

IMPLEMENTATION OF A TECHNOLOGICAL INNOVATION: FACTORS
INFLUENCING THE ADOPTION OF A NEW STUDENT INFORMATION SYSTEM

By

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To my family and friends for your unconditional love and support

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LIST OF ABBREVIATIONS

DOI	Diffusion of innovation
IC	Infinite Campus
GHS	Girard High School
GSD	Girard School District
PD	Professional Development
SIS	Student Information System
SoC	Stage of Concern
SoCQ	Stages of Concern Questionnaire

Abstract of Dissertation Presented to the Graduate School
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School information systems (SIS) have the potential to cause a change in a school's technical, structural, psycho-social, and managerial systems. Implementation of a technological innovation such as an SIS is not a one-step occurrence; it is a process that occurs over time. Implementing any technological innovation involves active learning regarding the innovation, incorporation of it on a regular basis, and proliferation of the innovation over time. Implementation culminates with the continued use of the innovation until it is recognized as being beneficial and becomes a routine feature of the organization. Based on a diffusion of innovation framework, this action research study analyzes the first six months of the implementation stage of an SIS at a rural public high school. Teachers' (n=22) stages of concern after a semester of using the SIS were identified using the Stages of Concern Questionnaire (Hall & Hord, 2011b). Focus groups with teachers, to ascertain perceptions of barriers and enablers to the implementation, were conducted, as were interviews with administrators from other school districts about their implementation experiences with the same SIS. The analysis of the data was used to develop a plan for the continuing implementation of the SIS that included the use of Teacher Coaches and the

design of professional development. Recommendations for others implementing an SIS or similar technological innovation are also provided.

CHAPTER 1 INTRODUCTION

Change implies that individuals must give up or, at least, soften their grip on their current views, practices, and/or beliefs and accept or integrate new ones in their place; the integration of new ideas rarely takes place without difficulty.

–Scott Tunison, *A Place Amongst the Fossils**

Implementing Innovations

Change in education is inevitable and dynamic. In the wake of the No Child Left Behind Act of 2001, educational facilities frequently find themselves implementing change processes rather than isolated change variables. Any change process within educational settings may involve interventions through workshops or professional development or the diffusion of an innovation in technology, standards, or leadership (Hall, 2010). According to Telem (1997), the introduction of a school information management system has the potential to cause a change in a school's technical, structural, psychosocial, goals and values, and managerial systems. This type of innovation can contribute to improved student performance and strengthen educational leadership (Telem, 1996).

Innovations are typically defined as products or processes that are new to an organization (Damanpour, 1987). Research suggests that due to extensive diversity, innovations may be classified in a variety of ways (Damanpour, 1987; Zaltman, Duncan, & Holbek, 1973). One method of classification is to distinguish between technological and administrative innovations. A technological innovation involves a new tool, device,

* *Epigraph*. Tunison, S. (2003). "A Place Amongst the Fossils": Using metaphors from imaginative literature to manage change in our schools. *McGill Journal of Education*, 38(1), 79-100.

or system that changes processes in an organization (Damanpour, 1987).

Technological innovations can be managerial or instructional; that is, teachers or staff members can use them as a managerial tool or they can be instructional, used as a means for improving student learning. An administrative innovation, on the other hand, relates more to administrative policy and procedure (Kimberly & Evanisko, 1981). The adoption of an innovation, regardless of its classification, is typically a means for improving one's performance or creating a relative advantage over others (Rogers, 2003).

In educational facilities, the adoption of instructional technology innovations by teachers is usually a personal choice; teachers make decisions to use new instructional technology in order to improve the learning environment (Ertmer, 2005; Zhao & Czicko, 2001). Teachers often choose to integrate Web 2.0 technologies or technological tools, not because they are told to do so, but because they believe these tools to be beneficial for the outcomes of the students. This is particularly true in secondary schools (Mooij & Smeets, 2001). The imposition of a technological innovation on an entire organization is less prevalent in education than it is in other industries. This does occur, however, when there is a mandatory dissemination and district wide implementation of a new technological system. In this case, teachers and staff are typically not consulted when the innovation is considered and are only made aware of the innovation when they are required to implement it. The primary choice for utilizing the innovation is made at an administrative level, and the teachers and staff are, as a result, adopting the innovation on contingent authority or on what is often referred to as an authority innovation decision (Rogers, 2003). This type of adoption, made by a managerial decision to

implement the innovation, tends to expedite the adoption process (Rogers). This is a less than ideal situation, however, in that it diminishes the autonomy of teachers as individuals (Fenstermacher, 1987) and typically causes resistance during the implementation stage (Zaltman, Duncan, & Holbek, 1973).

When adopting an innovation on an organizational scale, the focus from the standpoint of the actual users is less on the decision to use the new tool and more on the implementation process. Implementation, according to Jasperson, Carter, and Zmud (2005), Damanpour and Schneider (2006) and Rogers (2003), goes beyond including any events and actions leading up to the preparation of the organization for an innovation's use, trial use, and acceptance of the innovation. It involves active learning regarding the innovation, incorporation of it on a regular basis, and proliferation of the innovation over time. Implementation culminates with the continued use of the innovation until it is recognized as being beneficial and becomes a routine feature of the organization. According to Hall (2010), implementation is a bridge from the old practices to new.

The Innovation Under Study

The innovation at the heart of this research is a Student Information System (SIS), Infinite Campus (IC). Implementation of this SIS in the Girard School District began in July of 2012. Development of student information systems occurred to automate the collection and reporting of data in educational facilities. Business staff use an SIS to track budgets, while administrators and counselors rely on such systems for scheduling, tracking behavior or discipline issues, and recording student data from year-to-year. School districts use SIS technologies as a central repository for student information, such as, attendance and grading information, transportation data, medical

information, individual education programs and standardized test scores. These technologies have evolved from originally being site-based systems to now being web-based platforms that allow anytime, anywhere access. In addition to the aforementioned uses, Infinite Campus functions as a means for the Girard School District (GSD) administration to compile data for state reporting. This SIS also provides an information exchange environment for students, parents, and teachers. Infinite Campus affords teachers with a web-based gradebook and parent/student portal for anytime access to view grades, attendance and discipline issues. Adoption of this particular system resulted in the replacement of several systems district wide that were not synergistic.

