

As with curriculum, assessment and evaluation were included within the larger vision for the school. The WASL was seen as one measure:

I don’t feel really badly if we don’t make the WASL because it is a different cohort, there are other conditions that apply. Certainly its a goal for us to look at, and it certainly is one measurement, but I am more interested in looking at individual students over time. If I see that kids aren’t making adequate progress, well, in our classroom assessment, then we have to do something different and that going to adjust our school plan, which ultimately should result in the WASL improvement. (*Principal, Wrangle, March 28, 2002*)

All of the teachers spoke of a variety of assessments and the relationship to the curriculum and student learning:

…but I like correcting papers, I mean, assessment to me, I have a great quote from my master’s program, statistics, which I was scared to death of, she said something I’ll never forget, “assessment and instruction should be seamless,” and I loved that because that how I live. I’m always assessing when I am walking around the room, when I’m grading papers,
when I…I do a variety of things, performance assessments, projects….I think it is very important that the kids know right up front what their expectation are….But that’s assessment, it’s continually ongoing. I do points, I do percentages, the kids, you know, they always know their percentages, but it doesn’t stop there. They have to think about it, they have to reflect, they have to think “what am I improving on, what am I proud of, what are my weak points…when they go into seventh grade I want them to know “I am strong in math, I need help in speaking” they walk in the door knowing what their strengths and weaknesses are, so they can get help on the things they need to and they can feel confident about the things they don’t need help on”. (Fifth Grade Teacher, Woodland, May 10, 2002).

The teachers spoke of running records, and District math and reading assessments.

Accountability

At Woodland, everyone was accountable for student learning and, like East Lake, the principal was aware of the stress felt by teachers and attempted to alleviate it.

…I think some people, again, depending on where they are in their life, can’t deal with that [stress in the classroom] and I am pretty much in tune to where people are in their personal lives and I know which people I need to encourage and ones that I need to say, ‘Okay, let’s figure out how you can do it the best way you can’….I’m pretty intuitive and I’m pretty
able to sense where people are struggling. (*Principal, Woodland, May 10, 2002*)

Teachers who weren’t comfortable with assessments were also supported with staff development.

…some of them are really excited and some of them are really reluctant. We have our assessment data . . . they will have DRA on certain dates and some of the teachers are still not comfortable with that so we purchased time for those teachers who weren’t fluent, they were released from their classrooms to do the DRA for the other teacher and then the other teacher watched. So hopefully they got a lot so that the next time they were able to do that on their own. (*Principal, East Lake, May 6, 2002*)
Each of the four schools had various levels of assessment, including: state level assessments, district required assessments, school wide assessments and in-class assessments. The table represents the levels of assessment that occurred at each school. Assessment levels were verified with the contact person from each school after being mentioned by an educator during an interview.
Educators interviewed spoke of who each felt accountable to for assessment results. The absence of a cone signifies that no educators from the school referred to the corresponding category.
Curriculum Description

The staff from four schools, Wrangle, East Lake, Woodland and Sandal Creek, held different views of the role of curricula.

Barriers to Technology Integration

Responses to primary barriers to the integration of technology were divided into four categories: lack of access, time to plan, equipment and hardware, training and skills. In all of the areas teachers cited barriers with nearly every teacher commenting on hardware and equipment. At two of the schools, however, teachers were more likely to comment on how they were dealing with the barriers or how they overcame them. The following sections will highlight teacher responses to barriers.
Lack of Access

Lack of access addresses a teacher’s inability to use available resources. These resources may exist within the building or the district but the teacher believes that his/her access may be limited or hindered. Woodland teachers had no stated access barriers: a new computer lab had been placed in the building. As the lab wasn’t staffed by a lab technician or staff member, it was up to teachers to use the lab as necessary to support what was happening within the individual classrooms. A sign up sheet was available and there were multiple open places. The other three schools each had at least one teacher that cited access issues, which were generally attributed to how the District or building had planned for and/or spent technology dollars.

At East Lake, one teacher briefly discussed the problem with a small space. Although the teacher had a significant number of computers within the classroom, he felt it would have been better to have had a lab.

Because of the limitation of our space here, we are a small school and really there isn’t a classroom. We don’t have a tech. lab. When we had the tech. bond go through the school district the last few years, it was a focus to get a lot computers in the classroom. What other schools did was put them in a central location, so that…like in this room I have seven computers….(Sixth Grade Teacher, East Lake, May 6, 2002)

Although he felt this was not the best use of the resources, and cited barriers related to the time it takes to monitor students at the computer, this teacher had taken a training and received a large grant to be part of a weather network. The school then received a
weather station and a computer and his class participated in broadcasting and the study of weather.

At Wrangle school, two of the teachers had received the Gates grant. The principal spoke of the Parent Teacher Association trying to raise enough money to buy airport carts that would each house a set of lap top computers. Those teachers that had the Gates grant did not see access as an issue, as they had computers in the classroom. One teacher had a ratio of one computer to every two students.

Sandal Creek teachers spoke about the District technology plan. The perceived lack of access overlapped with barriers related to equipment and hardware, and perception was a reality; students had limited access due to outdated and limited equipment. There was resentment at Sandal Creek as to what other schools might have and this was often discussed when the District technology plan was brought up:

….they [the District technology committee] have a plan that would make it so that you have a new computer in every school every three years, but that doesn’t mean we’d get a new computer, that means probably the high school would get the new computer, the junior high would get their old computers, so that there is a new machine. It is new to the school but not necessarily a new machine…. *(Third/Fourth Grade Teacher, Sandal Creek, May 8, 2002)*

**Lack of Equipment and Hardware**

All of the schools cited issues with equipment and hardware. Both Wrangle and Sandal Creek cited these barriers, and few teachers, with the exception of one that had
received a grant, had no perceived way of dealing with the barriers. Woodland and East Lake, although barriers were cited, had often overcome the barriers or taken steps to address the barriers.

At Woodland, the school had planned to have a computer lab, and budgeted accordingly. They had also received numerous grants at various times for such things as keyboards, and they had also received what they called a Learning Disability (LD) Tech. Grant; a grant that had provided lap top computers for students with learning disabilities and for use in the general education classroom. Although the grant had been written and targeted for a specific population, it branched out and spread to other classrooms, which is different from what had happened with those teachers who had received the Gates grants. Gates grant recipients at Wrangle had tended to keep the technology within their own classrooms.

…well, it began, this it its second year…who is now our district librarian…I stepped in the second half. I said Sure I’ll try that, thinking, “okay, my technology skills are lack”…and the training was there and it didn’t cost me a dime….It was four 5th graders but the kids who were 5th graders last year were able to, the LD kids were able to hook up with their laptops to 6th grade and use them in 6th grade, so it…we have two new 6th grade teachers and they, its kind of branched out and reached into their classrooms. *(Fifth Grade Teacher, Woodland, May 10, 2002)*

The lab provided access and updated equipment. If teachers chose not to use technology, it wasn’t due to access or lack of equipment and hardware.
We just recently got this lab this year, which has been wonderful. We have one computer in the classrooms, so basically not very often do the kids use that one and all we’ve really done in terms of technology this year is some word processing, and some Internet search skills and various games that we have on our computers here. I’d like to do more, but I haven’t. (Third Grade Teacher, Woodland, May 10, 2002)

East Lake cited problems with equipment and a lack of funds.

It’s what you can buy for the computer that we have the two dollars to buy with. Literally, when we bought these computers, we went with Apples because the Apples had packages of software that covered word processing, they have some that were production…they had some slide shows, so it is an amazing package. We have not added much to it because we haven’t had the budget. We do have Claris Works on some and Microsoft Word on others…In fact some of the computers are starting to wear out. The Apples have held up very well. (Fourth Grade Teacher, East Lake, May 6, 2002)

Another teacher at East Lake discussed how she had accumulated several computers in her classroom:

I saw them in the hallway. Two of them are old Apples, but I have a lot of Mac materials, so that a lot of drill and practice things and I mean those others just came in this year, they were from the middle school and they got new ones so they were in our hallway. I think there were twenty
so we each got a couple more, so that is how we got three or four because nobody wanted them….I think it is hard because we don’t have technology for the whole school. *(Second/Third Grade Teacher, East Lake, May 6, 2002)*

Both Wrangle and Sandal Creek cited numerous hardware and equipment barriers. Only the teacher with a grant didn’t mention any equipment or hardware barriers.

At Wrangle, when the researcher asked an individual why she didn’t use technology, she cited that the one computer wasn’t sufficient. She also said that there weren’t any ‘try before you buy’ options for previewing software.

I think it has more to do with having computers, and with one computer, I’m not seeing how I can get kids really on the computer, one at a time, in an effective way…what they are going to do on a computer for one kid at a time doesn’t seem worthwhile right now….[discussing software]…I try to make sure its something they would enjoy, but I also took a class at the ESD and kind of walked through the kinds you should stay away from, like if there is too much reading involved, there the kids aren’t going to get very much out of it, and then there are the ones that tell you well, try again, try again, try again forever. Those aren’t really worth it either. And the ones that actually had them do some problem solving, but where kids can be successful too. So I can’t try them out before I buy them downstairs. *(Second Grade Teacher, Wrangle, May 7, 2002)*
This same teacher had been to the regional technology in education conference and had also been to a “One Computer Classroom” workshop at the ESD.

Sandal Creek had similar barriers. Teachers didn’t want hand me downs from other schools, as proposed in the technology plan and all discussed not having hardware and equipment that was up to date.

I would love to have a computer lab where the kids could go in and they would have a technology person who knew a lot about how to get them up and running, so there is like two kids to one computers and not two semi-broken computers, and one that doesn’t work at all and 23 kids and we have to rotate them…..what is difficult about the computers in the classroom is that they’re very slow to boot up, very hard to double click on, and very slow to load…and these kids…have a hard time because it is just different format that they’re used to at home, so it is really hard. I have to just be right there. (Kindergarten Teacher, Sandal Creek, May 8, 2002)

We are trying to pass a bond that would tie it all together. It is one of the major stressors I have about teaching in this district, is just the lack of technology. It really is appearing that they are behind the times as far as others school districts go…..and what worries me, also, is that there’s no filter in this district for kids, so if you are gin to be on the Internet, you have to sit there and watch them the whole time……It is horrible[the available technology]. We have four computers, …two which have
Windows 95, the other two are completely useless as far as I’m concerned. All I can really do on them are some word processing and some of the games and that is the most I can do. Although part of my master’s program in Ed. Tech, I feel like I have a lot of knowledge to share but I’m not able to do that because of the lack of technology….we’ve talked about a computer lab…[in regards to the district technology plan]…so, I don’t want any more hand me downs, just take them away. I don’t need them. (Third Grade Teacher, Sandal Creek, May 8, 2002)

Well, those two dinosaur computers over there are used just during free time, because they are dinosaurs. They use the computer for Accelerated Reader, which is a reading program…then we use them about once a quarter for writing, where we only have the two, it would take us a month to get through all of the final drafts. (Third/Fourth Grade Teacher, Sandal Creek, May 8, 2002)

Training and Skills

Again there was a distinction between the schools. Training had been offered or taken by most all of the respondents. However, more obstacles were listed by Wrangle, than either Woodland or East Lake. At Sandal Creek, there was no mention of training or skills in any of the interviews. Wrangle, again, had thoughts on training and skills. One teacher, who was a trainer of other teachers and had been a recognized as an exceedingly
effective educator, didn’t believe she had the skills necessary to use the computer in the classroom:

    Okay, I am going to be very honest again. I have done very little with the computer and the children. In the past we have done some. But if you were to say what my weakness is, my weakness is using the computer with the children. We have done it where I have had high school aides come in, but right now we have it so that she comes in during reading time and that is a “no, no, no.” You can’t do that. So my weakness would be the computer. (Transitional First Teacher, Wrangle, March 28, 2002)

Another teacher, who had taken training, didn’t believe she had the skills, or thought that the training she had had wasn’t appropriate:

    I did go last year [to the Northwest Council for Computing in Education Conference]. It was fun, you know, we had a great time over there. I met new people from our District that I didn’t know, but I really honestly didn’t learn anything that I could actually apply in my classroom…. (Second Grade Teacher, Wrangle, May 7, 2002)

    We weren’t required [to take the training at the ESD] but it was suggested that we do and I enjoyed it. Have I used any of the materials in my classroom? No……eventually it has got to be a focus and I think we’re just not there yet with schools that just don’t have the ability to get
their hands on the technology….we have fabulous teachers who have been successful for years and years that don’t know how to use the computer. They first have to learn how. I’ve used computers for probably 12 to 15 years and I have never had to set one up. I’ve never had to network it. I’ve never had to install a program…I wouldn’t say that I am skilled in that area and if a problem came up, heaven forbid, I would not know what to do….I have one computer to use, keep it in the corner so in case something happens to it, it doesn’t take a month for somebody to get here and fix it. I mean, if you are going to put technology in your curriculum, you are going to have to have people that can solve all the problems that come up, because they will come up. (Second Grade Teacher, Wrangle, May 7, 2002)

East Lake had one teacher that spoke of the training that had been offered:

….[there has been] some staff development, but it is, many times it is never been quite what you need. It has been just a little shot of something and then if you want to do it, you have to do it yourself…. (Reading Teacher, East Lake, May 6, 2002)

This particular teacher, however, had rated herself at the integration level on the survey and went on to provide her experience with computers:

…we got a computer in our home…I don’t know how long ago that was, but I mean we could have done, I think we could still do a
computer museum in our garage, I mean clear back to Radio Shack….I’ve had them at home and have kind of gotten into it that way. I am not a real tech person, I mean I guess as I told somebody, it like I can use the telephone. I don’t know how it works, but I can use it and that’s kind of the way with the computer. If something happens to it, I can’t fix it or anything, I have no idea what to do, but I’ve learned, I’ve learned to make it operate for what I need it to do. ….(Reading Teacher, East Lake, May 6, 2002)

Although she felt she had limited skills, she had also made it clear that she was willing and capable of overcoming obstacles.

Teachers at Woodland responded similarly:

I know how to do a particular program because of a workshop that I went to. I would have never tried to teach that before, until I knew it. It is like everything else, some things you can sneak by on, if you’re an intelligent person you can figure things out, but some things if you don’t intimately know it, it is really hard to teach. (Fifth Grade Teacher, Woodland, May 10, 2002)

Another teacher also explained her weaknesses and willingness to overcome the barrier of training:

It is definitely not what we have now, you know, last year I could have said we don’t have great computers. But I think it is just a comfort
level for me and I think I need to get in and experiment to how to use it myself and then be able to expect my kids do that, so I think it is something that will happen, maybe next year....(Third Grade Teacher, Woodland, May 10, 2002)

Time to Plan

Although time was listed as a major frustration for every teacher that was interviewed, not every teacher cited lack of time as a barrier to the integration of technology. Woodland had virtually no comments related to time limiting the use of technology. All three of the other schools did.

At Wrangle, the issue of a crowded curriculum was mentioned several times.

But in amongst all of our, you know, like our schedule, and it comes back to the fact, well, this is reading, writing, and math and I’ve got two half an hour block during the week to teach themes. It is very difficult...(Second Grade Teacher, Wrangle, May 7, 2002)

The curriculum is so crowded. This year I think I have shown one video period. Not because I think it necessarily isn’t important, but because of time, because of pressure, because of the SFA and the math. I don’t know if it is good or bad, I don’t think it hurts to show a video once in awhile if it is part of the curriculum. (Transitional First Teacher, Wrangle, March 28, 2002)
At Sandal Creek, one teacher reflected on the time it took to create a PowerPoint presentation for open house and the problems that she encountered with the technology.

….I made a PowerPoint this year for our open house. What I’ll do is run it on each computer from a file folder….but what a pain if you don’t have it right there. It is really easier to just say it [the information]. No other teachers are doing it, why should I? (Third Grade Teacher, Sandal Creek, May 8, 2002)

Secondary Barriers

Secondary barriers included beliefs about teaching, beliefs about technology and computers, and willingness to change.