Background

In winter of 2011, the GSD administration began a search for a new SIS, which could integrate the three existing separate systems used for teacher classroom management, administration functions such as attendance, scheduling and transportation, and business management for the individual buildings and the district as a whole. According to the administration, redundant processes and lack of communication between the current systems drove the decision to pursue an alternative, integrated system. As a teacher leader for educational technology and one who frequently plans and delivers professional development and training sessions for teachers, I was asked to be a member of the committee of administrators, technology specialists and teachers who investigated a variety of possibilities and eventually chose as the new system, Infinite Campus.

After the purchase of the new system in May 2012, the administration selected six teacher coaches, including myself, to help the GSD teachers effect the

implementation of the new SIS. The district allocated two coaches to each of the three district buildings. An Infinite Campus representative trained the teacher coaches using a train-the-trainer model so that we could train the other teachers in the district. The initial district-wide rollout of the system began July 1, 2012 with the transfer of student data from the old student management system to the new. The teacher coaches provided one and one-half hours of mandatory training for all of the district teachers during in-service time on August 23, 2012. Teachers began using the new system at the beginning of the school year on August 28, 2012. The coaches supplemented the initial training during the school year by offering training and help sessions during common plan time and through helpdesk support for the teachers throughout the 2012-2013 school year.

Prior to training and actual implementation, the centralized decision for diffusion of the SIS had already generated vocal concern from many teachers regarding the new system, even though most had never utilized it or recognized its capabilities. This is not unexpected, as change is a difficult and often resisted aspect in any facility (Fullan, 2009; Hargreaves, 2009). Some teachers saw the new program as the imposition of yet another gradebook. Other teachers indicated that they saw nothing wrong with the old system, a perspective that may have been true of their experience at the micro-level of the individual school. This was not the case, however, in terms of district-wide information integration and dissemination. Additionally, the purchase of this SIS will allow the district to make effective data-driven decisions regarding students' education. This led to deliberate steps toward successfully integrate a new SIS, which, in Hall's (2010) words, would create an effective implementation bridge from the old system to

the new. According to Kotter and Cohen (2002), efforts to elicit change often fail during the implementation stage, a problem the district hoped to avoid through in-service training and the presence of teacher coaches.

My roles within the school district and within this study are numerous. As a twenty-year veteran teacher in the district, I have developed a reputation for integrating technology into my classroom. Administration and my peers recognize that I am able to trouble-shoot software issues and am willing to help facilitate the implementation of technology in any classroom. In addition, I am persistently called upon to design and facilitate professional development for high school teachers, as well as the district as a whole. These roles resulted in my position on the committee to select the SIS as well as my current role as teacher coach for the implementation. As I directed the implementation of the SIS, I am also, as a teacher, implementing it into my daily routine and learning how best to utilize the various components.

Statement of the Problem

Any organization that invests in an innovation naturally desires that the diffusion of the innovation occur both effectively and efficiently. There is concern from the administration that the amount of money spent on Infinite Campus be justified through successful implementation and embracing of the system by the teachers and the community. The GSD has made initial positive steps in promoting effective change by including several teachers on the SIS search committee. Involving teachers in the origins of a desired change can help to ease transitions (Lieberman & Miller, 1981). School district administration wants to avoid a repeat of problems that occurred in the past when the district invested in Promethean interactive white boards and classroom sets of laptop computers for every major subject area teacher. Although this was an

example of instructional technology and not a technological innovation, an effective diffusion did not occur.

According to Damanpour and Schneider (2006) and Rogers (2003), diffusion of an innovation (DoI) is multidimensional; it can be influenced by either environmental or contextual factors, by characteristics of both the individuals and organizations that adopt the innovation, and by the characteristics of the innovation itself. However, Baldrige and Burnham (1975) as well as Kimberly and Evanisko (1981) indicate the organizational factors are more influential than individual characteristics. In either situation, characteristics and factors exist which can help to enhance the implementation or can potentially derail it.

Research Questions

This study was a mixed-method action research study of the implementation of a new student information system in a rural high school. The overlying concern for this research was: what future steps should be taken to influence the effective implementation of the new SIS and encourage the teachers to move from compliance of utilization to full incorporation and appropriation of the SIS? The teachers were required to change from a gradebook system that many saw no problems with to a new system they knew nothing about, and the transition had to occur during the first semester of the school year. There is no option to revert to the old system, as the district cancelled services with the previous gradebook company and did not renew services with the previous student-parent portal. There is considerable pressure, therefore, to ensure the SIS implementation is effective. Relative to the authority innovation decision to purchase and put in place the new student information system beginning in August 2012, several sub-questions arise,

- Where do the teachers perceive themselves in terms of the implementation process?
- What barriers do the teachers and staff perceive to implementation of the SIS?
- What personal or organizational aspects do the teachers and staff perceive as enabling implementation of the SIS?
- How does the implementation compare to steps taken by other school districts?

Conceptual Framework

Although the diffusion of the innovation took place across an entire K-12 school district, this research focuses on the implementation at the high school only. The implementation process of the diffusion draws from Roger's (2003) Theory on Diffusion of Innovation (DoI). The affective and behavioral responses of the teachers to the innovation and the implementation process stems from Hall and Hord's (2011a, 2011b) Concerns-Based Adoption Model (CBAM). In addition, as part of the implementation, Desimone's (2009) critical features of professional development were utilized when professional development activities were employed.

Often people see the adoption of technology as a subjective event since both internal and external motivations for adoption exist. Rogers' (2003) theory on the DoI outlines how individuals adopt an innovation through five stages. These include knowledge, persuasion, decision, implementation and confirmation stages. These stages progress, respectively, from information gathering about the innovation, to discussion of its use, appraisal, actual use and routine integration. Although Rogers incorporated into his fifth edition (2003) the relevance of an organization in DoI, this theory centers primarily on the individual choosing to adopt the innovation. The adoption of the SIS in the GSD was an administrative decision and the teachers, staff and administrators must affect the implementation. It is what Rogers refers to as an

authority-innovation decision. In authority-innovation adoption, administration takes the decision-making aspect out of the hands of the users of the innovation; this frequently occurs in industry (Zaltman, Duncan, & Holbek, 1973). The aspect of interest, therefore, is the implementation of the innovation, or the post-adoption diffusion of innovation. There is less concern, in this case, as to the decision making process involved in choosing to accept and utilize the innovation. Rather, the focus is on how the professional development training and teacher support can be best used to clarify the usefulness of the SIS, facilitate its ease of use, and encourage the teachers to utilize it as part of their daily routine.

This research is also based on Hall and Hord's (2011b) Concerns-Based Adoption Model (CBAM) to organizational change. Although originally designed to evaluate an individual's process of introducing a single innovation for improving teaching and learning, there have been efforts to apply CBAM to more global innovations and practices. This model is useful for identifying the progression of implementation of innovations amongst teachers (Hall & Hord, 2011b). CBAM is typically utilized when implementing a specific technology, standards or curriculum, but can apply to the adoption of any innovation. The primary interest in this study is in the overall implementation of the SIS at Girard High School; however, the individual teachers comprise the unit of analysis. Since educational change of any kind relies upon individuals (Fullan, 2009), it is logical to evaluate individuals levels of use and their stages of concern as it relates to an innovation configuration when looking at implementation organizational wide. According to Hall and Hord (2011a), documenting the implementation process is necessary in order to determine whether professional

development activities are effective. Implementation in schools can be measured through the Stages of Concern Questionnaire (SoCQ) that is grounded in CBAM (George, Hall, & Stiegelbauer, 2006).

Affecting change in schools, as is the case of the implementation of the new SIS, is typically facilitated through professional development activities. The implementation of the new SIS required tailoring training, help sessions and tutorials to both inform the new processes and encourage extended implementation. During this study, I utilized Hall and Hord's (George, Hall, & Stiegelbauer, 2006) SoCQ survey to identify areas of concern regarding the SIS implementation, and professional development activities were designed accordingly. Desimone's (2009) five critical features of professional development, content focus, active learning, coherence, duration and collective participation, were also integral to planning the professional development that facilitated the implementation process.

Relevance and Significance

The purpose of this research study was to identify the factors that either promote or inhibit the implementation of a SIS in order to facilitate further implementation of it in a public high school. The results of the study provided valuable information regarding the implementation process and the concerns of the teachers. The implementation of a SIS is a process, not a one-time event (Fullan, 2001). This study therefore identified the Stages of Concern exhibited by the high school teachers using the SIS as a means of planning the continuing implementation. Through using the Stages of Concern Questionnaire, I designed a plan for future professional development that addressed the teachers' concerns and Desimone's (2006) critical features of professional development.

This study may also provide school district leaders with the tools to identify potential problems when implementing a new technological innovation. It could assist them in developing successful professional development strategies in order to support the change initiative.

Identifying the barriers to implementation can help professional development designers and identify potential issues prior to future implementation efforts of technological innovations. In a similar fashion, identifying the aspects of personalities and activities that enhanced the implementation of the innovation, can help to focus future efforts. These findings may provide SIS developers with insights of implementation processes and in the area of professional development and provide them the tools to with schools to overcome these issues.

In addition to assessing the implementation of the SIS at this particular high school, it is the intention of this study to enhance the existing literature. According to a meta-analysis conducted by Tornatzky and Klein (1982), most innovation studies address the relationship between the innovation and its adoption and not the adoption and implementation. In addition, Hage (1999) indicates most of the literature on organizational innovation concentrates on the causes of innovation and implementation and not on feedback from within the organization

Definition of Terms

- **COMPLIANCE OF UTILIZATION.** The teachers are expected to use the SIS to take attendance at the beginning of every block. They are also expected to have grades in the electronic gradebook that will be viewed by students and parents and pulled from for grade reports. This is the minimum use that is expected to occur.
- **FULL INCORPORATION.** This phase refers to using the SIS not only for attendance and a gradebook, but also for a variety of other purposes. The

purposes may include, but are not limited to: accessing and utilizing student information, contacting parents, checking daily attendance, printing reports, designing ad hoc filters, affecting individual instruction through analysis of student data available through the system.

- **IMPLEMENTATION.** One of the stages during Rogers' (2003) Theory on Diffusion of Innovation process. This typically includes any efforts towards compliance or commitment to the innovation. This may include restructuring of the organization or the innovation to meet the needs of the organization, clarifying the relationship between the innovation and the organization and incorporating the innovation into daily routines.
- **INNOVATION.** According to Damanpour and Schneider (2006), innovation in an organization involves the adoption of a new product or technology by the individuals within the organization. In this project, the innovation is the Student Information System, Infinite Campus.
- **ORGANIZATION.** Zaltman, Duncan, and Holbek (1973) indicate an organization is "a social system created for attaining specific goals through the collective efforts of its members" (p. 106). This definition emphasizes the social nature of education as well as a shared purpose.
- **PROFESSIONAL DEVELOPMENT.** Professional development (PD), as defined by the National Staff Development Council (2008), is "a comprehensive, sustained and intensive approach to improving teachers' and principals' effectiveness" (para. 3). Professional development activities for this project will include teacher-training sessions, the availability of teacher coaches and the benefit of a website dedicated to providing documentation and tutorials for the innovation.
- **STUDENT INFORMATION SYSTEM.** A web-based software platform for compiling data regarding students.
- **TEACHER COACH.** Teacher coaches are teachers who support other teachers as learners during implementation of the SIS. The six teacher coaches were trained using a train-the-trainer model to make them 'experts' in the innovation.