Beliefs about Teaching and Willingness to Change

No consistent patterns emerged in relationship to beliefs about teaching. Teachers indicated different interests that may have influenced their desire to use technology. For example, one teacher from Wrangle who had received a Gates grant, said that technology changed his teaching not because of what it could do for student learning, but because of his love for technology:

I embraced it because I love technology. I am known as one of the most disorganized people on the planet until Thanksgiving when I got up at six in the morning for the day after Thanksgiving sale and I went and stood in line at Best Buys to buy my PDA. I would never write anything in a date book. I hate doing that. But if you give me something electronic….(Sixth Grade Teacher, Wrangle, March 28, 2002)
Beliefs about Technology

Wrangle

Beliefs about technology did not seem to be directly correlated to the level of integration. For example, one teacher who rated herself as a non-user had this to say about technology:

I know that it is just another tool. I feel pretty comfortable word processing, which our children don’t do, or to do a CD....I think it is going to be a very prominent tool in the classroom and I think it is a very useful tool. (Transitional First Teacher, Wrangle, March 28, 2002)

Another teacher wanted to use technology for personal gain, although she believed it was useful for students as well. She, too, rated herself as low on the technology integration survey:

My background was in graphic design and I went into teaching because I liked kids....when I heard about the Gates grant...I’ve always wanted to keep my hands in technology in case teaching didn’t work out....I thought it’s great for the kids....if I can invest my energies in something like that and then not only would I continue learning about technology, but in the future, it would look good for me to know how to network computers and that kid of stuff. Kind of selfish reason, even though we want the kids using it. (Second Grade Teacher, Wrangle, May 7, 2002)
Some teachers, such as the Gates grant recipient, had strong beliefs about how to use technology and they type of software he was willing to purchase for use in his classroom:

   Project software. That is the only thing I buy. I don’t buy software or have the kids work on software that is drill and kill stuff. At this level [sixth grade] I don’t believe in this stuff. I want to have a project for the kids to use the software to create. (Sixth Grade Teacher, Wrangle, March 28, 2002)

East Lake

   …I had the interest. I wanted to take courses and time is a huge factor…(Second/Third Grade Teacher, East Lake, May 6, 2002)

Sandal Creek

   All of the teachers at Sandal Creek felt that technology was important for student’s later success. None of them rated on the higher end of the technology integration survey:

   In third and fourth grade it is very important. I would like to see a computer lab in every school, but that comes from my experience of working in schools with a computer lab. (Third/Fourth Grade Teacher, Sandal Creek, May 8, 2002)
I see it everywhere, fitting in every subject area. I’m doing a lot more projects…so I see technology being able to fit anywhere. (Third Grade Teacher, Sandal Creek, May 8, 2002)

I think computers are highly motivating for the kids and there’s a lot of software out there that could be beneficial to some kids. Some kids will never be exposed to computers in their homes. Even if thy have computers in their homes, they’re not doing academic things, they are playing a game, which, okay, eye hand coordination….(Kindergarten Teacher, Sandal Creek, May 8, 2002)

Woodland

Woodland teachers believed technology was something that was part of the curriculum, not something that was separate:

I think it’s supportive of the curriculum, it just depends on what you’re going to use it for. Keyboarding; how does that support the curriculum?, well, for when they write papers you know…..I think computers are important for their futures. (Fifth Grade Teacher, Woodland, May 10, 2002)

Oh, there is a need for it. The kids have to know what’s going on. This world is just zooming by, especially the learning disabled kids that have fine motor skill problems are not able to write. It is another
vehicle…I use technology in science all of the time from compound microscope…I don’t show videos enough,…I don’t have a TV. (Fifth Grade Teacher, Woodland, May 10, 2002)

Administrator’s Perceptions of Barriers

Administrators often commented on barriers. At Wrangle, the principal recognized issues with training. She commented on both the inadequacy of the trainings to meet the teachers needs, and was concerned as to how to get teachers up to speed, perceiving teachers as being deficit. On top of this were concerns with the time that it might take to learn to use new technologies:

I think some of them are helpful, but I heard from one person that, as far as the one-computer classroom workshop, that that wasn’t as helpful as they would have liked….I think that was the question, as far as how we are going to bring the teachers and staff up to speed. I did look into an Ameri-Corp person to come…..that person would also be responsible for helping the classroom teacher because many of them are not confident and do not feel like they could teach a lesson based on their knowledge right now….You know, people have to have someone sit next to them and show them one thing, and go side by side and kind of mentor, otherwise you don’t make time during the course of the day. There are just too many other things that need to be done, but unless you have a designated time or a designated person….(Principal, Wrangle, March 28, 2002)
At Sandal Creek, the comments from the administrative intern were minimal:

.....and everybody else would probably say that the least of our concerns is the technology....and nobody here has the Gates Grant. (Reading Teacher, Administrative Intern, Sandal Creek, May 8, 2002)

In terms of a big picture plan at Sandal Creek, technology was segregated

...and there is a technology plan that we did all review that came from the district, or you know, their representative....we all felt that it was quite, well, I think that people thought it was not very realistic...I mean, we are trying, but not anything big. (Reading Teacher, Administrative Intern, Sandal Creek, May 8, 2002)

Woodland’s administrator discussed barriers, but did so in a manner that was supportive of assisting teachers in the continual development of technology skills and use. Her vision included the role of technology in the context of the entire functioning of the school and her own willingness to admit her weakness:

Technology is a tool. It is not to be, I mean it is not the goal, the technology is not the goal, it is the means to the end and the is...we model for kids....so the product is, has a purpose for communication, but the technology was really the tool to create the project.....actually it is on my professional goal planning sheet, was to become more skilled at using technology as a means for me to produce quality products and so my staff cheers to see my PowerPoint, but they still like my squiggly pictures.
…we don’t have time...we don’t have time in the day to do those free standing things that aren’t tied directly to goals we have for student learning.  (Principal, Woodland, May 10, 2002)

East Lake had been trying to get a Gates grant, but hadn’t been able to. In order to facilitate training staff development, classes were being offered for the teachers: in order to receive any new equipment, teachers had to attend the classes first.

Technology Use

As with all of the other categories, how technology was used and selected differed between the schools. At Wrangle, use was often determined by what was in the scripted curricula, which generally was limited to the use of an overhead projector:

Multi-media, like projects, that takes more creativity on the teacher’s part, but SFA has the possibility to do all of those things but they want to know how that all impacts student learning. (Reading Coordinator, Wrangle, March 28, 2002)

The whiteboard and things like that….mainly during Success for All, I use the whiteboard…..there seems like there was a lot of overheads in the beginning, but I found using charts works better…I don’t really use the computer…(Second Grade Teacher, Wrangle, May 7, 2002)

The one exception was the Gates grant recipient, although he too felt what he could do was limited by the curricula. At Sandal Creek, computing technology was used for such things as Accelerated Reader, a reading test program.
Woodland had several teachers who related use to the purpose of the classroom instruction:

…depends on the purpose. If everybody needs to follow along I use the overhead. (Fourth Grade Teacher, Woodland, May 10, 2002)

Some of what I decide is just pure convenience…proximity…it depends on what we are doing…it depends on the various activities. (Fifth Grade Teacher, Woodland, May 10, 2002)

East Lake listed specific programs that were used, like HyperStudio and KidPicks, as well as Accelerated Reader. Teachers commented on student needs:

I kind of think it is the climate of the students…they need a variety [of activities] and nothing works for long. (Fourth Grade Teacher, East Lake, May 6, 2002)

Software Selection

In terms of selecting software, One Sandal Creek teacher, who had a masters degree with an emphasis in educational technology, listed programs such as Kidspiration and Inspiration, although elsewhere she said she didn’t use technology because the equipment wasn’t available. As for the other schools, most teachers simply used what was provided or recommended by other teachers.

….I use software] basically stuff that the school owns. I didn’t really pick anything, I just used what the school has, which isn’t very much. (Third and Fourth Grade Teacher, Sandal Creek, May 8, 2002)
At Wrangle, two comments stuck out

…because people aren’t telling us what the research base is, so I’m just finding whatever’s there and that’s what I will use, but I’m not using it to teach kids with, I’m using it as like a reward for having completed whatever things they’ve done in the classroom, so I’m not thinking of it as, in terms of curriculum. It is more like…it is not part of our curriculum, it is something extra for kids who are finished and need an extension of whatever. (Second Grade Teacher, Wrangle, May 7, 2002)

Reform, Restructuring and the Role of Software

All of the schools were asked for copies of the school reform plans following the interviews. None of them produced the plans, with the exception of Woodland, where the principal shared how the school had gone through a developmental process of learning about how each component of the school system was connected. Woodland also had copies of the Sit-based Council meeting minutes from the last three years posted on the Internet, as well as the last few year’s school improvement plans.

During the interviews, both Woodland and East Lake were able to recount what had transpired during reform. Both Wrangle and Sandal Creek administrators weren’t able to do this. In part, perhaps, because both had been at the school for less than five years. However, there were connections between how administrators viewed technology and the how software was selected. At Woodland, the principal discussed school improvement and the relationship to student learning:
…[our improvement plan] is ongoing. Right not we’re putting together our school improvement plan for next year and so we have already calendarized the meetings for next year’s school improvement teams. In this building everyone is on a team and it depends which goal they’re on….they have to bring to the whole group to get their feedback and adjust the plan….this year we’ve been working really hard on reading because we didn’t make our goal….we go back to the first student learning improvement grant stuff we did and we look at the student data….(Principal, Woodland, May 10, 2002)

She also shared how software was considered part of the curricula:

Some of it has been selected by the district through the curriculum process. We have some math software and it is in every building and it’s available everywhere because they’ve used it towards the math curriculum when it was adopted….we have a couple of others that are curriculum based. …we really don’t have tons of software that just like instructional software, what we try to do is use the computer as an application tool…. (Principal, Woodland, May 10, 2002)

East Lake was similar. The principal recounted the restructuring process.

It started in 1991, and so actually my last three years in Frank School District…I had the opportunity to watch my principal try to develop the Site Based Team…and I watched our school deal with that
issue and the starting of the goal process. In 1991 we were more focused on the site based stuff and in 1994 I started here and we were….initially it seems like the staff though of the Student Learning Improvement Grants (SLIG) as…they were learning related but it was more of ‘oh this would be some fun to do with kids’ and there was battling, a little bit with trying to get them to think properly. It just so happened that the District needed an assessment team…we started to get going in the right direction as far as focusing academically and trying to coordinate some huge improvements with the students…it is progressive. (Principal, East Lake, May 6, 2002)

Sandal Creek, when asked about how the SLIG dollars were spent said

...You know, I don’t know because I think, that’s a really good question, I don’t know what they did, what they’ve done here or what they did in the past.. (Reading Teacher, Administrative Intern, Sandal Creek, May 8, 2002)

As for software being integrated:

It is not at all. In little ways, like using Accelerated Reader…(Reading Teacher, Administrative Intern, Sandal Creek, May 8, 2002)

Wrangle spoke of current programs/funding opportunities, such as I-728, which were funds that were provided for school improvement.
Our district had a committee and we decided how that money should be spent. We had to take a look at the needs of our school and then make a determination based on that. (Principal, Wrangle, March 28, 2002)

Well, one thing they did was that they went down to the ESD, or some people had used certain programs before on their own and I think they selected a wide variety on reading and phonemic awareness and writing type things. Math. I am not really sure. I didn’t do the ordering…..I just sign and say I will pay for it. It makes life easier. (Principal, Wrangle, March 28, 2002)

When looking at her staff, she had noticed that it depended upon the grade, the teacher and the classroom:

It really varies between classrooms…it is integrated into the curriculum in many cases. (Principal, Wrangle, March 28, 2002)
CHAPTER FIVE
INTERPRETATION

Interpretation

All of the hindrances to technology integration that have been cited in the literature were mentioned at nearly every school. These included: inappropriate training or inservice (Kay, 1996; Maor, 1999); collegial jealousy or pre-defined roles (Sherry & Billig, 2002; Reinking & Watkins, 2000; Wood, 2000); lack of appropriate or relevant software instruction (Becker, 2000; Rockman, 2000; Rogers, 2000; Ruberg, 1993; Sia, 1992); teachers failing to find the relevance of technology use or applications to classroom practices (Maor, 1999; Sherry, Billig, Tavalin, & Gibson, 2000; Rogers, 2000); as well as teachers having a lack of space and time within the curriculum (Cuban, Kirkpatrick, & Peck, 2001; James, Lamb, Bailey, & Householder, 2000). One telling quote from a teacher at Wrangle was able to summarize all of the barriers during her interview:

I think that our staff would really be interested in going to any class that would show us how to use something, especially if it was research based, but I think the whole question would be how might I use that with my one computer, and so I think those who have more computers in the classroom because of the grant, yeah, they are all for it, but I know myself, I went to the conference in Spokane last year and that was really fun and I attended a couple classes that said it is for the one computer classroom and no, I is not. And you know, we can’t spend our, honestly with all the other things in our day, we can’t spend our planning time or
our outside of school time focused on how am I going to create something that one kid is going to use at a time? (Second Grade Teacher, Wrangle, May 7, 2002)

After reviewing the analysis, several hypotheses could be generated that are worthy of further study and several recommendations for developing technological integration could be made. The following section will present each hypothesis with a review of the analysis.

Curriculum, Assessment, Classroom Instruction and Teacher Responsibility

Clark and Estes (1999) provided the theoretical underpinning for this study. In their model for the development of authentic technologies, identified here as teaching strategies, the initial research stage calls for the generation of hypotheses. From this study, three hypotheses were generated.

**Hypothesis 1**: When education reform efforts include the integration of curriculum, assessment, and classroom instruction, teachers are more likely to take personal responsibility for learning.

In the literature review it was noted that a disconnect occurred between state level administrators who were concerned with assessment, district level administrators who were focused on accountability, and teachers who were focused on student learning, when the three groups were discussing technology integration (Rockman, 2000). This same disconnect existed in two of the four schools: Sandal Creek and Wrangle. At Wrangle, teachers were using the structured curriculum as the primary means of
addressing problems with student achievement in reading. While this may have increased reading scores on the specific tests, teachers did not necessarily use assessments to adjust instruction to meet the individual needs of learners. The principal would identify targeted kids based on reading scores and say that more students needed to improve their reading. Instruction was not to be adjusted, but more of the same was requested, with more time spent with each student. While this may have improved reading scores, teachers were not making the decisions to alter their reading instruction. Outside individuals who were representatives from the adopted reading program and a reading coordinator reviewed scores on a regular basis and directed adjustments. Teachers felt that they had little say in what and how to teach in the classroom.

At East Lake and Woodland, teachers discussed multiple types of assessments and multiple purposes for assessment. The WASL existed and was used, but the results from this assessment were not the only measure of student success. District assessments and classroom assessments were also used to adjust instruction and determine individual student needs. Formal assessments and informal classroom assessments were combined to assist in curricular decisions. Teachers were expected to make decisions based on their own professional judgment. The literature on teacher thinking suggests that when teachers are told what to do, little reflective thought will occur (Carlgren & Lindbold, 1991). This may be happening in schools such as Wrangle where curriculum is scripted and everyone is expected to teach the same thing. For example, when asked about software use, one teacher from Wrangle said, “No one is telling us what the research is”.

Sandal Creek had virtually no structure and connection between curriculum, assessment and classroom instruction: No curriculum existed, just frameworks. Wrangle
demonstrated a huge gap between curriculum and teacher’s ability to make instructional
decisions. Neither of these two schools had teachers who commented on being
responsible for the actual learning of the students. Woodland and East Lake were very
different. In both of these schools, curriculum, assessment and classroom instruction
seemed closely connected. There was a clear understanding of both formal and informal
assessments, and assessments used to measure group progress, such as the WASL as
opposed to assessments that were given as a means of guiding instruction. It was only at
these two schools that teachers comment on being responsible for student learning, being
accountable to themselves:

“It’s the teacher’s responsibility”, as one teacher put it.

Integrating Technology with Reform and Teacher Responsibility

**Hypothesis 2**: Teachers will take more responsibility for technology use when
technology integration is not separate from curricula and/or reform efforts.

At both Woodland and East Lake, teachers were more likely to have mentioned
having overcome obstacles to technology use and integration than at either Sandal Creek
or at Wrangle. At both Woodland and East Lake, technology use was seen as part of the
total overall piece of instruction, not as something that was separate from or in addition to
the existing curriculum. At both Woodland and East Lake, there had been long range
planning, the integration of assessment with instruction, and technology had been used as
a part of the process; both districts had adopted software that committees felt had
supported the curriculum and classroom instruction.
At Sandal Creek and Wrangle, technology was separate from everything. The Reading Coordinator at Wrangle had said it took an extremely creative teacher to incorporate technology into the reading program. At Sandal Creek, they were in the process of developing a district technology plan, which was going to be handed to the school, as opposed to the school being involved with the development of the plan.