Limitations and Delimitations

Bias is defined as any distortion of research data that may create suspicion or validity issues (Gay, Mills, & Airasian, 2009). In qualitative, action research, bias is inevitable, however it can be minimized if the researcher is cognizant of it and acknowledges it (Mills, 2011). The implementation of the SIS began with the new school year in August of 2012. In January of 2013, I asked the teachers of Girard High School to participate in an online survey, the Stages of Concern Questionnaire (SoCQ). Although I asked the entire teaching staff to participate in this survey for this study, it is not a requirement of the implementation process. As a result, those who had a greater interest in helping me complete my study likely responded. In addition, I presented the survey online. As a result, skewing of the data towards those more comfortable utilizing technology may have occurred. Utilizing an online questionnaire, however, minimizes the procedural bias of completing the survey; I requested completion at some time over the course of two weeks at any time of day so the teachers did not feel they were being pressured to complete it in a small period of time. This study may also be limited by the interview sampling technique; although the entire staff was asked to participate in the survey process, volunteers populated the interview pool. The volunteer nature limits the generalizability and transferability of the results.

Rogers (2003) accentuates another limitation of this or any similar study. He indicates that research on diffusion of innovation may be subject to pro-innovation bias. Rogers suggests, however, that this may be limited if the innovation is studied during the implementation phase as occurs during this study. My own researcher bias, therefore, must be acknowledged. Not only was I involved in choosing the SIS, but also I am instrumental in developing and presenting the training and PD. As a result, I

naturally wish to not only see the implementation succeed, but I also desire the teachers to believe I made a good choice in recommending this system. Therefore, this may influence my research and consequential analysis of the data. Through the use of a researcher journal and by recognizing the potential of my own bias (Mills, 2011), I will minimize the potential effects of personal bias. I also minimized bias by conducting the SoCQ anonymously. I do not know who responded to the survey, nor am I able to correlate a survey with a particular person.

This study is delimited, as the teachers involved were high school teachers at the same school district. All of these teachers teach in the same building and were provided identical professional development and supplemental training opportunities. Although the entire district is implementing the new SIS, I made a conscientious decision to use only the grades 9-12 teachers as part of this study. This is primarily a result of the direction the different building administrators wanted for the implementation and the actions of the teacher coaches in the buildings. The middle school teachers are utilizing the SIS in the same manner as the high school teachers; however, the method for training and professional development differed significantly. In addition, the elementary school administration chose to utilize the SIS in a minimal way and was, therefore, not comparable to the high school in terms of use.

Summary

Chapter 1 includes an overview of this study. Although the diffusion of innovations is typically seen as a personal endeavor, organizations often impose innovations in order to impact behaviors and affect change (Zaltman, Duncan, & Holbeck, 1973). This type of imposition has been studied extensively in health care facilities and to a much lesser extent in education (Damanpour, 1987). Studies do exist

regarding building or district wide implementation of instructional technologies, however few exist which focus on technological innovations. This study will serve to enhance the literature in facility-wide diffusion of an innovation in a public high school. I was actively involved in the decision-making aspect of this innovation, and as an opinion leader for its implementation, being able to identify what the teachers identify as enablers and inhibitors to the implementation of an innovation is invaluable. Knowing this information can help to drive future training and create more effective implementation procedures.

CHAPTER 2 A REVIEW OF THE LITERATURE

Educational facilities are social organizations and as such tend to be highly individual and personal. This implies that instigating change in schools should be highly personal, as is indicated by a concerns-based approach (Hall & Hord, 1987). This literature review describes the change process in schools by drawing from Lewin's (1945) model for organizational change. This will be further refined toward academia through a description of organizational innovation implementation as well as Rogers' Theory of Diffusion of Innovation (2003) and Hall & Hord's (1987) Concerns-Based Adoption Model. Primary focus in these models will be on the implementation stage.

This literature review was initiated using electronic databases including Google Scholar, Education Full Text, Omni Full Text Mega, Professional Development Collection, and CINAHL. Keywords utilized in the searches included: diffusion of innovation, student information system (SIS), CBAM, Rogers, innovation implementation, organizational innovation, and organizational change.

Innovations

When contemplating a change, organizations often to focus on the adoption of an innovation (Hall & Hord, 2011b; Rogers, 2005). Adoption of an innovation, according to Damanpour, (1987) occurs when an organization makes a decision to begin implementing a new process, product or idea. Non-educational organizations have a propensity to adopt innovations for the enhancement of current performance or to stay ahead of the competition (Damanpour & Schneider, 2006; Lewin,1945). In the case of public education, however, the end goal of adopting an innovation is typically to enhance the educational experience for the student and positively affect their learning.

Examples of these innovations are the use of electronic whiteboards in the classroom (BECTA, 2003; Hall, 2010; Higgins, Beauchamp, & Miller, 2007), classroom response systems (Beatty & Gerace, 2009; Fies & Marshall, 2006), one-to-one laptop initiatives (Apple, 2005; Donovan, Hartley & Strudler, 2007; Penuel, 2006) or technology integration initiatives (McGrail, 2006; Zhao, Pugh, Sheldon, & Byers, 2002). Diffusion research has also been utilized in studies on teacher professional development (Hall & Hord, 1987; Vaughn, 2002). This study focuses on effecting change through the adoption of an educational innovation, and the integration and use of a new student information system (SIS) by teachers in their daily functions.

Adoption of Innovations

The term innovation often represents a tangible piece of equipment, a managerial concept or a curricular process. For the purpose of this study, however, I will affiliate with Damanpour's (1987) idea that innovation is more of a process. Innovation is the implementation of an idea that is new to an organization at the time of adoption. There are two important points to this definition. First, the innovation itself need not be newly discovered or identified; it needs to simply be new to the organization (Damanpour, 1987; Zaltman, Duncan, & Holbek, 1973). Second, action must be taken with the innovation; adoption implies utilization. For this study, it is not enough for the teachers to go through the basic motions of using the SIS; they need to embrace the system for its potential and incorporate some of the auxiliary components of the program. Since the implementation of the SIS has already begun, the purpose of this project is to identify where the teachers currently are in their use of the SIS and their feelings towards it. This will allow me to identify what the next steps in implementation should look like.

It is necessary to be aware that there is the potential for resistance to the implementation of any innovation. Folger & Skarlicki (1999) claim that "organizational change can generate skepticism and resistance in employees, making it sometimes difficult or impossible to implement organizational improvements" (p. 25). Although resistance to change may be inevitable, implementing change through well-established and researched processes can minimize its effect (Zaltman, Duncan, & Holbek, 1973). According to Ertmer (1999; Ertmer, Ottenbreit-Leftwich, & York, 2006), this may be accomplished through professional development by addressing not only barriers to implementation but also pedagogical beliefs. In addition, Lewin indicates resistance can be managed (Dent & Goldberg, 1999). Due to the nature of the mandated implementation, any anticipated resistance to the implementation is expected to be limited to vocalized concerns and not a tangible resistance to the use of the system.

The theoretical framework for the implementation of the innovation in this study is Roger's Theory of Diffusion of Innovation (DoI) (2003) and Hall and Hord's Concerns-Based Adoption Model (CBAM) (1987). Although other models for technology adoption exist, such as Davis' Technology Adoption Model (TAM) (Davis, 1989; Venkatesh & Davis, 2000) and Moersch's Levels of Technology Implementation (LOTI) (Moersch, 1995), I chose to focus on DoI and CBAM for their potential to transfer to an organizational model rather than an individual model. Both TAM and LOTI focus on an individual's decision to use an innovation while both Rogers (2003) and Hall and Hord (2011b) have addressed how diffusion occurs with an organization as the unit of analysis. The diffusion of the SIS, Infinite Campus, was studied using the Stages of Concern from CBAM and the implementation stage of DoI.

Student Information Systems

The innovation being studied is a Student Information System called Infinite Campus. An SIS is similar to the configurable software systems known as enterprise resource planning systems (ERPs) that businesses began utilizing in the 1960's (Jacobs & Weston, 2007). The ERPs were designed as cost-effective, single platform systems for managing information formerly processed by several different programs. The integrated systems allowed a variety of information to be shared in a company; financial, human resource, operations and logistics, and sales and marketing data could flow seamlessly throughout the system (Davenport, 1998). Educational facilities today frequently use ERPs to manage student information, staff and scheduling data, human resource data and payroll, and general finances (Carroll, 2009). Higher education systems tend to use the phrase ERP while K-12 systems refer to this software as student information systems (SIS).

According to Barrett (1999), schools utilize SIS technologies as central repositories for student information: attendance and grading information, transportation data, medical information, individual education programs and standardized test scores. These systems have also been shown to enhance parent-school communications through web-based services (McIntire, 2004; Telem, 2005). Although the SIS investigated in this study may seem on the surface to be strictly an administrative tool, this innovation has the potential to affect student learning if it is used to its fullest capacity. A significant reason for the selection of this particular SIS involved the ability to store and access students' standardized test scores, course grades and the capability for teachers to access this information. This potentially allows for more

individualized learning experiences that are data driven. Therefore, completion of the adoption of this innovation has the potential to influence student learning in the future.

Innovations and Change in Education

Implementing an innovation can cause organizational change. And, instigating change is difficult. Governments, corporations and educational facilities all attempt to institute transformations through a variety of measures, and surprisingly few of these attempts at change make the permanent impact originally intended (Cuban, 1990; Reeves, 2009). If change in general is difficult, change in education is more so. Education is dynamic; that is, it is frequently undergoing change (Cuban, 1990; Fullan, 1991). Often the success or failure of an intended change may be affected by many factors and variables (George, Hall, & Stiegelbauer, 2006). Change, according to Hall (2010), should be predictable if one is clever enough, but this does not always seem to be the case. When attempting change in organizations, one cannot and should not expect change to occur overnight, as it is a process and not an event. In fact, when treated as an event, the change process typically breaks down (Hall & Hord, 2011b).

In the context of this study, change takes on a specific meaning; it is the organizational change that is occurring as a result of the adoption of the SIS. Change refers to the complete implementation of the new SIS. It is important for the successful implementation of the SIS to be seen as an ongoing progression. This will be accomplished by identifying teachers' concerns regarding the innovation after basic training and use has occurred and then identifying what needs yet to occur to continue the overall change.

Any change process is influenced by a variety of factors, including an organization's culture and the external context. Facilitating change is a team effort, and

no matter the organization, effective change is about learning. Capacity building through the acquisition of new knowledge and skills, access to resources, and individual motivation are all necessary functions for change (Fullan, 2009).

Organizational adoption of innovations is a relevant lens when attempting a large scale change. Two organizational change theories dominate the literature. The first is Lewin's (1945) Three Step Model for Organizational Change; this is regarded as the forerunner of organizational change models. Also prevalent in the literature is Zaltman and Duncan's (1977) theory of innovation in organizations. Although both models originated in industry, they are easily transferred to education and this particular study. This literature review will focus on Lewin's change theory as it has informed several educational change theories specifically (Fullan, 2009; Guskey, 1986; Hall & Hord, 2011b).