Access to Technology

**Hypothesis 3:** In order for technology to be used in a school, access to technology needs to be made for all.

The literature review highlighted traditional views of the diffusion of innovation, stating Roger’s concept of homophiliy (Rogers, 1992) that suggests that the adoption of a new technology is more likely to occur if someone similar, such as an equal colleague, introduces and or is successful at using the new technology. It was interesting to note that Wrangle school probably had more computers per student than any of the other schools. Three teachers had Gates Grants and one had received an earlier grant that had provided Macintosh computers. Of all of those interviewed, Wrangle also had a teacher that scored higher than any other did on the integration survey, although Wrangle, overall, had less technology use as measured by the Technology Integration Scale. The Gates grant seemed to have isolated the teacher. Access to the technology didn’t move with the students as it did at Woodland, where the students took the technology with them, such as the laptops that were provided to the students and future teachers then became involved with using the technology. The technology provided by the Gates Grant stayed within the individual classrooms, although the grant recipients did collaborate with each other.
Wood (2000), found that teachers who were next to technology grant recipients often were jealous and those with the technology were often discouraged from sharing, as it actually isolated them from their peers. This was seen at Wrangle. In the pilot study, it was found that other teachers were often angered by the Gates Grant teachers who, every year, collaborated in the creation of a play. Two classrooms were involved in the development of the play and the integration of technology throughout was apparent: brochures, advertising, film editing, lights, music were all developed. One of the teachers who was interviewed and had observed the play, asked the researcher to figure out, “How, exactly, does that fit with curriculum”? While the principal was ecstatic about the positive recognition that this large production brought in, other teachers complained about the disruption of other schedules, such as the reading schedule, and the huge messes and noise that occurred in the hallways prior to the culmination of the play.

It should be noted, however, that the literature suggests that access to technology doesn’t guarantee that teachers will utilize it (Cuban, Kirkpatrick, & Peck, 2001). At Woodland, where the lab provided ample access, some teachers still hadn’t used the lab. However, even though the teachers were hesitant, they weren’t unwilling to try or had future plans to increase use. Once access is provided, addressing individual perceptual barriers and actual needs may be the next step. However, in schools where there is no access, or access is restricted to specific classrooms, does seem to make it unlikely that other teachers will seek to integrate technology.
Summary of the Hypotheses

*Hypothesis 1*

When education reform efforts include the integration of curriculum, assessment and classroom instruction, teachers are more likely to take personal responsibility for student learning.

*Hypothesis 2*

Teachers will take more responsibility for technology use when technology integration is not separate from curricula and/or reform efforts.

*Hypothesis 3*

In order for technology to be used in a school, access to technology needs to be made for all.

Discussion

Two areas presented in the literature review pose cause for discussion. First is the relevance of software. Lack of relevant software has been posited as a possible rationale for lack of use. In a recent study by Iding, Crosby, and Speitel (2002) 78 pre-service and in service teachers who were surveyed felt that adequate software was not available. Interestingly, even at Sandal Creek where no one readily integrated technology, software programs were specifically named that teachers thought would be beneficial in the classroom. In all of the schools there were teachers who were able to name specific software that they felt would be relevant.

Second is the issue of the diffusion of educational technology. Several models have been presented, including two models that identified that the point of rejection of a new technology occurred when teachers failed to see relevance for the learner (Sherry,
Bilig, Tavalin & Gibson, 2000; Rogers, 2000). Upon completion of this study it seems necessary to further define the diffusion of educational technology models so that they encompass more than one technology and provide direction in to the encouragement of adoption. This is not to say that these models are inaccurate, however, they are designed to address specific technologies, not the overall process of technology integration. Technology integration within schools far exceeds the adoption or use of a single technological device or application.

Most of the models take a technology-centered view. Even a holistic model presented by Dooley (2000), where internal and external factors of integration are viewed in the context of the school along with types of change facilitators, impact of the innovation, the tasks given and the self, presents technology as the central focus. ISTE, when stating those factors necessary in a teacher preparation program for technology integration has presented the conditions from a technology centered point of view. Their requirements include: a vision for technology, access to technology and technology support, educators skilled in the use of technology in their prospective disciplines, and skills in the assessment of the technology to name a few (ISTE, 2000). While all of these components specifically address barriers to technology integration, they do not take into consideration or mention the student as being the focus of concern.

In reality, schools cannot be centered solely around technology, or just assessment, or curricula. Schools that become too focused on one area can neglect the others. In order to better understand how technology can be supported, the school needs to be viewed from the perspective of student learning first. What are the factors that directly influence and impact student learning? Such things as the relationship of
curricula, assessment, accountability, leadership style, resources and the individual needs of the teacher need to be examined in a global context. Technology integration fits in to many of the categories, but technology alone won’t guarantee student learning. It is simply one factor that may contribute to assisting a student in meeting learning goals.

As was highlighted in the pilot study (Appendix A), Schneiderman (1997), when discussing interface design, says that for a program to be used, it must be: (a) user-centered; (b) promote responsibility and: (c) provide a sense of accomplishment. Although the integration of educational technology is not the same as the use of an interface, these three principals of the design of a technology could be applied to a classroom. The study of instructional technology is the examination of the theory and practice of design, development, utilization, management and evaluation of processes for learning (Seels & Richey, 1994). If one is to place student learning as the ultimate outcome or ultimate goal of the teacher and the educational system, the interface then would be all of the systems in place that support this goal. For each system and process, such as: curriculum selection, the development of guidelines or frameworks, assessments used and the selection of methods and media, the principals of interface design can be used to explain whether or not a teacher will integrate technology.

User-Centered

User Centered can also be called User-Control. The premise is that users have a strong desire to be in control or gain mastery of the system. In the context of a classroom, the teacher is the user who has a strong desire to be in control of what happens in the classroom. Being told what to teach, when to teach, what to assess and how to assess by someone outside of the classroom lessons the control. It lessons the control
even more when the directives given are not truly centered around what is best for the students in the classroom or what would best support student learning in the classroom. For example, if a curriculum is adopted by a school district and a teacher is told that he/she must follow the curriculum exactly even though the teacher finds that some of the practices within the curriculum are not developmentally appropriate for the students, the teacher is left with a decision. He/she can violate District policy and alter what is taught or to teach as expected. Altering what is taught without approval from the District or principal can create conflict for the teacher.

In the schools studied, the idea of control came up repeatedly. At Wrangle, teachers felt that they had little control in terms of curriculum, assessment and media selection. Teachers were frustrated. At Sandal Creek, the teachers were given so much freedom that they felt out of control. All of the teachers commented on frustration with the lack of curriculum and the lack of guidelines. In contrast were the schools Woodland and East Lake. The teachers were given curricula and frameworks or performance indicators, and were given the freedom to make choices related to their students, based on the needs of the students. Although the teachers at Woodland and East Lake were not without frustrations, they were able to focus on students, as opposed to being focused or stuck on the perceived problems of the lack of control as the teachers from Sandal Creek and Wrangle were.

The notion of user-centeredness can also be applied to the use or integration of any technology. If a teacher enjoys technology simply for the sake of technology, it is likely that he/she will center the classroom instruction around the technology or find ways to overcome any barriers to the lack of technology. Of the teachers interviewed at
Wrangle and Sandalwood, only one teacher readily integrated technology and it was the one teacher who readily confessed that he embraced and loved computing technologies. The rest of the teachers, who had less control of curriculum and decisions, such as at Wrangle, or who felt that there was no structure, such as at Sandal Creek, did not take responsibility or feel that they had control over the use of technology. This contrasted with the other two schools, Woodland and East Lake, where teachers were more likely to attempt to overcome barriers or who were more likely to take personal responsibility for the use of or lack of use of technology. As with the theory of interface design, without control by the potential user, responsibility, the second premise, will not be taken by the user. The same situation is likely to happen in a classroom.

*Responsibility*

Responsibility, the second premise, states that once a user has control, the user is able to accept responsibility for his or her actions. In the cases of both Wrangle and Sandal Creek, the teachers rarely took responsibility for what was happening in the classroom. At Sandal Creek, teachers blamed the school district’s technology committee for a poor plan, said that they didn’t have time to use the technology and were frustrated with the school district for not providing curricular materials. There was little responsibility for assessment. Teachers like teaching, but there were not stated connections between curriculum and assessment and instruction. At Wrangle, teachers wanted someone else to tell them ‘what the research was’ and the principal even deferred responsibility for the selection of software by stating that software selection was done by another teacher and the school librarian and that it was easier for her to simply sign the purchase order for any software. The teachers at Wrangle were being held accountable
for test scores but the agents of control were outside of the classroom, including people who were actually from the reading program. As stated by Carlgren and Lindbold (1991), teachers who use an innovation because of someone else’s reaction, such as an administrator’s, will ultimately have little follow through toward meeting the initial goal. This then creates the question of whether or not in the long run student learning will continue to improve. How can teachers feel responsible or take responsibility for student learning if the control of the classroom is ultimately directed from outside of the classroom?

At East Lake and Woodland, teachers stated that they felt personally responsible for student learning. Student Learning was the focus and the curriculum, assessment measures, and instructional practices were to be responsive and used to impact student learning.

**Accomplishment**

The sense of accomplishment only comes from having the feeling of control and then responsibility. Within interface design, if a user does not have a sense of accomplishment, they will not continue to use a program. In a classroom, teachers need to feel accomplishment and need to feel that their efforts lead to student learning. In both of the educational technology diffusion models, teachers ceased to use an innovation if he/she did not see the connection to student learning (Sherry, Bilig, Tavalin & Gibson, 2000; Rogers, 2000). Having a lack of control, or a perceived inability to overcome barriers to technology integration leads to a lack of responsibility and no accomplishment can be felt. Teachers will not attempt to overcome barriers.
Conclusions

The integration of technology into today’s classroom needs to be viewed as an integral component. Although the literature often uses the phrase “integrate technology” to imply that technology is to be part of multiple areas of education, including curriculum, assessment and instruction, it is often presented as the focal point or treated as a separate component. Student learning is truly at the center of education. Performance standards or frameworks are in place in almost every state. Curriculum and assessment should be used to inform instruction. Technology and best practices need to be examined within the context of each area of the educational system and technology integration needs to be re-conceptualized and presented within the context of an entire school system (Figure 9).
Student Learning is the focal point for decisions regarding standards, curriculum and assessment. Standards, curriculum and the assessment should be tightly connected and directly related to student learning. The use of technology should be viewed as an integral and connected component for decisions regarding standards, curriculum and assessment. Best practice, like technology, is not separate but an integral component of all practices.

In order for teachers to overcome barriers to technology integration, teachers need to feel in control both of the classroom and the available technology, be able to take responsibility and have a sense of accomplishment. These three areas can be applied to the use of a single technological innovation, but can and should be applied to the broader context of a school system. Within the classroom, teachers need to feel in control, be
able to take responsibility for the learning of the students within the classroom and through these processes have a sense of accomplishment. Too many schools are taking away the ability for teachers to be responsible. Teachers are being given scripted curricula, are told what to teach and which assessments must be given, as opposed to being given the freedom to make appropriate choices about instruction and appropriate assessment.

Several recommendations can be made for school improvement and restructuring. First, combine technology with other reform efforts. Make the connection between the use of certain technologies or best practice with continued student achievement. This can take many forms; projects for increasing student learning, specific software applications for student use, appropriate assessment, and continued classroom management. Isolating technology, or any other component of reform, such as curricula, creates frustrations and limits vision.

Secondly, schools need to have the ability to overcome multiple primary barriers. Focusing on one barrier, such as access alone, neglects the others. Teachers are unique, have differing skills and need different opportunities for growth. Meeting one need does not guarantee integration: other barriers will arise and the ability to address them needs to be available for all. This includes not limiting materials and resources provided by a grant to a single classroom. This can isolate a teacher from his/her peers and create potential school climate issues. If a teacher does receive a grant, plans for future growth for other teachers within the building need to be thought through. This is the same for the students. What about those students who spend a year in a technology rich classroom followed by several years in a technology poor classroom, or those students at the same
grade, because of placement in a certain classroom are then denied access to computing tools? Solutions to the one technology classroom may include team teaching, or cross-age projects.

Thirdly, long range planning needs to be done for all school restructuring. Although in Washington State schools are required to submit building goals for the following year, these do not always appear to be tied to long-range plans. School goals need to be created in a holistic context that includes the close scrutiny of curriculum, assessment practices, how teachers are matching classroom practices with established frameworks and how teachers are implementing best practices in instruction. Building goals should be developed followed with the examination of individual teacher needs. It simply isn’t enough to set goals without taking into consideration different barriers that individual teachers may face.

Recommendations for Further Research

The theoretical underpinnings that guided this research were based on Clark and Estes four-stage model (1999) and this study was at the Descriptive Scientific Research Stage, where the goal was the development of hypotheses based on the descriptions. While it is appropriate to continue to observe and describe school settings, it is also appropriate to move to the second stage where theories are developed and checked.

Three hypotheses were generated from this study: (a) When education reform efforts include the integration of curriculum, assessment and classroom instruction, teachers are more likely to take personal responsibility for student learning; (b) Teachers will take more responsibility for technology use when technology integration is not separate from curricula and/or reform efforts; (c) In order for technology to be used in a
school, access to technology needs to be made for all. Further research is then needed to validate these hypotheses.

For hypotheses one and two, more studies need to be conducted that examine specific programs, such as the North Carolina ENTech program. The ENTech program was a statewide initiative that provided in service opportunities that focus on school improvement projects that blend educational strategies and technology (McCullen, 2002). Research studies should be conducted in order to determine if such practices do increase teacher responsibility for the use of technology as well as increasing teacher responsibility for student learning. Further descriptive studies could also be conducted in order to add to the data on reform and restructuring efforts.

As for the third hypotheses, examining issues of access more specifically may help to illuminate and generate more problem solving approaches. For example, comparing schools where specific classrooms and teachers have been provided with opportunities and resources that far exceed the rest of the classrooms and those schools where grants have been used that provide collaborative or open opportunities for other teachers and students. Providing rich data and descriptions in this area may then assist districts in determining which methods are best suited for developing technology integration and may best alleviate barriers that arise.
Summary

This study was guided by two research questions:

1. What are teachers’ perceptions of barriers to the use of educational technology/technology integration and how do the barriers connect to education reform?

2. What are the connections between perceived barriers to the responsibility for computing technology?

From this study, it appears that teachers tend to cite the same types of barriers. For example, almost all of them cited time and hardware or equipment as a barrier to the integration of technology. What differed was the teacher’s willingness or perceived ability to overcome barriers. All four of the schools studied had gone through a reform process. Two of the schools had done long range planning and attempted to connect the performance standards with the curricula and assessment. In these schools, assessment had been viewed as a multiple tiered process that was used to determine what needed to be altered within the classroom to improve student learning, and the teachers were more like to state personal responsibility for both student achievement and the use of technology within the classroom. Specific barriers in and of themselves did not appear directly related to whether or not a teacher was willing to take responsibility for student learning. Instead, what seemed to influence a teacher’s willingness to state responsibility was a balance between having an available curriculum and being given the flexibility to adjust the curriculum and instructional methods to meet the needs of the students in the individual’s classroom. This flexibility was coupled with multiple methods of assessment that were used to guide decisions about what was to take place in the
classroom. Administrators in these two schools took the role of an advocate or supporter of the teachers, as opposed to an enforcer.

To improve the integration of technology in the classroom, three factors could be examined: (a) the control that a teacher has over what is to be taught in the classroom; (b) whether or not the teacher is able to take responsibility and; (c) making sure that teachers have a sense of accomplishment. Student learning is the primary goal of all teachers and should be placed at the center of any model of technology diffusion. Performance standards, curriculum, and assessment should be coordinated and include best practices and technology should be placed into an appropriate context within each strand. If student learning is impacted, then teachers will continue to use the technology. Although similar barriers are cited by all teachers, the type of support needed to overcome the barriers needs to be adjusted for the individual. Grant opportunities that support one teacher and a single classroom may not increase the use of technology and may increase the perceptual barriers by other teachers within the building.

Currently there is limited literature that specifically addresses the diffusion of educational technology. Educational technology has had a fifty-year history of difficulties, with failed integration efforts in the areas of radio, film, and television (Saetller, 1990). By continuing to dialogue with educators and through the creation of detailed descriptions of differing contexts and through the provision of rich data in the areas of educational technology and education reform, a better understanding of the barriers that confront technology integration will be created. With a better understanding of those barriers encountered by teachers, methods for developing meaningful technology integration can be formed and implemented that will best alleviate the barriers that arise.
## GLOSSARY

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Diffusion of Educational Technology</td>
<td>The study of the process by which educational technology is adopted within a school system.</td>
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<tr>
<td>Diffusion of Innovations</td>
<td>The study of the process by which the use of a perceived new idea, practice or object is adopted within a given social system (Rogers, 1995).</td>
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<tr>
<td>Essential Academic Learning Requirements</td>
<td>The performance indicators developed for students in the State of Washington.</td>
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<tr>
<td>Gates Grant</td>
<td>Refers to grants that were given to selected teachers in the State of Washington by Bill Gates, the founder of Microsoft. The grants provided computing tools for public school classrooms and intensive training for teachers.</td>
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<tr>
<td>HB1209</td>
<td>The Washington State Education Reform Act passed in 1993, known as House Bill 1209, that initiated state mandated reform.</td>
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<tr>
<td>Iowa Test of Basic Skills (ITBS)</td>
<td>A standardized measure of reading and math skills</td>
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<tr>
<td>Six-Traits</td>
<td>Refers to the Six-Traits of Writing: the model or the source of the model used to score student papers in numerous state assessments and district assessments. The traits include: ideas, organization, voice, word choice, sentence fluency, conventions, and presentation</td>
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**Student Learning Improvement Grants (SLIG Grants):** Grants that were given three consecutive years to all of the schools in Washington State who completed and submitted school improvement plans beginning in 1994.