Three Step Model for Organizational Change

According to Kurt Lewin (1945), the change process must focus on the entire organization and not the individual. A key component of his change theory, Group Dynamics, emphasizes that the characteristics of a group cause the collective to act in certain ways. Group Dynamics explains how groups and the individuals that comprise them react to change. Lewin emphasizes that no matter the group, "a complicated network of problems and conflicting interests exist" (p. 128). Therefore, in order to effect change, the behaviors of the group must be targeted (Burnes, 2004; Rogers, 2003). Change in teachers is typically accomplished through group professional development activities rather than individualized instruction. Therefore, identifying the teachers' attitudes, beliefs and values are essential to the change process. According

to Guskey (1986), much of the research surrounding changing teachers' beliefs has evolved from Lewin's three-step change model.

The most recognized component of Lewin's (1945) model of organizational change is the three-step model of unfreezing, change and freezing. During the unfreeze stage, the focus is on changing existing beliefs, attitudes, behaviors and values. During this stage, a created state of disequilibrium forces the participants to examine the current state of the organization and recognize that change is necessary. In order for change to occur within an organization, some aspects of the organization must undergo an unfreezing (Schein, 1996). The unfreeze stage could be the most critical part in a school, depending upon the degree of intrinsic barriers present in the faculty (Ertmer, Ottenbreit-Leftwich, & York, 2006). In this study, the unfreezing was precipitated by the elimination of the previous electronic gradebook and prior parent-student portal. The teachers were thrown into a state of disequilibrium where they had no choice but to accommodate the new SIS and evaluate it for its worth. This unfreezing caused teachers to reconsider their beliefs and practices, or the intrinsic barriers which could inhibit implementation (Ertmer, 2005).

During the second stage of Lewin's (1945) model, people resolve their uncertainties and look for new ways to do things; they start acting in ways that support the new direction. During the Change phase, communication is essential, as people need to value the benefits of the change, understand why it has to take place and realize that it will take time. Due to the top-down decision to implement this innovation, the teachers were provided with the new way of doing things; they did not have to search out and evaluate a new system. Although there was little communication to the

teachers during the decision process, the teacher coaches emphasized the long-term potential of the system during the initial training sessions. In addition, during any training activities, I encourage the teachers to share with their peers any components of the SIS they discover and utilized.

Finally, during the Freeze stage, facilitators establish a support system that is mindful of barriers and enhancers of the change, in order to facilitate the anchoring of the change (Schein, 1996). Through the use of the Stages of Concern Questionnaire, I hope to identify these barriers and enhancers and use them to direct future implementation steps.

Although I have highlighted the relevance of Lewin's change model to this particular study, it is also important to acknowledge its relevance to the action research process (Adelman, 1993; Dickens & Watkins, 1999). As an action researcher trying to influence my professional practice, I am helping to create disequilibrium and implement a change to influence my educational facility. The product of this study, the future actions needed to cement the implementation, are a critical component of the freezing stage.

Adopting Innovations in Organizations

Factors That Influence the Adoption of Innovations

Unit of analysis. According to Damanpour (1987), a reliable theory of organization adoption of innovation does not exist. He asserts that most research in organizational innovation does not take into account the different attributes that characterize varying innovations and resultant diffusion efforts. Another issue associated with organizational adoption of an innovation is the unit of analysis. Zaltman, Duncan, and Holbek (1973) as well as Hall and Hord (2011b) emphasize that

the unit of analysis when looking at organizational innovation is typically the organization as a whole and not the individual. However, many of the models associated with innovation adoption focus on the individual as the unit of analysis. When affecting change in schools, teachers are the primary units of change during the implementation process since they are the ones utilizing the innovation. In the case of this study, the teachers' use of the SIS will saturate the program with student data.

Classification of innovations. As previously mentioned, innovations can be classified in a variety of ways. Although they may be classified as high-risk versus low-risk or radical versus incremental, much of the research on organizational innovations centers on administrative, technological or ancillary classification (Damanpour, 1987). Administrative innovations focus primarily on a change in an organization's structure. These innovations focus primarily on a managerial component, such as a hiring process. Technological innovations involve the introduction of a change in technology which then promotes change in organization. This may be a tool, technique, device or system that is introduced into the organization as a means of producing a change in products, services, or how the services are rendered. According to Daft (1978), technological innovations tend to evolve in a bottom-up scenario while administrative innovations are naturally top-down. Finally, ancillary innovations are services which are provided to the community. These innovations tend to bridge the gap between the organization and the external environment. Damanpour (1987) contends the different types of innovations are influenced differently by organizational factors during the innovation process. In this study, the student management system is best classified as a technological innovation. The SIS is a software program that is altering how

information is communicated within the district and between the teachers and the students and their parents. In addition, it can affect learning strategies for individual students.

Barriers and enablers. Technological innovations have a unique set of factors which can influence their adoption. These are often classified as barriers and enablers to integration. Barriers are those characteristics or events that inhibit achievement of a goal (Schoepp, 2005). Ertmer (1999) indicates there are two categories of barriers, first-order and second-order. The first order barriers are extrinsic and often equated with monetary aspects such as training, support and resources. Second-order barriers are intrinsic, such as feelings, beliefs and visions. In addition, these barriers are relevant to Lewin's (1945) unfreezing stage as well as Zaltman, Duncan and Holbek's (1973) initiation stage.

Enablers, on the other hand, are characteristics, which help to promote the achievement of a goal. Enablers can also be equated with extrinsic and intrinsic factors, although intrinsic factors for enablers are hierarchal to extrinsic (Ertmer, Ottenbreit-Leftwich, & York, 2006).