**Success for All (SFA):** A scripted reading program that originated at John’s Hopkins University in 1987.

**Snowball Sampling:** Identifying cases of interest from people who know people who know people who know what cases are information rich, that is, good examples for study, good interview subjects (Patton, 1990, p. 182)

**Theoretical Saturation:** When a researcher assesses that he or she has exhausted the dimensions of the categories in an analytical framework and is able to develop theory based on the data gathered and analyzed (Bogden and Biklin, 1998, p. 67).

**Usability Testing:** Conducting tests or evaluations to determine if a particular group of users is able to easily use a product. Results of usability testing can be used to improve a product.

**Washington Assessment of Student Learning (WASL):** The performance test administered to all fourth, seventh, and tenth grade students in the State of Washington. The assessment is based on the Essential Academic Learning Requirements (EALRs)


http://www.iste.org/L&L/archive/vol26/no8/supplements/moersch/table2.html


presented at the American Technology Education Conference, Orlando, FL.


APPENDIX A

PILOT STUDY

Running Head: INSTRUCTIONAL RELEVANCE: A QUALITATIVE PILOT

Instructional Relevance:

A Qualitative Pilot Study on Teachers’ Selection of Media

LeAnne K. Robinson
Washington State University

April 30, 2002
Abstract

This is a report on a qualitative pilot study examining how teachers in a western Washington school determine which media best supports their instructional choices. The study was conducted using interviews, observations and field notes of staff members including general education staff, support staff and an administrator. Results indicate that although each individual had different rationales for their own levels of technology integration, all of them referenced pressure they felt for ensuring that their students performed well on the Washington Assessment of Student Learning. The building’s adoption of curricula was a major factor in determining what media was utilized in the classrooms. While the staff verbally supported the use of computing tools, few of them took responsibility for their use or purchasing decisions. The study points to the need to more closely examine the relationship between technology integration and educational reform efforts.
Computing technology has been marketed as the current solution to education’s problems (Rockman, 2000), and the quest for technologically equipped schools has grown dramatically. In 1996-97, an estimated $4.3 billion was spent by school districts in order to upgrade and incorporate computing technology in classrooms (Healy, 1998). By the year 2000, the number of computers in schools numbered over 10 million (Becker, 2000). The International Society for Technology in Education (ISTE), with the support of numerous educational, non-profit, and private businesses (Best, Wheeler, Renchler, & Summerlight, 2000) has published the National Educational Technology Standards for Teachers (NETS) and another set of standards for students. The document developed for teachers provides an outline defining what computer based skills teachers need in order to facilitate school improvement. It is believed that in order to be an effective teacher, one must be able to meet these standards, including demonstrating a sound understanding of technology operations and concepts and the planning and designing of effective learning environments and experiences that are supported by technology (PT3, 2000). Educators are pressed to prepare students for the future and are told that without computing skills and the appropriate technological equipment in the classroom, they are ill-prepared to teach, and students are likely to fail.

In order to more clearly understand what is happening with regard to computers in the classroom, it may be helpful to clarify the term “educational technology.” Teachers (and the general public) often equate technology with computers and technology is
commonly thought of in terms of gadgets, instruments, machines and devices. However in professional literature, technology has been defined as “The systematic application of scientific or other organized knowledge to practical tasks” (Galbraith, 1967, p. 12). Today, Instructional technology is defined as “the theory and practice of design, development, utilization, management and evaluation of processes for learning” (Seels & Richey, 1994, p. 9), and educational technology is a “combination of the processes and tools involved in addressing educational needs and problems, with an emphasis on applying the most current tools: computers and their related technologies” (Robyler & Edwards, 2000, p. 6). Computers in the classroom have then often been mistaken as “educational technology” (Yeaman, Koetting, & Nichols, 1994). In actuality, computers and the hardware and software that accompany them are types of tools that teachers can choose to use during instruction. Methods of instruction and the materials, or media, of instruction are separate entities. Computers and computing software are media that may be used to support a method. There are numerous types of methods that can be used and appropriate media should be matched with the appropriate method. For example, methods would include such things as: presentations, doing a demonstration, cooperative learning, using discovery learning, doing a simulation, or using drill and practice. Media is used to support various methods, such as: using graphics, including visuals, slides or overheads and display boards, audio, text, real objects as well as computer software and video (Newby, Stepich, Lehman, and Russell, 2000). One method of instruction is not capable of meeting all of the instructional needs in a classroom, just as one medium cannot support all methods. In theory, computing tools can be used to support and enhance a method that is selected to assist a learner in meeting a pre-specified objective.
Even with all of the pressure to integrate the use of technology into the curriculum, the presence and accessibility of computers in the schools has not shown that the technology is being used by educators or that students actually can or do use it (Kalkowski, 2001). Although they are accessible, computers have not transformed the practices of a majority of teachers (Becker, 2000; Labbo & Reinking, 1999), and Willis, Thompson, and Sadera (1999) have pointed out that integration of computers into the classroom has actually been a slow process. Only 43% of elementary classrooms used computers on more than 20 occasions during the school year (Becker, 2000).

In 1988, it was found that the primary use of computers in the classrooms was to teach job skills (Willis, Thompson, & Sadera, 1999). In a NCES (1997) report, more than half of the students who used a computer at school did so only to play games or to practice computer literacy skills such as keyboarding (Fuller, 2000). More recently, teachers use software primarily for preparing handouts, writing lesson plans and recording and calculating grades. Students use computers primarily for word processing, emailing and accessing the Internet (NCES, 2000; Rockman, 2000).

The field of educational technology has begun to question why teachers have not utilized computing tools. Initially, the argument had been that there was insufficient training and not enough resources. Recently, however, research studies are showing that something more is happening. For example, Cuban, Kirkpatrick & Peck (2001) reported that even in Silicon Valley, where there was wide teacher and community support as well as availability of educational technology, the use of computing tools was not fully incorporated into teaching practices.
Sherry, Billig, Tavalin, & Gibson (2000) reported on the adoption of technology in a WEB project. Using multiple theories, they identified a circular model of technology adoption as it related to the development of teachers’ expertise with the Internet and Web. In terms of permanent adoption, the important stage in determining whether or not a technology will be adopted was after training and “collegial sharing.” Instead, teachers rejected an innovation when learning outcomes were not immediately seen. A similar but hierarchical model is cited by Rogers (2000). Both the model by Rogers (2000) and by Sherry, Billig, Tavalin, & Gibson (2000) address the need for support and training and highlight the importance of a teacher finding relevance for the learner. The results of a qualitative study by Levitt (2001) examining science education reform found that once teachers observed student learning, the teachers’ beliefs in the new approaches and commitment to it changed. In some instances, students and student learning are the center of the rationale for adoption or rejection of the media (computing technology) by teachers. The idea of a rationale suggests that ‘teacher thinking’ research may provide some insight into what may be occurring.

Zeichner (1994), in a paper on teacher thinking, describes several traditions of research on teacher thinking and highlights that much of the research has focused on top-down assumptions in educational reform. He concludes that more collaboration and less “othering” should occur between researchers and educators. This notion has been elaborated on in other research and writings (Day, 1991), including a paper presented at the American Education and Computing Technology (AECT) conference by Moallem (1996). Moallem encouraged instructional designers to examine the context of any
design; the design of materials (media) should be created from a teacher’s frame of reference.

Carlgren and Lindblad (1991) noted a difference between “innovations governed by ideas” and “innovations governed by reactions” (p. 514). When teachers focused on ideas, their practice changed until their intentions were realized. If, however, teachers based the decision to use an innovation on the reactions of someone else, e.g. reactions from parents, students or colleagues, thinking did not develop; there was no reflective thought. An assumption was made that initial intentions (goals) would be met. However, unlike innovations governed by ideas, there was not necessarily follow through by the teachers to see that it happened.

Problem

The limited literature indicate that teachers develop rationales for integrating or not integrating technology. However, little research has been conducted that relates theories of teacher thinking to the failure of the integration of technology. Also, there are few writings that include teachers in the process of identifying either problems or solutions relating to the instructional relevance of available media. No clear rationale exists that explains how teachers determine instructional relevance and how this is related to a teacher’s selection of media.

Purpose

The purpose of this study was to examine how practitioners in one public elementary school decide what media to use and to determine why some of types of media aren’t utilized. It was the intent of the research to begin to illuminate what
teachers feel is needed to improve or support teaching and student learning so that further
work can be conducted that is beneficial to teachers in the classroom.

Methodology

Design

Qualitative methodology was used to design this study. The researcher believed
that in order to better understand teachers’ reasoning for selecting media needed to be
done with both interviews and observations in a naturalistic setting. Using qualitative
methods, a description of the problem could be better understood than through surveys
and quantifications.

Site Selection

Site selection was purposive. The researcher wanted a site where technology was
integrated differently among staff members. An acquaintance of the researcher, who was
also a counselor in Wrangle school, had been approached and asked if it would be
possible to contact her principal about the possibility of doing a study. As the principal
had remembered doing an observation in the researchers classroom five years earlier, she
agreed to allow the staff to be interviewed.

Participant Selection

Purposive and snowball sampling techniques were used. The counselor was told
the purpose of the study and asked to generate a few names that would give a good
overview of the curriculum and teaching practices in the school. As she was in and out of
the classrooms and interacted with each staff member on a weekly, if not daily basis, it
seemed as though she knew who would be able to provide valuable insight. Upon
completion of these interviews, staff recommended others who might be willing to be interviewed.

_Data Collection_

Semi-structured interviews (see Appendix A) were conducted with the principal, counselor, P.E. teacher, a transitional first instructor, reading coordinator, sixth grade teacher, and a second grade teacher. Interviews lasted between thirty and seventy minutes and took place within the school. Transcriptions from the interviews were later transcribed verbatim. Observations were limited and occurred with the general education teachers. These lasted between twenty and forty-five minutes. Two separate visits occurred during a one month period.

_Data Analysis_

Transcriptions from interviews, observations, and field notes were coded and studied for recurrent themes. Follow up interviews were conducted after the initial coding to answer more specific questions regarding the emerging themes and member checking was done with a second grade to teacher to verify the initial interpretation.

_Conceptual Context_

_Setting_

Wrangle Elementary (a pseudonym) is located in a mid-size town in western Washington. There are 360 students with a high rate of mobility, and the free and reduced lunch count is over 53%. Ethnicity is predominantly Caucasian with a small Hispanic population. The three story brick building sits on top of a hill in the middle of a residential area just on the edge of town. A bulletin board covered with news articles of smiling faces greeted me in both English and Spanish, highlighting the accomplishments
of both Wrangle staff and students as I walked through the front doors. Posted in the hallway were advertisements for t-shirts from a school produced play. Two well-dressed teachers stopped their quiet conversation and smiled as I past them on my way towards the office before resuming in hushed tones. The secretary warmly welcomed me and I was invited to wait for the counselor who had not yet arrived. She smiled and said, “She often straggles in with her kids.” Sure enough a few minutes later, Jane, the counselor, walked through the doors and kissed both of her kids before shooing them outside with the other arriving students. Jane, an acquaintance, had made the interviews at Wrangle School possible.

Meeting the Wrangle Staff

Jane had a list of contacts for me in her office. I had told her of my interest in media, and she arranged interviews and observations with several staff members who could give me an overview of the curriculum and thoroughly highlight the climate of the school. “At 1:00 you get to see the play.” She laughed. “And, if you really want different reactions, just ask people what they think about it!” Briefly she explained that the play had been an ongoing event, and took up most of the first semester in both the fifth and sixth grades. Part of the heated discussion within the school was the relevance or justification behind spending so much time on such an activity. “We only had four kids pass the WASL last year” were her parting comments as she left to begin her day.

The notion of reflective thought has been a part of the teacher thinking literature stating that just observing what happens in a classroom isn’t sufficient. A researcher must also understand why teachers make choices. A question that has arisen has been the extent to which choices that teachers’ make are conscious. I thought I might add to the
understanding of how teachers make choices about media through hearing about the importance of in-service, or perhaps district bonds for technology. By the end of my time at Wrangle school I found, as can be the case with qualitative research, many more questions than answers. The following sections highlight the development of these questions, leading to a need to redefine the initial problem.

Analysis

*Mr. H and the Use of Technology*

Mr. H was the first person interviewed. He was a confessed technology nut, and one of the two teachers responsible for organizing the play. As I was particularly interested in the use of computing technology, he was a logical person to start with. He explained that both he and his teaching partner had acquired thirty computers and other educational technology including scanners, digital cameras and software through two separate grants. He felt that the presence of educational technology had changed his teaching practice dramatically and went on to explain his philosophy on educational technology use by describing an upcoming project.

I have lots of project activity software. I don’t buy software or have the kids work on software that is drill and kill stuff. I want to have a project for the kids to use the software to create. They are on the computers almost constantly working on some sort of project. It opens the whole world. I made the decision to buy only productivity software that allows the kids to be able to take projects to the next level. We are about to get ready to start planning for a three day field trip at the beginning of March. The technology will come in handy because the kids are going to
study using the Internet. They are going to explore the places we are going and each team of four is going to have to create a brochure in Publisher that they will take on the tour bus and they will get up and actually teach students on the bus what they are about to see.

When asked what would improve his teaching he said:

If I wanted things to be better? I wish I had more time. I wish I had more time in the day to teach what we are being expected to teach for one thing. I wish I could veer from the hard and fast philosophy we are living with now…I would like to branch out and be a little more creative. It is the way I used to teach. Now we have to stay with the party line. It is boring for me and I know it is boring for the kids to a certain extent. …and fewer constraints. I know there needs to be some sort of accountability…but I wish they were less centered on the teachers.

This notion of accountability and lack of time became a dominant theme throughout the teacher interviews and any initial thoughts I had regarding teachers selection of media, especially educational technology, stopped with Mr. H.

“I am Candace Smith. I am Who I am. I am Unique. I am My Own.”

After 33 years of teaching, this petite woman still stood on chairs and danced with her students. Her students, all in between Kindergarten and first grade, worked hard to match her energy level. While I was observing her reading lesson, she walked by and
whispered, “Nine of these dears are ESL and the rest are behavior problems or exceedingly shy. That is what they give me. But don’t get me wrong, honey, I love every minute of it.” Her crew of ‘transitional-first’ graders were engaged and reading. Colleagues in the building had commented on her passionate and positive spirit and she had had a distinguished career as a classroom teacher and teacher educator. Her students learned and her enthusiasm radiated. Candace was able to give a rationale or state a purpose for everything that happened in her classroom. “Everything here has to have a purpose. So, anything I do, no matter if we are jumping up and down, there is a purpose. Hopping is because of age. Everything has a purpose.”

Although she knew everything and a purpose and even with a distinguished career, when asked if she had a weakness, she quickly responded and mentioned a conflict with the use of computing tools and reading time:

Okay, I am going to be very honest again. I have done very little with the computer and the children. In the past we have done some. But if you were to say what my weakness is, my weakness is using the computer with the children. We have done it where I have had high school aides come in, but right now we have it so that she comes in during reading time and that is a “no, no, no.” You can’t do that. So my weakness would be the computer.

She elaborated on her understanding of the computer as a tool, and again brought up the reading program and time.

I know that it is just another tool (the computer). I feel pretty comfortable word processing, which our children don’t do, or to do a CD,
but no, there are so many other things. I think it (the computer) is going to be a very prominent tool in the classroom and I think it is a very useful tool. I use the overhead a lot, even before the new reading program……The curriculum is so crowded. This year I think I have shown one video period. Not because I necessarily think it isn’t important, but because of time, because of the pressure, because of the reading program and math. I don’t know if it is good or bad. I don’t think it hurts for a child to see a video once in awhile if it goes with the curriculum.

With two interviews, the questions of media became larger. Two outstanding teachers, both constructivist in practice, chose to use different media. Both felt constrained with time and with the curriculum. Candace, who didn’t use the computer, felt she had a weakness. Mr. H., who did, felt as though it were squeezed in and was catching some flack regarding the Play production. The debate about teachers using what was available seemed to contain more depth then just “what is in the classroom.” The third interview, with the reading coordinator further illuminated what was happening.

*Shedding Light on Wrangle History*

Sally was in her fourth year as the Success for All (SFA) Coordinator. SFA was a reading program that had been adopted by the building and served as a framework that teachers in the building used with their basal readers.

We are all on the same page now. We had an old basal reading series that we didn’t particularly love, and it was also the time period of whole language, and there were many of us that moved those directions. In the
meantime our population changed here, and we were (are) a poor school. Our kids had such different needs. We, as a staff, did our soul searching. Everyone decided we weren’t teaching enough kids to read well enough.

Sally loved teaching and had high praise for the hard work that the teachers in the building had done. She also explained her position and the importance of testing.

I am a peer coach for teachers. Our students are assessed every eight weeks, and I coordinate that and make decisions about which students, where they need to be, who needs tutoring, who needs extra support and who is ready to move on. I work with parents about where their kids are and what they can do to help....I take this information from the teachers, the student scores on their reading assessments, plus I look at kids’ ITBS scores, their WASL scores. Last year was the first year we gave level tests. We used to give the Gates. So, all of these pieces matter.....A lot of this is coming in SFA. They (the SFA people) are on the same page, looking at our data...We are trying to use data to drive our instruction.

Accountability, Sally felt, had changed teaching practice.

It probably wouldn’t have happened without SFA. For no other reason than you feel more accountable. There is me. As a classroom teacher you have me looking over your shoulder, at your data and what is coming out of your kids. Plus you are moving kids to other teachers, like
someone is going to follow you up. Younger kids might go to someone else who will say, “What was this person doing?” What I hear more is, “Man, you really taught the kids how to do this. Your kids really nailed this.”

Comments that both Candace and Mr. H made started to make sense. SFA practice mandated an uninterrupted 90 minutes, was highly structured, and left little room for flexibility. Even Sally had said that any use of multi-media could only be incorporated into SFA by a highly creative teacher. The choice of media, in this case, was dictated by the reading program requirements. Were all of the teachers feeling pressured? The PE teacher would have probably answered yes.

*Being Squeezed Out*

When I had seen that I was scheduled to meet with the PE teacher, I wasn’t sure what information on teachers’ selection of media I could find. After all, weren’t the media used by PE teachers balls, ropes, and scooters? Ms. Everson, a positive, yet discouraged, teacher set me straight.

Ms. Everson wanted to share the process of curriculum adoption for physical education. She started by setting the stage for where they were.

We had a curriculum called, I want to say Learning Objectives, that was adopted in 1978, and we went about the process of adoption in 1995/96. We felt the need because reading and writing were getting their own EALR’s, and we knew that PE would be some place, and we wanted to be ahead of the game. It was a mutual consent and it was so exciting! We wanted to hold the kids accountable and the district accountable and
some how get the 100 minutes of teacher directed activities a week…..we worked really hard for two years, and our administrator didn’t feel that we went about the process in the correct way. Our school is very frustrated and doesn’t feel like they want to go through all of this again because we have something very similar already in place. It was really the same concept, just how we went about is, so it was never approved by the district.

Ms. Everson, like the two other teachers, was being impacted by time and the reading program.

I am teaching reading. Four years ago it was a site based decision, and I could see the benefits (of SFA). I also knew that was taking away three PE classes a day because it is a 90 minute uninterrupted block. I didn’t want to be the lone person to stand out. I felt like I educated my whole staff on how I felt, but I also saw in black and white that our kids were not learning how to read. We were at 36% readers at grade level, so at that point it was a priority. Here I am still teaching reading to lower class size for everybody, and it is a nice break, but school wide, we need more opportunities.

Education Reform affected her as well.

Last summer I went to a workshop in Seattle, and Terry Bergeson was there and really seemed supportive of the physical fitness and health
piece and that felt really good. But she is still getting pressure from the other curriculum pieces.....I am not very optimistic about this and it is kind of frustrating and I feel bad. It really drags me down.

And what did Ms. Everson think would happen? She was looking to go elsewhere and also had thoughts on the Play.

When it comes down to it, the administrators dictate what happens and I am looking to go elsewhere. It is really a touchy subject because I feel so torn. How long are you going to keep fighting this uphill battle? And our school is unique because we have this play and it is really a touchy time of year because the Play is on and I don’t see any kids. They don’t seem to think it is a problem.

The Play

I was ready for a break and looked forward to seeing a cute performance. Astonishingly, it was unlike any elementary production I had seen. The introduction was a video entitled “The Making of the Jasmine” and contained clips of interviews with actors and actresses, community members, rehearsals and the makers of the sets. The use of multi-media technology was apparent. All of the costumes were hand made, there was a small group of musicians that flawlessly played music, as fifth and sixth graders danced and sang in changing lights. The play was professional and, as a former sixth grade teacher, a feat that I viewed as phenomenal. It was clear that for such a performance, the teachers had to have veered drastically from the adopted curriculum.
The Initial Problem Redefined

The initial goal of the study had been to identify how teachers select media. In the case of Wrangle School, this appeared to be related in part to the curriculum that had been adopted. Mr. H had elected to use educational technology and had incorporated it into his classroom because he enjoyed it. However, he felt constrained, and the Play, whose production involved the use of multi-media, had received criticism. In the staff room, a member of the site-based council told another person not to share the previous meetings minutes with anyone because there were some harsh statements made. I learned later that these were directed toward the production of the Play. Candace, who had selected not to use educational technology, felt guilty about doing so, stating that her lack of use was a weakness. All four interviews suggested that the use of media was in part influenced by both time restrictions and pressure to follow a specific curriculum, where the media choice was already defined.

Interviewing the Instructional Leader

The interview with the Wrangle School principal addressed the issues of curriculum adoption, pressures of accountability that were influencing teacher’s adherence to structured curriculum, and finally, hinted at the role of educational software. Her comments bring forth considerations in the role of educational technology in today’s classrooms.

The principal was friendly and enthusiastic about her job and her love of children was apparent. A quiet knock on the door partway way through the interview prompted the turning off of the tape recorder and was followed by accolades for a student who had succeeded at some classroom task; the student had been sent unannounced by her teacher
and this was explained as common practice. Like the reading teacher, the principal too had high regards for her staff and appeared incredibly supportive and proud of all the work the teachers in the building were doing. She emphasized the three patterns that had emerged throughout previous interviews and observations.

**Assessment and Accountability**

The principal shared her feelings on the role of assessment:

I hate to say this, but I think that test results are really important. It has brought us to a different level, to different expectations for kids, and I think we need to keep in mind developmentally appropriate activities and learning for kids….we all need to strive to do our best but we have to be very, very careful.

The principal confirmed the existence of pressure for teacher accountability. There was an acknowledged emphasis on increasing test scores and several individuals made sure that teachers followed the adopted curricula and used the methods and media outlined in the district approved programs. This was illustrated in her comments:

….They [SFA people] come and do site visits So that has to be a very, very strong structure. It is a very research and data driven program which has been very, very helpful.

We [the leadership team] have been asked to look at score sheets, identify a list of kids…[picks up a sheet on her desk]…these are our hot
list kids and we have 195 kids reading at or above grade level, and we identified ten and I told our facilitator “I want ten more” this list isn’t good enough, so we have identified twenty children and then I am going around and I am saying, “Okay, who can team up with these kids and make sure they are reading….and I am going around and looking at team score sheets weekly. It just raises the bar….I feel like I am four months behind and I want children to do well and I want teachers to enjoy what they are doing, but I want results. As I explained to someone the other day, I don’t want to be a K-Mart. They are going downhill, they are losing it and we don’t need to have the state come in, and we don’t need to have monitors come in and see what we are doing. We can do what it takes to improve student learning.

*Time and Teacher stress*

The challenge of increasing test scores and standardized teaching practices was a factor in teacher stress. The principal confirmed the lack of time being experienced in the school day:

…..and one of the challenges is that with our 90 minutes of reading everyday and then our minimum of an hour for math…and we have to get library, music and PE in…then recesses and the lunch. It is just a challenge to get everything in, like Junior Achievement and the other things that are important in the curriculum, to be available and have time to fit.
Our school day is so limited. There is just not enough time to do all of the things we are expected to do. We used to do the whole language approach and we just don’t have time to bring it all in. It is kind of like pushing, pushing, pushing to get in what we absolutely have to get in, and still we just don’t have time. I am not quite sure how we are going to solve the problem. It is kind of a dilemma. We don’t have the money to pay for the additional time that would be needed, and I just try to encourage people to drop at least one thing. If you could take just one thing. It might be fun, it might be exciting for the kids, but take one less thing and try to drop it and see if that lessens your load yet still provides continuity.

Research Base

All of the curricular processes in place, including pre-defined media and methods by adopted curricula, affected teachers’ decisions in the classroom. Curriculum adoption and the process that was followed was important to the district. The PE teacher had talked about the frustration with not meeting the districts standards in terms of process of adoption. The principal continually highlighted the emphasis on curriculum and programs that had a research base:

It [the curriculum adoption process] is a district process. For instance, the SFA was piloted first by Madison and they felt it was very successful and they brought that information to the administrators….The district had several meetings with Madison and representatives from the SFA program..you have to have 80% or higher to adopt. They [the SFA
people] come and do site visits. That has been a very strong structure. It is a very research and data driven program…as far as the math committee, they go through and look at the different research and data and then make a recommendation.

….I think now in school there is a purpose for this and this is where you are going to use it and why, and I think there are a lot of other places that we don’t even think about today because technology is changing, so, just the research that is available, the data, the scores, being able to have kids tested, methods…..

Teacher Selection of Software and the Role of Technology

Although accountability with curriculum was stressed and research was a high priority, when the principal was asked how media was selected by the teachers, she pointed to what was outlined by the curriculum. Teachers were not necessarily given a choice:

With the SFA program, most of the material is done on the overhead, so they have their word practice on the overhead, their treasure hunt questions on the overhead. I think that has just been done because that is the way the program has been set up. In math, I think some of the things are done on the overhead…
This question was followed up with discussion about educational technology and the long range plan for the building and the district, which included bringing in several portable carts with a classroom set of lap tops. Several more teachers were applying for major technology grants, and the principal was excited about the possibilities for the use of educational technology, although these possibilities were not defined. When she was asked how software was selected, the response, however, did not match with the requirements of research base and accountability that had been echoed throughout the other threads of curriculum development.

Well, one thing they did was they went down to the ESD, or some people had used certain programs before on their own and I think they selected a wide variety of reading and phonemic awareness and writing type things. Math. I am not really sure. I didn’t do the ordering. We have two people that are assigned to be the building representatives and the librarian is one and then Mr. H is the other so we let them do that. I just sign and say I will pay for it. It makes life easier.

The role of educational technology at Wrangle School had yet to be defined.

Interpretation

Several factors were possibly influencing teachers’ selection of media choices. Two of them were apparent in the dialogue: time allotment and accountability to both test scores and individuals who were monitoring the performance of the students in the classroom. All of the teachers were feeling constrained and under pressure. They felt
that they were to teach the curriculum as it was scripted. When curriculum was deviated from, such as with the Play, discord amongst the staff occurred.

Many rationales have been presented as to why teachers have not incorporated technology, including diffusion of innovation theories and lack of teacher training. A comparison of two other models of educational technology innovation adoption pointed to the lack of perception of relevance for the learner: if teachers did not see immediate results, the use of the innovation didn’t continue. However, neither of these explain the lack of the use of computing media by Candace or the lack of concern over the use (or lack of) research-based practices of the technology that was being sought and incorporated into classrooms at Wrangle.

At Wrangle School, at least one of the teachers, Mr. H., used technology because he enjoyed the tool. Another teacher didn’t, but felt it was a weakness, and the principal, who was adamant about research based practices, didn’t have a problem relinquishing the research criteria to the selection of software. This creates the question “are there other factors that are influencing use of technology?” Cuban, Kirkpatrick & Peck (2001) hypothesized that teachers will continue to teach the same way they have always taught, no matter what.

Schneiderman (1997), in discussing Interface Design, says that for a program to be used, it must be (a) User-centered; (b) Promote Responsibility; (c) Provide a Sense of Accomplishment. Although the integration of educational technology is not the same as the use of an interface, similarities can be discussed in terms of use or lack of use of educational technology. These three components may be used to explain why a teacher may or may not be selecting computing technology.
User-Control: The premise is that users have a strong desire to be in control or gain mastery of the system. If a teacher enjoys technology simply for the sake of technology, it is likely that the use of the technology is centered around the instruction of the teacher. He/she thinks in terms of how to use and incorporate technology into the lessons he/she wants to teach. If the use is not obvious or intrinsically apparent, the ‘user-centeredness’ of the technology is lost. Training may, or may not be enough to encourage adoption. Without control by the potential user, responsibility cannot, or will not, be taken.

Responsibility: Once a user has control, the user is able to accept responsibility for their actions. In the case of Wrangle school, responsibility for actions in terms of choosing media had been diminished. Teachers were not in control of the choices that were made in terms of media selection. Teachers were being held accountable, but the agents of control were the curricula and accountability to the principal and SFA people. Choice did not exist in large portions of the teachers’ day. As stated by Carlgren and Linbold (1991), teachers who use an innovation because of someone else’s reaction, such as an administrator’s, will ultimately have little follow through toward meeting the initial goal. This creates the question of whether or not students’ WASL scores will improve to passing. After four years, Wrangle school was able to say that they had moved from the very bottom score of 1 to a score of 2 (3 is passing).

When a second grade teacher was asked about the phenomenon of the lack of research used in software selection and the lack of technology integration, she stated that “no one was telling them about any research” and that technology was merely a
supplement, not really used for instruction. Ironically, this teacher is hoping to receive a large grant for the following year that would amount to more than ten thousand dollars.

Accomplishment: Accomplishment only comes from first having a sense of control and then responsibility. The pressure for test scores is not unique to Wrangle. At Wrangle, teachers were struggling with a lack of time, with external pressure for test scores and were pushed to follow adopted curricula and prescribed media. One of the teachers interviewed used educational technology; another who did not felt it was a weakness, but had no desire to change, in part because the lack of time and in part because she didn’t feel “allowed”. One is left to ask, even with available technology, why tools and related curricular materials (such as software) are not held up to the same “research base” requirements as other materials are? The belief that technology alone will change or improve teacher practices may be at work at Wrangle School.

What was happening at Wrangle school raises many questions, especially in terms of the use of educational technology. What factors influence an educator’s willingness to take responsibility for the media that is used and what prevents the abdication of responsibility? Is it a lack of control of the media in the first place? Or, is it, as Cuban, Kirkpatrick, & Peck (2001) stated, that teachers will likely continue to teach the way they always have taught? How can control and responsibility be fostered so that teachers feel confident about the choices that they are making related to media use in their classrooms?

Discussion

At the onset of this study, the intent had been to examine how teachers went about selecting media for use in the classroom in hopes of understanding why computing tools
have not been integrated into regular classroom practices. Many rationales exist within the literature suggesting why a lack of adoption has occurred. These include: inappropriate training or inservice (Kay, 1996; Maor, 1999); collegial jealousy or pre-defined roles (Reinking & Watkins, 2000; Wood, 2000); lack of appropriate or relevant software instruction (Becker, 2000; Rockman, 2000; Rogers, 2000; Ruberg, 1993; Sia, 1992); teachers failing to find the relevance of technology use or applications to classroom practices (Maor, 1999; Sherry, Billig, Tavalin, & Gibson, 2000; Rogers, 2000); as well as teachers having a lack of space and time within the curriculum (Cuban, Kirkpatrick, & Peck, 2001; James, Lamb, Bailey, & Householder, 2000).

Within this limited pilot study, all of these rationales were cited. However, the one overarching theme was the overwhelming stress that teachers were feeling as a result of pressure to have students score well on the Washington Assessment of Student Learning (WASL). “Research-based” curriculum had been adopted as a means of ensuring “student success.” Teachers did not feel that they truly had freedom to make choices regarding media because what happened in the classroom was dictated by the curriculum. This lack of control seemed to spawn a whole separate set of issues. Many staff members were disgruntled with the play production, stating that it took away from the curriculum, that the students disrupted programs and classrooms during the day with noise in the hallways and messes during production. Two teachers pointed to their observations that while it appeared as though all students were included, many were left out. This reaction could be a symptom of the “green-eyed monster,” or collegial jealousy that has been cited in case studies examining teachers who actually integrate technology (Wood, 2000; Labbo & Reinking, 2000).
While all of the teachers expressed the concern that technology was important, all of them, with the exception of the one teacher who fully integrated technology, abdicated responsibility for its use and implementation. The principal was willing to sign off on purchase orders without the scrutiny applied to other curriculum and materials. This was rationalized by others, relegating software to ‘supplemental’ materials. One teacher stated “no one has told us what the research is.”