Both enablers and barriers to integration are individual or personal factors, which affect innovation adoption. In addition, there may also be organizational and environmental factors that may be influential. Individual factors encompass varying roles and personalities that exist within the organization. Organizational factors may include specialization functional differentiation, professionalism, size, and administrative intensity (Baldrige & Burnham, 1975; Kimberly & Evanisko, 1981). Finally, environmental factors include homogeneity and variability. According to Baldrige and

Burnham (1975), schools are greatly influenced by environmental factors since they are regulated by the community through elected school boards. When looking at the types of innovations and these factors, the organizational factors are more directly linked to technological innovations than to administrative or ancillary innovations. According to Damanpour (1987), it is essential to distinguish between the innovation type and the stage of adoption process in order to identify organizational characteristics that facilitate or hinder adoption of innovation. However, successful adoption depends largely on support, leadership and coordination provided by managers, or in the case of schools, the administration leadership (Damanpour, 1987; Hall & Hord, 2011b).

Diffusion of Innovation

Diffusion of Innovation (DoI) is classically associated with Everett Rogers. Although first published in 1962, Rogers continues to update his *Diffusion of Innovation*, with the fifth edition published in 2003. Rogers' DoI influenced Mahajan and Peterson (1985) who identify four key elements in the diffusion of an innovation: the innovation itself, channels of communication, the rate of adoption and the social system. Although typically associated with individual's adoption of innovation, there have been cases where an organization is used as the unit of analysis (Rogers, 2003; Zaltman, Duncan, & Holbek, 1973). According to Rogers (2003), diffusion is "the process in which an innovation is communicated through certain channels over time among members of a social system" (p. 22). The core of diffusion of innovation rest with the process an individual goes through when incorporating an innovation into their existing processes. The essence of diffusion is effective communication; therefore, interpersonal channels and the experience of peers greatly influence individuals during this process.

Innovation-decision process. According to Rogers (2003), the innovation-decision process involves a series of choices made either by the individual or the organization as the innovation is processed. It is comprised of five stages: knowledge, persuasion, decision, implementation, and confirmation. Each stage closely aligns with Lewin's (1945) 3-stage model for change as is seen in [Table 2-1](#).

Organizational DoI. Although DoI was designed from the standpoint of an individual choosing to implement an innovation, Rogers (2003) does address in the more recent editions of *Diffusion of Innovation* the idea of a contingent authority decision. In this situation, the organization eliminates the first three stages of adoption, knowledge, persuasion and decision, and places them in the hands of a select few change agents. A comparison of the components of the initiation and implementation stages is in [Table 2-2](#). Organizational DoI places considerable emphasis on the implementation stage, and communication during the implementation stage is of paramount importance. Schools are social organizations and people tend to learn from other implementers (Fullan, 2010). Therefore, it is paramount for the success of the innovation that key personnel be in place to help affect the change.

Since the change agents, in many cases, tend to be outside of the implementation of the innovation, the management tends to rely on opinion leaders to influence the implementation process (Rogers, 2003). These individuals have been established as influential amongst their peers due, in part, to their technical competence and innovativeness. Therefore, they tend to be at the center of the interpersonal communication networks within the organization. Such is the case of the teacher coaches in this study. According to the high school administrator, the high school

teacher coaches were chosen not only because they are technologically perceptive, but also because they garner respect from their peers. The greatest concern regarding opinion leaders is that they will be worn out by the change agents; they will eventually be seen as pro-management and will lose credibility amongst their peers (Rogers).

Whether the DoI is centering on an individual or organization, everyone has a propensity for adopting an innovation. This is referred to as innovativeness. The innovativeness of an organization is a fairly well distributed bell curve. According to Rogers (2003), within social systems, all members of the organization will cooperate with the diffusion of an innovation; they will just do so to varying degrees. The implementation of the SIS in this project requires the teachers to adopt the new program. Although Rogers indicates sixteen percent of the teachers will have a high propensity to resist adoption, not adopting the SIS is not a viable choice in the school that is the subject of this research.

Concerns-Based Adoption Model

Rogers (2003) indicates the diffusion of an innovation will proceed at varying rates, based on the innovativeness of the individuals involved. According to Rogers, DoI has been used as a model for a variety of industries, including education; more than 5,200 publications exist, many of which are identified in *Diffusion of Innovation* (pp. 406-448). However, Hall and Hord's (1987; 2011b) Concerns-Based Adoption Model (CBAM), is, according to Anderson (1997), one of the more vigorous and grounded models for examining change in schools and focuses on the personal and behavioral aspects of innovation adoption. When CBAM was first proposed, the focus was on introducing single innovations by individual teachers to improve teaching and learning. Research has led to the measurement of the implementation of an innovation being

incorporated into the model, where the emphasis remains on how teachers make sense of the innovation (George, Hall, & Stiegelbauer, 2006). It is important to be cognizant of the importance of the individuals in the organization as the implementation progresses; change is personal and requires developmental growth in the teachers. CBAM has been used by school-based consultants implementing research based best-practices to impact implementation (Roach, Kratochwill, & Frank, 2009), in research on instructional innovations (Surry & Farhquar, 1997), and by researchers to examine changes in concerns (van den Berg & Ros, 1999). In addition, CBAM has been utilized to evaluate such school wide reforms such as vocational education (Anek & Finch, 1997; Saunders, 2012) as well as teacher professional development (Bradshaw, 2002; Brzycki & Dudt, 2005; Hall & Loucks, 1978; Holland, 2001).

Stages of concern. CBAM contends that people considering and experiencing change evolve in the kinds of questions they ask and in their use of whatever the change is. These are an individual's Stages of Concern (SoC). The stages, in [Table 2-3](#), range from awareness of the innovation through refocusing the innovation. In general, early areas of concern are more self-oriented; individuals are concerned with the personal impact the innovation will have on them. When these questions are resolved, individuals shift to more task-oriented questions that deal with the use of the innovation. Finally, when self- and task concerns are largely resolved, the individual can focus on the potential impact the innovation will have on their environment (Hall & Hord, 2011a; Hall & Hord, 2011b). In the case of education, teachers usually focus on the impact on students (Loucks-Horsley, 1996). According to Hall and Hord (2011b), mandated innovations, such as in this study, result in significantly higher personal

concerns. Addressing the informational and personal concerns, therefore, must be deliberate in order for effective implementation to occur. The SoC are relevant in this study as they often drive professional development in an effort to “create the capacity to perform the change” (Hall & Hord, 2011b, p. 264).