Re-Examining Teacher Thinking

As an initial starting point for this study, the literature on teacher-thinking was reviewed. Carlgren and Lindblad (1991) noted a difference between “innovations governed by ideas” and “innovations governed by reactions” (p. 514). When teachers focused on ideas, their practice changed until intentions were realized. If, however, teachers based the decision to use an innovation on the reactions of someone else, e.g. reactions from parents, students or colleagues, thinking did not develop; there was no reflective thought. An assumption was made that initial intentions (goals) would be met. However, unlike innovations governed by ideas, there was not necessarily follow through to see that it happened. The relationship between a teacher’s knowledge and actual practice is complex. Teacher cognitions take years to develop and this knowledge is a result of several factors including individual experiences and circumstances as well as formal training (Schon, , 1987; Verloop, Van Driel & Meijer, 2002). How a teacher views the relationship between his/her knowledge and any innovation is an important factor in whether or not an innovation is utilized (Verloop, Van Driel & Meijer, 2002).

Technology Integration Diffusion of Innovation
Several linear models of technology integration diffusion of innovation have been presented. These include both Rogers (2000) and Sherry, Billig, Tavalin, & Gibson (2000) that were presented at the onset of the study, as well as one presented by James, Lamb, Bailey, and Householder (2000). In this study, the seven stages of concern during adoption were: awareness; informational; personal; consequence; collaboration; refocusing. More experienced users of technology had concerns that related to final three stages of adoption.

The notion of concerns being dependent upon experiences has been referenced as “primary and secondary barriers” (Judson & Sawada, 2000; Prater, 2001; Ertmer, Addison, Lane, Ross, & Woods, 1999). Both primary and secondary barriers are explained as being both intrinsic and extrinsic (Ertmer, Addison, Lane, Ross, & Woods, 1999) which is similar to research by Carlgren and Lindbland (1991). Primary barriers include: lack of access to computers and software, insufficient time to plan instruction, and inadequate technical and administrative support. Secondary barriers include: beliefs about teaching, beliefs about computers, established classroom practices, and unwillingness to change (Ertmer, Addison, Lane, Ross, & Woods, 1999). A teacher’s pedagogy, or beliefs and practices of teaching have been related to secondary barriers and differ depending on the individual teacher’s pedagogy (Maor, 1999; Pugalee, 2001; Judson & Sawada, 2000). As opposed to examining the diffusion of innovations in a linear fashion, there is support for examining adoption in a more holistic fashion. Dooley (1999) has offered a model where relevance, principal leadership, and intrinsic and extrinsic factors, including pedagogical beliefs, practices and exposure to innovations are considered in examining the diffusion of educational technologies.
In January of 2002, President Bush reauthorized the Elementary and Secondary Education Act. This bill contains an even larger allotment of money and support for technology from the federal government (Fletcher, 2002). Currently, 48 states have adopted or are developing assessments based on standards based reform efforts (Stecher & Chun, 2001). Reform and standards have impacted classroom practice and teacher’s have reacted in multiple ways (Adcock & Patton, 2001). Often, technology reform and education reform have paralleled each other as opposed to being incorporated (Peters, 2000), meaning that in many instances the purchasing of computing and development of skills was not coordinated with a building’s reorganization and examination of the curriculum and instructional processes included in education reform. When the two, both education reform and technology integration, have been fully combined in curriculum reform which includes examining pedagogy, positive results have been found for students (Bain & Smith, 2000).

Wrangle School is only one of many who are reacting to state mandates and standards-based testing. While they are aware of technology, it has not been included as a thoughtful component in restructuring. It has been viewed as an aside or supplement by most individuals. In the process of trying to address the needs of students, curricula have been adopted that appear to be “teacher proof”, disallowing deviation from scripted practice. Standards-based assessment and student accountability requirements will continue to be implemented and developed, and schools must continue to grapple with the role of educational technology. The impact that reform efforts are having on curriculum adoption is worthy of further study. At Wrangle School, teacher stress is high
and technology use is limited. Rationales vary amongst the educators as to the role of technology and why it is not being integrated.

Further Research

Computing tools are a failing innovation. If an understanding of why technology has not been integrated can be identified, the failure of future innovations may be alleviated and perhaps more importantly, options may be developed that would allow for appropriate and effective use of the technology that already exists within the public schools. Utilizing a holistic paradigm, the state of educational technology innovation diffusion in relation to education reform should be examined further. Understanding if the phenomenon at Wrangle is unique or if it is broader in scope may help to re-direct two separate reform movements that were meant to be consolidated.
References


teachers’ beliefs about the role of technology in the elementary classroom.


APPENDIX B

TEACHER INTERVIEW QUESTIONS

What grade level do you teach and how long have you been teaching?

Tell me about your classroom this year.

What is your daily schedule?

Tell me about your reading and language arts program and how you go about instruction.

Explain what is your most common use of instructional methods (grouping, lecture, etc).

How do you decide what to use (manipulatives, visuals, computers, etc).

Tell me about your math program and how you go about instruction.

Explain what is your most common use of instructional methods (grouping, lecture, etc).

How do you decide what to use (manipulatives, visuals, computers, etc).

Describe how educational technology is used in your classroom and within your building.

How have the WASL and EALR’s impacted your classroom practices?
APPENDIX C
ADMINISTRATOR INTERVIEW QUESTIONS

How long have you been a principal and what did you do before you became a principal?

Describe the school.

What is a day in the principal’s office like?.

Describe how curriculum is selected within the building and the district

Tell me about your reading and language arts program, math program.

How do teachers in your building decide what to use (manipulatives, visuals, computers, etc.)?

What is the role of assessment in the building and what assessments are given?

How has reform/restructuring impacted your building?

How has the WASL and EALRs impacted classroom practices?

How is technology selected/used in the building? What is available?

What are your favorite parts of being a principal?

What is the most frustrating part of being a principal?

In order to improve education, what is the one thing that needs to happen?
APPENDIX D

TECHNOLOGY INTEGRATION SURVEY

Adapted from ISTE Technology Integration Scale, (ISTE Homepage, 1999)

___ Technology based tools including: databases, spreadsheets, graphing packages, probes, calculators, multimedia applications, desktop publishing, and telecommunications augment selected instructional events (e.g., science kit experiment using spreadsheets graphs to analyze results, telecommunications activity involving data sharing among schools).

___ The use of computers is generally one step removed from the classroom (e.g., integrated learning system labs, special computer-based-pull-out programs, computer literacy classes, central word processing labs). Computer-based applications have little or no relevance to my instructional program.

___ Technology based tools serve as a supplement to the existing instructional program (e.g. tutorials, educational games, simulations). The electronic technology is employed either as extension activities or as enrichment exercises to the instructional program.

___ Technology is a process, product (e.g., invention, patent, new software design), and tool toward students solving authentic problems related to an identified “real world” problem or issue. Technology provides a seamless medium for
information queries, problem-solving, and/or product development. Students have ready access to and a complete understanding of a vast array of technology based tools to accomplish any particular task.

___ I have a lack of access to technology based tools or lack of time to pursue electronic technology implementation. Existing technology is predominantly text-based (e.g., photocopies, chalkboard, overhead projector)

___ Technology based tools are integrated in a structured manner that provides rich context for students’ understanding of the pertinent concepts, themes, and processes. I rely mostly on prepackaged materials to aid me in the daily operation of their instructional curriculum. Technology (e.g., multimedia, telecommunications, databases, spreadsheets, word processing) is used as a tool to identify and solve authentic problems relating to an overall theme/concept.

___ I can readily create integrated units with routine little intervention(assistance) from outside resources. Technology based tools are easily integrated in a routine manner that provides rich context for students’ understanding of the pertinent concepts, themes, and processes. Technology (e.g., multimedia, telecommunications, databases, spreadsheets, word processing) is a tool used to identify and solve authentic problems relating to an overall theme/concept.
Technology access is extended beyond the classroom. I actively elicit technology applications and networking from business enterprises, governmental agencies (e.g., contacting NASA to establish a link to an orbiting space shuttle on the Internet), research institutions, and universities to expand student experiences directed at problem-solving, issues resolution, and student activism surrounding a major theme/concept.
APPENDIX E

SAMPLE TEACHER INTERVIEW

LR - ok, maybe you could tell me a little bit about yourself and teaching; how long have you been teaching, maybe about your masters

CH - ok, this is my 3rd year of teaching but I’ve always taught 3rd grade each year, so I’ve only had experience with full-time teaching in 3rd grade, although I’ve done practicums you know, in other grades, um, I’m getting my masters, and I’m in the 2nd year of my master’s program at City University in Curriculum and Instruction, so I’ll be finishing that this June and plan on, in the future, possibly moving up into the intermediate grades, possibly high school. Eventually want to try a college professor, that’s my future goal

LR - so this is your research classroom

CH - yeah exactly, exactly, so anyway, that’s the plans for the future. Until then, I’m just really enjoying the elementary level staying at this level, um, 3rd, 4th grades and stick with that for awhile.

LR - ok, what I’m gonna do is go through a list of questions and you don’t have to answer any of them if you don’t want to, and can quit if you need to. . . . can you describe a typical day for you?
CH - ok, I have a very scheduled classroom with the same students and the
same schedule daily, it seems to be easier for the children to follow and
less, maybe less time for transition and um, direction giving for me, which
is nice, so we do an entry task every morning and we actually spend about
an hour on that each morning so that they’re independently working on
something and I’m able to wake up and get moving along with them, so
I’m taking care of independent workers and monitoring them and group
work, so we do that for quite a while and we finish up anything that was
left from the previous day, which is always a nice feeling, and then we end
up having a mini-lesson in the morning, we do some scheduling and that
just depends on the unit that I’m doing, I plan units and usually they’re
three or four weeks long and I try to cycle back to them every once in a
while so that I’m trying to design a spiraling curriculum and then we have
recess. After recess, I do a daily read-aloud, I think that is really
important to help build their vocabulary so do that everyday while they
finish up work and at that time we have choice of what they would like to
work on, some art work, or what not, then after that we have about an hour
to an hour and fifteen minutes for math and that also is unit based as well
so we will go through a whole unit and we spend time on that and review
and spiral back around on that also, and lunch/recess and then afternoon is
language arts, and that works fairly well after the lunch break, we sit and
read and do writing and arts and all different kinds of listening activities
so everything I do pretty much integrated, that’s the only way I have time to teach everything I am supposed to teach. then um, afternoon recess and they have a specialty each day, which is nice, I have planning each day for forty-five minutes

LR - I’m writing, just so you are aware, of questions I need to follow up on..

CH - oh sure, sure, and then at the end of the day, at least it is very unusual this year because we only have a 25 minute period, so it’s not enough time to teach a lesson and it’s a little too long for finishing up work, so we do a silent reading and then I can meet with students individually to do conferencing, to do reading out loud, do reading inventories or finishing up math, so that works out fairly well. I feel like my time is a little more cramped this year because of the unusual scheduling, but I’m getting it all in, somehow, I don’t know how, but I am.

LR - can you talk about the unusual scheduling, what’s different this year; do you have a choice; I’m gonna ask you several questions, you can answer how you want. Do you have a choice in how things are scheduled, do you have certain times you’re supposed to do things

CH - at this particular school, we don’t have any sort of scheduled time, but our other schools have reading all at a certain time, um, no we pretty much
plan all of our own days, um, what’s a little different this year is I’m having an afternoon specialty instead of a morning, so my entry task time is longer and it’s just a little bit different because I have shorter blocks of time to work in, so that’s hard for me, especially doing integrated kinds of curriculum

LR - and what is your specialty time, what are the choices

CH - they have 2 days of PE, 2 days of music and 1 day of library

LR - ok,

CH - um, and I’m hoping in the future we’ll have some kind of computer lab time; we don’t have a computer lab here now, so.

LR - what kind of technology do you have available in your room and in your school?

CH - oh goodness, it’s horrible, it really is, um, we have 4 computers; one of them which has Windows or two, excuse me, two which have Windows 95, the other two are completely useless as far as I’m concerned. All I can really do on them are some word processing and some of the games that I have that are lower end software, so we do, I do teach them games and
that’s the most I can do, although part of my master’s program in Ed Tech, I feel like I have a lot of knowledge to share but I’m not able to do that because of the lack of the technology in this district, so I really feel pressure as far as trying to teach them and not having the equipment to do so.

LR - and where did the equipment come from that you have, like the software that you have

CH - software, I’ve just chosen it, I’ve bought from stores, from garage sales, borrowed and uh, pretty much just try things out to see if kids like them, they’re educational, they’re age appropriate and then keep them. That’s about it for computers, though I mean, we don’t …we use calculators as part of math, uh, the technology in this district is not where it needs to be.

LR - do you foresee it happening in the future, is it…

CH - I hope so, um, we’re trying to pass a bond this month and that is a big cause of technology, they will tie it all together, uh, really it’s one of the major stresses I have about teaching in this district, is just the lack of technology, it really is; appearing that they’re behind the times as far as other school districts go, so it’s the lack of technology, it really is. It is
appearing as they are behind the times compared to other districts, so it is frustrating…

LR - especially if you have an interest in; do you have Internet access

CH - yes. One computer and what worries me, also, is that there’s no filter in this district for kids, so if you’re going to be on the Internet, uh, you have to sit there and watch them the whole time and they need Internet cards and it is a huge hassle, so basically they don’t use the internet. I’ll do particular things, say Encarta, the encyclopedia, and I have to go on strict searches just for things on that, so they’re not exposed to a whole bunch of other things to find, but there’s no filter which is really a bummer also,

LR - yeah, I can imagine that. Ok, I’m gonna come back to the tech part and double back on this, um, you talked about um, I asked you about the scheduling and you said; one thing that you had said that I’d like to elaborate on is you said that; how do you know what needs to be taught, you made that comment, I wanna make sure that, you don’t have time, or you do have time but you have to be pretty careful

CH - sure, um, our curriculum in this district is based on hodgepodge, pretty much, and I hate to say that and mean it negatively, because I appreciate part of that, being that I can be creative and put together my own things.
Basically I’ve made all my curriculum and we are given certain things to teach in a binder, so there’s a math binder for teachers, there’s a reading expectation that is taught at each grade level, uh, there’s a social studies topics and science topics. Basically you design everything you teach, how would you teach it is never explained. There are suggested resources and suggested activities, but pretty much curriculum is up to me and the time is definitely up to me, so we have a list, we have obligations that have to be fulfilled and taught and of course the report card goes with it, our scope and sequence for each subject area go with that, but it’s not always possible to get through all of it.

LR - do you know where the, um, list of obligations come from, the scope, the sequence, when that was developed

CH - it was developed, actually, I’m sitting on a committee right now, the math committee for the district, because we are trying to purchase or adopt curriculum for next year because people are frustrated with the hodgepodge.

LR - no formal curriculum

CH - no formal program
LR - what about the reading and language arts?

CH - we have something called First Steps which is a philosophy, not a program, so basically I spent all my money buying class sets of books and developing activities, buying math resources and tools developing activities, so there’s no set books or teacher’s guide or anything like that…..what…(can’t hear) but um

LR - talking about the math curriculum

CH - oh the math curriculum, I’m sorry, my math committee, so anyway, we are looking toward, um, the scope and sequence and seeing if it aligns because the state at the same time the district put out their scope and the state put out what’s called their frameworks, so that I was on the committee to try to fine tune and we realized that our expectations for the district were considerably more than the states, so we tried to raise the bar on that and I think they are doing the same thing on the reading committee right now…(can’t hear)

LR - so this is just happening this year, they’re starting things, so let me see if I have this right; the district has a scope and sequence that they’ve developed, the state developed the framework, I’m not sure I’m using
CH - this was about 1998 (can’t hear) somewhere in there

LR - that the state came out with their framework

CH - right

LR - and so now the district is trying to take theirs and match it with the state

CH - yeah, trying to line them

LR - so that the EALR’s are met; so how, what’s it like in a building or a district where there’s no set curriculum and with the pressure for WASL scores or what are your thoughts on that

CH - that has been our whole staff big complaint, honestly, um, like I said, there’s a positive and there’s a negative. The positive is I, as a teacher, am not forced to teach something that I don’t think is age appropriate, developmentally appropriate or that possibly I don’t feel necessary. At the same time, there is a huge push for this testing, standardized testing is the key to our money and whatnot, so I feel like if I’m not aligned with that, a lot of what I teach is somewhat pointless as far as trying to exceed them to that level, to pass through the WASL with graduation requirements, so I feel like we’re all kind of just wandering, kind of lost as far as what to
teach, what are the key points that I can teach at each grade level, so a lot of the staff, including myself, feel overwhelmed by the fact that we need more aligned curriculum in each area so that we can say ok, here’s what I’m teaching, these are my objectives, these are what the kids will do by the end of the year if not I will re-teach, remediate, what have you, and I think that we’re ready for some kind of adopted program or some kind of way of aligning them grade to grade and common vocabulary that teachers can use between grades. What we do is completely different. It is a mess right now, so I think that will be changing soon.

LR - where do you see technology fitting into the framework

CH - I see it everywhere um, I see it fitting in every subject area, I’m doing a lot more project based approaches to teaching and learning, um, because of lack of time, that would be the best solution would be to integrate it all into some sort of meaningful, real life scenario for children. So I see technology being able to fit anywhere in the curriculum. I don’t see it as a separate component, so that (can’t understand) is hard to fathom too, so a lot of teachers say, “technology? How am I going to fit that into my day in addition to a, b, c, and d, well you do the projects, you put it together somehow so children are learning with technology as a component to what they are already doing.
LR - what would you think would happen if one of the programs you adopted didn’t include technology or have technology integrated. Could you integrate?

CH - oh definitely, and that’s part of, with my masters, too, I’ve learned several different pieces of software that I, were fabulous, that I would love to use in any situation; math, science, anything

LR - can you tell me what those are or

CH - well one program I’m fond of is Kidspiration and Inspiration are two great, they’re just graphic organizer programs and really incorporate visual learning and writing. I love PowerPoint, PowerPoint is a tool that I could use to teach, the kids could use to show me what they have learned, such as (can’t hear) and I just wish that I could have the technology

LR - and you don’t have anything else, a projector?

CH - the EXCEL teacher does and she is willing to lone it out I’m not sure what the library has

LR - what’s the EXCEL teacher
CH - she is a gifted teacher in the district. We have a multi-age gifted program in the district.

LR - so it probably, is she in the building?, is she part of your building?

CH - yes, yes, she’s a teacher in the building.

LR - I am wondering how difficult it is to get it.

CH - no, I mean it’s not too difficult but even trying to; how do you create a PowerPoint without a standard, you know, different things like that, it just all tied together and it just doesn’t work out. so most of the time I’ll do it at home and just deal with it there. I actually made a PowerPoint this year for our open house for next year. What I’ll just do is run it on each computer from a file folder and do it as well; I could possibly run it through my TV also, , but you know, what a pain if you don’t have it right there, it’s really easier to say forget it, you know, no other teachers are doing it anyway, why should I

LR - so you say a limiting factor then is, or a barrier to technology is the access and the time that it would take even if you could find the time it takes time to then get the equipment. so it sounds like you have an understanding of what it takes for the technology
CH - yeah I do, and that’s partly because of my masters program. It actually had a lot more to do with it. I find that most teachers don’t understand technology. They haven’t been educated very well, so I’ve been answering questions around lately for other teachers, which is fun, it’s great, that people are giving it a try, but I mean with the lack of equipment and materials, there is no way it is going to happen.

LR - do you know what’s in your bond (can’t hear) if your bond passes, would it be a computer lab or do you even have a chance in the building for that

CH - we’ve talked about computer lab, however we don’t have space. um, the bond also includes, they lumped everything together, they put a new elementary school along with tech, along with other monies. Different sorts of things all together in one big sum and so I really don’t know. It hasn’t really been adequately discussed with us at this point.

LR - you just know that there’s money for technology

CH - yeah, I don’t know what it is, if that’s for the high school, I don’t know, could be, it really honestly could be. we just basically get hand me downs, so I don’t want any more hand-me-downs, just take them away, I don’t need them, I’m terrible
LR - um, go back to my list of questions I’m supposed to get through. How would you describe your teaching style?

CH - oh boy, um, having studied philosophy, educational philosophies, I’d say I’m a combination of so many things it’s hard to pinpoint. I really believe I am a bit of everything. I strongly believe that there needs to be some direct instruction, however not the majority. I believe there needs to be a lot of group cooperation and cooperative learning (tape change) facilitator rather than answer giver or the encyclopedia of knowledge, so I really try to get the kids independently motivated and used to using each other as a resource. I don’t know if that explains my style, but um, (can’t hear)

LR - you sound like a very, it sounds like it’d be fun to be in your classroom

CH - yeah, thank you, oh thank you. Yeah, no I do draw a little bit from everywhere, you know, I; there’s this, when I was in college I know the movement just to be constructivist, kind of teacher and I agree with a lot of those things, however, running the classroom day to day that wouldn’t fit my personality like that, so I think you know, I take a little bit of that, I take a little bit of everything because every kid will benefit from a different kind of instruction so it seems to work for me at this point
LR - what method, and you’ve sort of answered this, but in terms of methods of instruction, do you have any that you; you said a little direct instruction, maybe you could just explain one more time a little bit about your method?

CH - sure. I do a lot of the, the model of I do, we do, you do kind of thing, the really scaffold approach and I do a lot of inquiry, based on, my KWL charts, what you already know, what we want to learn, you know, looking that. I believe there should be, you know, pretty much guided, guided practice before any sort of independent practice, although sometimes there requires them just to junk that, so I take different approaches for whatever I’m teaching and feel that inquiry really works well with kids.

LR - if you could improve what went on in your classroom, what would that be, what would you want

CH - um well technology, um, math problem solving. I think I love to teach it, I don’t think kids get it a lot of the time, so I would like to just try a bunch of different approaches to teaching (can’t hear) and for them to be able to be analytical thinkers and write down the process and just kind of overhaul what I call challenge math, it’s just really a problem solver kind of unit and doing that for next year to revise and really have them understand and be able to explain it; so that’s what I’m working on, math
problem solving and you know, just making sure that kids are able to communicate verbally and in written form anything that they need, you know, um, just making sure that that’s in place all the time, but as far as, as far as my days go, I really kind of a tight ship and it runs really well, it really does, I’m really satisfied that they’re learning all the time; not from me, from each other and uh I am very satisfied with that. I just think I can tweak a few pieces of the curriculum to really work better for all of us.

LR - how do you assess, how do you know if kids are learning

CH - constantly, I’m constantly checklists, um, just a lot of observation, we’ll just step back from what they are doing without them knowing and just watch and listen, and check like that. I’ll do some of the tests that are, like Star tests and QRI kinds of things, just to make sure they’re on track

LR - now what’s QRI

CH - QRI is qualitative reading inventory, it’s that 5th grade level test which we give several times.

LR - ok. So (can’t understand)

CH - our school doesn’t have a set thing that I have to do, except the ITBS
LR - how do the kids do with that, the ITBS you don’t have answers, just your classroom as a whole, what’s happening with the standardized testing

CH - uh, in this building, we’re significantly low…..that is why we are trying to get some aligned curriculum to help us with that

LR - have they been consistently below or have they been dropping or

CH - yes, and we’ve only, I think this (can’t hear) and it sounds like it has always been that way. Now it is going up gradually, um, along with WASL and ITBS and that is good, it’s different year to year also, but they’re also; you’re seeing a lot of varying …

LR - how do you describe the population, because the school looks very affluent, when I drive up here

CH - yeah, it’s very homogenous, it’s uh, basic here middle to upper middle class students, uh, a lot come from very classic American family, some of them have both parents at home, some of them don’t, so I mean there’s changes in that little differences in those kinds of things, but we have a very small minority population. they’re mostly all Caucasian. yeah, and I have actually this year is my first year and had a couple Spanish speakers,
but basically everybody is English only and I don’t know what the percentages that receive special services, um, I know that in my three years, I’ve had possibly, less than a handful, so that kind of gives you an idea. It’s very much the same if you go to other classrooms.

LR - what are your greatest frustrations as a teacher

CH - lack of time, uh, and I am not fond of the decision making process as far as the administration goes. A lot of times I feel frustration mostly on committees. Frustrations are outside of my classroom. I love it when I am in my classroom.. my job, it’s, yeah, it is the outside things that really get to me.

LR - can you talk about what those are?

CH - uh huh, sure, um, a lot of times committees are formed to help make decisions, but I feel that a lot of that time decisions are previously made before the committee forms and the agenda is already in place

LR - and have you been on one of those committees, can you give an example of
CH - I’m on several right now, um, I feel I’m on the learning improvement team for our school. We are making our goals for next year and I really feel that there is an agenda, an agenda from the principal, maybe that comes from the district, um, that she has in mind already and I think that our input, that I, it’s important because we need to hear each others thinking about really (can’t understand) uh, most of my frustrations come from I’m not sure how I’m really helping out as far as sitting on committees that take up so much time, and it does!

LR - so it sounds like you spend a lot of time outside of your classroom

CH - yes, and I feel they really need to be cut down. we need to have this significant goal for each committee and there’s just too many, and it’s just burning us out. so; anyway, committees are what gets me going because it, it’s a top down, it really is a top down even though they try to make it appear that it is not. So, I feel my input isn’t necessarily helpful. That is my greatest frustration as a teacher.

LR - and you mentioned the first one was a time, a lack of time

CH - uh huh. Yes I have a planning every day, so I should be thankful because I know a lot of people don’t, um, however, I’m paid for a 7 and a half hour day and after I spent my first year up here every weekend, I said, I said no
more, absolutely no more, I mean it was too much, it just really, I realized
I couldn’t continue to do that, that I just wouldn’t last. So I’m paid for 7
and a half hour day. I usually stay beyond my time both morning and
evening, and I still couldn’t get everything done that I want, I mean I
could spend 20 hours a day here and not get everything done. Um, I also
feel like I just don’t have time to check out what else is out there, you
know, I don’t have time to go sit on the Internet and see other people’s
lesson plans, I don’t have time to go to my next door neighbor’s classroom
and actually watch her. I don’t have time to call all my student’s parents
and say wow, you have an amazing child. I don’t have time to do much of
anything besides get my stuff ready for the next day, and that’s it and
that’s kind of where I have had to draw the line because it is just a never
ending cycle. That’s another frustration, but anyway…

LR - well I’m looking at my watch and it’s, I have another interview scheduled

CH - ok, good

LR - I appreciate your time

CH - yes

LR - so much
LR- I am talking with the principal. Can you tell me how long you have been a principal and what you did before you were a principal.

PP- This is my third year here as a principal and the year before that I was a principal in Concrete elementary. Prior to that I taught for about twenty three years as a second grade teacher. I have taught esl at the college level and I have taught adult basic ed. Prep. For a community college.

LR- Wow.

PP- Both day and night school. I have been in Mt. For about nineteen years.

(inaudible clarification of jobs)

LR- so you have been a principal for four years.

PP- I really like it. It is so different. You get to see all of the kids now and get a more global picture. When you are in a classroom, you just get to see what is happening in your own little world. There isn’t the personal contact that happens in the classroom, but.
LR- What is your favorite part of being a principal?

PP- Well, I do like being able to talk to kids and bring them in and call home for positive reasons, and the staff is wonderful here and the parents are very supportive. And that is very nice.

LR- I just saw your play. That must be very exciting.

PP- Oh, yes, it is very nice to have that. They do a fabulous job. You know, they start from the ground and work all the way up. SO many kids are involved that wouldn’t normally have the opportunity to experience that, with problems with transportation and after school.

LR- I couldn’t believe the costumes.

PP- Oh yeah, they are hand made.

LR- It was so professional.

PP- Oh yes. It is something we can all be proud of.
LR- It was fun. I wasn’t expecting to get to see that. Can you describe the school here? The demographics, the number of free and reduced lunch, what is the population?

PP- We have about 360 students and it has fluctuated. We have a lot of mobility…it is fairly high and I can’t tell you percentages at this point. Our free and reduced is just over 53 percent. We have Hispanics and caucasions, we have three black children. That is predominantly the population. We have a district magnet program which is the district program for children who have dyslexia, at this time we have a grade level per class, so one class per grade level and they are integrated in with the SFA reading, they are integrated into the play, into all of the activities here. It is a self contained class and they use a multi-sensory approach, it has some extra instructions and work with their disabilities, but learn coping strategies and ways to be successful.

LR- Is that kindergarten through sixth grade, or just grade one?

PP- Just grade one through sixth. We also have a transitional first grade. Those children come throughout the district and they are screened by their classroom kindergarten teachers and then at least the teacher gives an overview for the parents and then goes to the some of the schools that request it and observe some of the children. Its for children that have late birthdays, that are aboved average in intelligence, that have signs of immaturity and that is what it is predominantly
for. Our K program is half days. So children come every day half days. SO, that is kind of…..

LR- My first day substituting was here. (brief talk)

PP- I also want to tell you that we have special ed. And for the most part the teacher goes into the classroom and she does teach an SFA group, and we also have Angie, who is our bi-lingual teacher and she doesn’t do an SFA group, but she does pre-literacy.

LR- Now is everyone involved involved with the SFA, I had talked with the PE teacher and she said she taught a group

PP- Right, right. Our music teacher does not teach because she is not a full time teacher but we are hoping to get an extra person. We do have our PE teacher, our counselor, and our EL teacher. Our EL teacher and Kay share a group, so on Monday Tuesday and Wednesday or EL learning teacher teaches a group and Kay teaches on Thursday and Friday. And then we did just get an I78 person and she does our reading and math group and we have another I738 person that does reading and math and she also works with the low classes.

LR- And what is an I-728?
PP- An I-728 was to take the place of better schools for dollars. Our district had a committee and we decided how that money should be spent. We had to take a look at the needs of our school and then make a determination based on that.

LR- Now could it be spent on staff or materials or was it directed

PP- That was depending on every school. It did not buy a space. So we could not buy a portable. That was a challenge for some of the schools in the district, you know, because you could not get an additional space, Every school got one staff person and then you had additional money. And I think we had, well, I am not even going to quote because I don’t remember exactly the amount of money we had, but we did have enough to get a half time person and then you could determine whether that person was going to be a half time teacher or do a before or after school program, it was to improve student learning and it could be either to help bring students that are near to the bar to get up and over or it was to work with enrichment. People were very creative with what they did with the funds throughout the district.

LR- Is that federal funded or state?

PP- State.

LR- Did every district in the state get that?
PP- Yeah. It was nice to have. We are worried that it is going to go away with all of the budget constraints,

LR- What are your biggest worries as a principal?

PP- My biggest, you know, our special ed is not funded at the rate we need it to be funded and we have children with some very special needs we have an autistic child, we have some children that need to have some one on one aids and there just isn’t the money to cover those high costs. That are associated with one on one aids. We try to be careful with how we assign those and what we write in an IEP. It is huge concern.

LR- And how do the teachers, the staff deal with those special needs and concerns

PP- Well, I think there is a high degree of stress because you have this one child that, if they do not have an aid, they consume a tremendous amount of time, and so the teacher has the rest of the class that they are responsible for and they need to have the ability to teach. This child interferes with their ability to teach and other children’s ability to learn. Not much happens as far as productivity and we , our staff is wonderful. We spend… a lot, We have tried to fund some of the students with the I728 money and we have Medicaid dollars that we have funded extra, above and beyond, just so we ….it is tough.
LR- It is. It is. I was a special ed teacher before I went back to school

PP- Yeah it is really hard.

LR- What has been the history of curriculum adoption. How does that work? Is it a district process, a school process a cycle?

PP- Well, yes. It is pretty much a district process. For instance, the SFA for reading was piloted first by Martin Elementary, and then they felt very successful and they brought that information to the administrators and that happened to be the year that I was doing my internship and then the principal at the time and along with other principals applied for the Porter Obee grant. Some of the schools did get it and some of the schools didn’t get it, but, then, the district had several meetings with Madison and representatives from the SFA program came to speak with the teachers and then they decided to take a vote and you had to have 80 percent or higher to adopt. Our school was, met the 80 percent or above and then several of the 80 percent. In fact all of the schools in Mt. Vernon met the requirement. So then there was lots of training that went with that. There was a conference that two people, Jan our facilitator and one other person would go to. This year it was one other teacher plus two instructional assistants and myself. So we are trying to get more people involved to go to those trainings as well as what is available locally. SO that has continued. They come and do site visits. So that
has been a very strong structure. Very, research and data driven program which
has been very very helpful. As far as the math committee, there is a district
committee and they go through and look at the different research and data and
then make a recommendation. There was a teacher representative from our
building that they would go through and they pilot it for one year, so every school
had one person that would use the material for a year and then it was presented to
the staffs throughout the districts. For K through five they used trailblazers and
for sixth through they used connective math. And then again the trainings went
on. So, Judy came over and did the follow up….and they have continual training
and so forth. This last year they did the writing curriculum, the write source, so
again, we had a person be on the writing team and they go through as similar
process and it goes through the board and all that. Social studies and science are
up and so, it seems like every year it seems like something is going on. And one
of the challenges is that with our ninety minutes of reading every day and then our
minimum of an hour for math, and we have to get library music and PE in, it just,
the recesses and the lunch, and it is just a challenge to get everything in, junior
achievement and the other things that are important in the curriculum, to be
available and have a time fit. And that is the challenge of it. You know, I was
talking to our facilitator today and said, you know we used to have to scrounge
and we would look high and low for material and bring it all in, and now there is,
materials and things and the time to present it and make sure the students
understand it. We still have a lot of material and we don’t get to adapt some of
the things that we should.
LR- Maybe you could talk about the materials that they use. Do you see teachers using what has been provided, or comes with the curriculum packets, or teachers bringing in a lot of their own stuff, or…what do you see happening?

PP- Kind of a little bit of both. In the SFA, one of the things that we have tried to do is provide for (realia?) so that those children who have English as a second language or have that background, they are presented with materials that go along with the reading, but have, you know, if there is a fruit in the story then they have apples, oranges or other types of fruit that go along so that they can relate to that. I think as far as SFA, people are very good at using things and staying to the curriculum. One of the exciting things this year, Jan and I are participating in the leadership team and so once a month we meet with the principals and someone from SFA to share information, the data, the techniques and what to look for, so to help those kids and the teachers go from the routine stage to the refinement stage. And so hopefully results will show that they are improving. As far as math, I think this is a lot more challenging because people are used to teaching with algorithms and touch math and some of those types of methods and have a difficult time because we have ITBS tests which is still relying on the basic algorithms, and so there is this compassion to teach children math and have the foundation of math, but also teach the reasoning skills, so there is kind of a tug of war going on. You know our test scores, the results are in the paper and it is really unfortunate, both for the WASL and the ITBS. To see those results and you
know that it takes a while to get the vocabulary and the procedures and being able to explain and that isn’t the part that is not reported in the papers.

**LR** - Going back to the idea of methods, you talked a little bit about the math. What do you see as a principal when you start to watch teachers as they go through changes. Is the curriculum encouraging them to change teaching practices? Or are they adopting curricula that matches that the teaching practices that they already have in place? Did that question make sense?

**PP** - Yeah. I think some of the are feeling more comfortable because not only are they participating with this is their second year of implementation but they are also participating in the DMI, I am sorry, I don’t know what that… I think it is Developing Mathematical Ideas, but don’t quote me, But they have a district team that is going through and it is basically teaching adults how to teach math and the reasoning skills, so I think those people that are participating in that are feeling more comfortable and confident. But I think that the biggest problem is that we still have, like I say, the ITBS. People want those computational skills, they want to teach the math curriculum the way the trailblazers presents it, with a very structured approach to thinking skills and finding answers and you need to explain the answer, but there is this huge tug of the computation part.
LR-  And what would you say teachers need to do. Would you encourage them to not
follow the curriculum so closely, or take more of the training, or, and why do you
think the teachers want to follow the curriculum so closely?

PP-  Well, as in SFA explained to us, the first part when you are getting used to it, you
have that guide there, you have the bible, and it gives you the fundamentals and it
gives you a step by step approach. IN order to move from the routine to the
refinement stage is really the key, because that is where we start seeing results. I
think it is just a matter of getting the confidence. One of the things I did when I
first came, I did say I want to observe you in SFA, because it was the second year.
Last year, because it was the first year, asked to go in and observe the math
lesson, this is the year, getting your feet wet, getting comfortable, so that you feel
like you are understanding what all of this is about. The same with writing this
year. If you want me to come in, I would love to see it, but you don’t have to
have a formal observation in it. You know, just kind of getting your feet solid and
on the ground is really important. Taking risks, it is just like all of us, trying
something new, sometimes it works and sometimes it doesn’t, and it is really
important that people feel comfortable with “oh, that didn’t go very well”, but the
freedom to evaluate, “Well, how would I do this next time?” Did that answer
your question? I feel like I am rambling?
LR- No, no. That was great. Educational technology, computers and computing tools. What has happened in your building/district with that? I know a lot of districts have passed bonds.

PP- Well, there are a couple of phases. When I first came here, the teacher’s Gates Grant came available and we had one person get it the first year, we had another person get it last year. This year it is open to K-2 bands and two people can apply, 3-5 grades can apply, again, 2 people, and 6-8 can apply. We have one person at grade 2 that will apply and we have two at 3-5. I am really excited. I am hoping that they get that opportunity because they get about 9,000 of hardware and software that they can use in their classrooms. We have one now that got a grant last year that was through the ESD for technology and unfortunately that hasn’t been as satisfactory. It has been disorganized and not very successful, but that, in that respect, we have a couple of people who have gotten the (Cluck?) Grants, and a couple of grant things…one teacher got one when I was here teaching and as far as our building, we have gotten some Medicaid dollars and so our commitment was to get every teacher a computer and that sort of thing. And last year I went through and made a connection with the ESD and people had the opportunity to go to the ESD and look at different software and things that were grade appropriate and developmentally appropriate. Our PTA was committed to do a read-a-thon that was to be for technology and that unfortunately has been delayed. It has been delayed because it was approved through site council last year and then I go sick at the end of the summer and it got stalled but our plan is
to have airport systems on our top floor, middle floor and basement floor. And then two additional ones per classroom so that they can just plug the airport systems in. We are planning on buying a minimum of ten laptop computers and possibly twelve so that those could be distributed throughout the buildings for different classrooms teachers and they could check them out and make sure they are charged for the next day and that kind of thing. We are really excited about that. You know, I just met with Ken F. who is our person at the district level to get that ball rolling again. We hope that the grant and the tech lab, we want to increase those as time goes on. We’ll have the technology available and the people that have the grants have implemented them and kids are on the computer and it is fantastic, just really exciting, to see kids….to see them have these opportunities.

LR- When you looked at software, do you know what kind of software was primarily selected or how people went about selecting software?

PP- Well, one thing they did was they went down to the ESD, or some people had used certain programs before on their own and I think they selected a wide variety on reading and phonemic awareness and writing type things. Math. I am not really sure. I didn’t do the ordering. We have two people that are assigned to be the building representatives and the librarian is one and then Mr. G is the other one, so we let them do that. I just sign (laughing) and say I will pay for it. It makes life easier.
LR- What do you see as the role of technology in teaching and what impact it will have on teachers …and students.

PP- Yeah, I think that was the question as far as how we are going to bring the teachers and the staff up to speed. I did look into an Ameri-Corp person to come and they do have them specifically targeted for technology and I think as we get more lap tops for students then, we’ll have someone to maintain a small lab, then that person would also be responsible for helping the classroom teacher because many of them are not confident and do not feel like they could teach a lesson based on their knowledge right now. They are pretty confident as far as word processing and some of them can make charts and graphs and that sort of thing, or keeping their grades on that, but as far as being able to share the equipment sharing information, using LCD panels and that sort of thing, they need some instruction.

LR- and in terms of incorporating it into instruction….

PP- Right. Right. Some of them have gone to the one-classroom computer instruction workshop and have taken technology workshops, but actually turning that into instruction with kids, that…(inaudible)
LR- Have you gotten feedback from them on what they felt about the workshops that they have gone to?

PP- I think some of them are helpful, but I heard from one person that, as far as the one-computer classroom workshop, that that wasn’t as helpful as they would have liked.

LR- I am curious about these technology workshops, what is taught….I am wanting to ask teachers what do you think?

PP- Right, right.

LR- I would like the teacher’s opinion on what needs to happen.

PP- I know it would be really helpful, and when I was the principal at Concrete, we did set some up. It wasn’t me, but it was somebody on the staff, that organized at the ESD to actually go down and take classes because up there, what money was used to do that, but again, every classroom had one computer. And so it was really important and we had some people that just set up their computers in one room and on a certain afternoon, the staff would come and they would actually go step by step through because some people had never been on a computer before. But our PE teacher was at the point that when she retired they got her a digital camera (laughing) and she is just an expert now! Like, she didn’t know about
email, she didn’t know about anything but yet she had kind of a mentor and it was
kind of phenomenal what she knows now.

But it is time. You know, people have to have someone sit next to them and show
them one thing, and go side by side and kind of mentor, otherwise you don’t make
time during the course of the day. There are just too many other things that need
to be done, but unless you have a designated time or a designated person,
(inaudible)

LR- so would you say, this is kind of a leading question, when teachers decide what
media to use, when to use an overhead, when to use a computer, bulletin board,
white board (interruption, tape player off)

What was asking you? Oh, yes, in terms of what media teachers use to support
their instruction, what do you think, what do you observe as being the most
important. Why do teachers choose to use what they do, overheads,

PP- With the SFA program, most of the material is done on the overhead, so they
have their word practice on the overhead, they have their treasure hunt questions
on the overhead, so, I think that has just been done because that is the way the
program has been set up. So, in math, I think some things are done on the
overhead, I think a lot of the manipulative, the hands on, a lot is kids experiencing
the different concepts, as far as people using LCD panels, that has been done
through a grant and so I think more people would use it if they had it in their
classroom. So, I know that with the grant that came about, that teachers can use those. I can’t think of what else.

LR- So what you are saying is that what curriculum the teachers use helps determine what methods and media is used for instruction. There is a debate on what a teacher has in the classroom influences what a teacher selects. But I am hearing that is has more to do with curriculum? At least in your school.

PP- Right. And just the availability. Because the teachers don’t have the availability. For the most part if they didn’t receive a grant, and they don’t have the technology to put it up on the screen. They do have one to check out, but people do use that. Michael has the step by step for a Power Point presentation, People can use that, but again, it is just a matter of, I think that some have used it and

LR- I’ll ask you one more question. How would you describe…what would you say that an effective teacher does?

PP- I think, and we have some wonderful staff, it is so much fun and I have taught for so long, when, you know, I was teaching way back in the days when we had workbooks and everyone did every page, and now we know things about learning and about learning styles and people do adapt these things. So, I am sure that we are going to find out in the years to come that there is something better. I think people engage the students, They keep track of the students, getting the students
involved by giving the students some information, by allowing them to predict information, to test their predictions. To read and explore on their own, they learn how to ask questions. They learn how to come to an answer, even though their answer may not be right, the results on reading and math, or writing, scoring through rubrics and they use that information to guide their instruction for their lessons….what else…helping kids to understand that learning doesn’t take place only at school, it is only part of it, and I think that, when I was going to school I couldn’t figure out why we were doing things, and I think now in school there is a purpose for this, and this is where you are going to use it and why, and I think there are a lot of other places that we don’t even think about today because technology is changing, and just the whole world is changing, so, just the research that is available, the data, the scores, being able to have kids tested, methods,…..I hate to say this, but I think that test results are really important. It has brought us to a different level, to different expectations for kids, and I think we need to keep in mind developmentally appropriate activities and learning for kids. I think that sometimes we do things that aren’t appropriate, and we do so much to build their self esteem and we try to make them feel that everybody is unique and everybody is capable and yet we get a WASL score or a test result and we….and I think they are important and we all need to strive to do our best, but we have to be very very careful, and educate parents and try to get them so that they are understanding what is happening, and it doesn’t just happen at school and it is a (inaudible)..you know, it used to be that parents came to a parent conference, and you know, Uh-huh, uh-huh, and now they are really requested to be a part. Reading at home,
signing papers, practicing spelling, help with the math and that sort of thing. We have always had homework, and it wasn’t really participatory. They would help on occasion, but not to the degree that we are asking people to be involved now.

LR- So, to improve education, what would you say needs to be done? To improve teaching in the classrooms, if you could provide something what would it be?

PP- In my perfect world, and this is something that I probably won’t live to see, but I would love to have the school open 24 hours a day, because I think we could provide all kinds of learning activities. Not all academic, but and give them opportunities to learn different languages, art, parent education, tutoring for extra help, providing other opportunities for kids. Our school day is so limited. It is just… there is just not enough time to do all of the things we are expected to do. I think using time wisely. I love to travel and have had opportunities when I was teaching to bring in the different cultures of where I traveled, and people don’t have time to do that anymore. We used to do the whole language approach and we just don’t have the time to bring in all of those things that are so important. It is kind of like pushing, pushing, pushing to get in what we absolutely have to get in, and still we just don’t have time. I am not quite sure how we are going to solve that problem. It is kind of a dilemma. We don’t have the money to pay for the additional time that would be needed, and I just try to encourage people to drop at least one thing. If you could take just one thing. It might be fun, it might
be exciting for the kids, but take one thing and try to drop it and see if that lessons your load. And yet still provides continuity.

LR- Are teachers stressed?

PP- Oh yeah. Absolutely. And you know, part of it since I have come back, I have been involved in this leadership team and I have a real commitment to go into classes. We have been asked to look at their score sheets, identify a list of kids...(picks up a sheet on her desk). ..these are our hot list kids and we have 195 students reading at or above grade level, and we identified ten, and I told Jan our facilitator, I want ten more, this list isn’t good enough, so we have identified twenty children and them I am going to go around and I am saying, ‘Okay, who can team up with these kids and make sure that they are reading and make sure they can answer a question with part of the question in the answer, so they are restating in their answer and, just touch base and say ‘come on you have go to do this” and it is really putting pressure on. And I am going around and looking at team score sheets weekly, And it just raises the bar and it, you know there are some …and I try to get in and watch math and I have observed on e formally. The person did invite me in to observe a writing lesson and that was today. ..and you were there. It was really a commitment. I feel like I am four months behind and I want children to do well and I want teachers to enjoy what they are doing, but I want results. I really want,…as I explained to someone the other day, I don’t want to be K-mart. They are going down hill, they are elosing it, and we
don’t need to have the state come in, and we don’t need to have monitors come in and see what we are doing. We can do what it takes to improve student learning.

LR- Is that a fear? Has the legislature talked about bringing in monitors? I heard rumors of that.

PP- Yeah, I think that will be the future and there is kind of, you have heard rumors about for those who are not meeting their goals, they get extra money, but for those that are meeting their goals…it is just kind of like, wait a minute here. It is just one of those things that we are all looking at. How is it going to shake down. Of course no one wants to go there. But also when we have the SFGA people, they really have helped us focus on what we need to do. Overall, I want to be better at what I am doing. And I think everybody else does to and we have to implement things…It is easier to say I did it this way and it didn’t work, we didn’t have kids reading at grade level. There is a lot of pressure. There is a lot of pressure as a principal, too!

LR- I bet!

PP- The task is quite high! It is hard. It is really hard….What are your goals
APPENDIX G

SAMPLE PAGES FROM FIELD NOTES AND METHODOLOGICAL LOG

Sample Observation Notes

Arrived at 8:35. Principal gave tour. Much had changed since last visit.

New computer lab: in large classroom, black PC’s.

Office Moved into old library.

Flyers for parents were available on office door.

New book room: Sharing of curricular materials with other staff members.

Multiple curricular resources available.

Principal is going to teach differentiated instruction courses for young teachers
and several experienced teachers.

Kids coming into building and hugging secretary.

Parent enters office: acquaintance from high school. Says she loves the school
(to me). Shared she was Jehovah Witness but the teachers are flexible. Sport
opportunities are great. Teachers are great. Takes volunteer badge hanging on
the wall.

9:35: Principal is out greeting students as they arrive. I sit in the office. Parent?
Educational Assistant? Brings in projects looking for a place to display a project.
Secretary leaves desk to help look.
Issue/Concern drop box for parents and students is on a wall.

Flyers for parents displayed

Display case with student work at entry way

Sample Research Organization Notes

*Thoughts on Dissertation*

Descriptions

- 4 schools
- Minimum differences
- Similar WASL scores upon appearance
- Different structures, different levels of technology integration
- Different stories

A look at the perceptions of barriers, who was able to overcome/begin to overcome barriers.

Variety of teachers from all schools…nothing really consistent, nor were samples necessarily representative of the entire population.

Personal responsibility addressed in pilot study. Differences between schools….too much structure/not enough…less responsibility

One chapter on describing the different sites (introductions)

How reform was discussed and described? Review this in charts.

Common barriers between all schools, especially time
Assessment and Accountability distinctly different between schools

One chapter on Responsibility (different perceptions depending upon type of accountability)…. 

Interpretation

Administrative Leader….impact on staff responsibility

Staff development in assessment and accountability

Barriers are overcome in some sites

Not just a matter of using technology, but creating a climate where teachers have the choice to appropriately integrate technology as needed to improve student learning.

ISTE: conditions for change? Were they present?

Examining the barriers and reflecting upon essential conditions. ….without parceling out technology, keeping it encompassed? Trying to use technology as something separate, when it is a part of the whole picture. Essential conditions addressed and barriers will go away. Cannot address individual barriers alone, have to look at system and systemic change. Support exists, appears that in these two schools, teachers were more likely to have attempted to overcome the barriers.