Level of use and innovation configuration. In addition to SoC, CBAM provides two other diagnostic dimensions, Levels of Use (LoU), and Innovation Configurations (IC). All three of these components can be utilized individually or collectively, depending upon the research intent. Any combination of the three may be used to measure how far an individual or organization has progressed in terms of implementation of an innovation (Hall & Hord, 2011b). While SoC centers on the personal and affective aspects of change, LoU measures behavior. LoU is a generic construct, so it can be applied to any innovation to assess use, non-use, and the variations in between. It is helpful in tracking an individual’s progress during implementation change if it is used across a time span (Hall, Dirksen, & George, 2006). Innovation configurations take into account that not everyone will utilize an innovation in exactly the same way. Creation of an innovation configurations map provides for a better analysis of the implementation of an innovation. It allows an observer to identify if everyone is adopting the innovation in exactly the same way. The use of an innovation configurations map to outline an exact sequence for use for this study is not necessary since the focus of this research is not to study whether everyone is using the SIS in the exact same manner, the aim is to investigate how they are using it as individuals.

According to Hall and Hord (2011b), organizations adopt change, but individuals implement it. Research on professional development and new practices in education

does not typically assess the implementation process of diffusion. In addition, different change efforts will require different implementation bridges (Hall & Hord, 2011a). The adoption process stems from an individual's desire to use a particular innovation or it can come on contingent authority; it can be either personal or organizational. In either case, CBAM can be used to analyze the implementation process.

Innovation Adoption Examples

Dol. According to Salter and Hansen (2001), Rogers' theory on Diffusion of Innovation (DoI) has been used as a springboard for the development of new models for the adoption process. These include adopter based models or organizational models. Salter and Hansen, as an example, incorporated DoI into the adoption of web-based technologies both at the institutional level and the instructor level. In addition, Burkman's adopter-based model (in Salter & Hansen, 2001 and Surry & Farquahar, 1997) combines several factors of DoI and concentrates on the characteristics of an individual adopter. Roger's DoI and Hall and Hord's (1987) CBAM have also been amalgamated to develop teacher based technology adoption models, such as Sherry's (1998) integrated technology adoption and diffusion model.

CBAM. Due to its roots in education, CBAM has been utilized as a conceptual framework for a number of educational initiatives. Roach, Kratochwill and Frank (2009) emphasize its general significance for school-based consultants who are implementing research-based best-practices to effect change in schools. These changes may be curricular in nature (Christou, Eliophotou-Menon, & Philippou, 2004; Hall, Alquist, & Hendrickson, 1999; Huntley, 2009; Malone, 1984) or technological (Chamblee, Slough, & Wunsch, 2008; Davis & Roblyer, 2005; Gershner & Snider, 2001). Song, Wang, and Liu (2011) utilized this framework to identify faculty concerns during the adoption of

web-based instruction. This information was then used to identify factors which could decrease the faculty's concerns and encourage the adoption of the proposed web-based instructional tools. Song, Wang, and Liu's study associates well with mine in that the relationship between teacher concerns and staff development is emphasized. Another specific example of utilizing CBAM as a research framework is Donovan, Hartley and Studler (2007) identification of teachers' concerns during a school-wide one-to-one laptop initiative. The one-to-one laptop study is also similar to mine in that it involves a mandated adoption and subsequent teacher professional development designed from the identified teacher concerns. Finally, Anke and Finch (1997) used the SoCQ while evaluating the High Schools That Work (HSTW) program. This study reinforced the CBAM model as the identified concerns shifted from self to impact concerns after directed professional development was used.

Professional Development and Adoption of Innovations

Much of the aforementioned change research actually parallels research in professional development. Professional development is the means for professional learning in education and learning is the basis for any change (Hall & Hord, 2011). According to Desimone (2009), professional development increases a teacher's knowledge and skills and as a result changes a teacher's beliefs and attitudes.

Hall and Hord's (2011) first principle regarding change is that it cannot occur without professional learning. Moreover, the stages in CBAM have major implications for professional development. First, they point out the importance of attending to where people are in the implementation process and addressing the questions they are asking when they are asking them. Often, we get to the how-to-do-it before addressing self-concerns. The kinds and content of professional development opportunities can be

informed by ongoing monitoring of the concerns of teachers (Loucks-Horsley, 1996).

The intent of this study is to evaluate the concerns the teachers have after using the SIS for a semester and identify what needs to occur in the future to progress the implementation. It is expected this will include professional development, although it is likely that there are organizational factors, which may also need to be addressed for implementation to proceed.

In educational settings, professional development has long been the key to educational improvement and change in teachers (Dede, Ketelhut, Whitehouse, Breit, & McCloskey, 2009; Desimone, 2011; Murtaza, 2010; Sykes, 1996; Wilson & Berne, 1999). When professional development activities are designed following best practices rooted in adult learning and change theory, then teachers are able to increase their knowledge and skills, modify and improve their practice, and grow emotionally, socially and personally (Desimone, 2011). Saunders (2012) also indicates the importance of professional development as a means of leveraging change. In the process of designing professional development, therefore, one must be cognizant of the perceptions of professional development, the overall purpose of the event(s), characteristics of successful processes and how professional development activities are evaluated for effectiveness. In this study, the SoCQ survey was used to identify areas of concern regarding the use of the SIS since Surray and Farquar (1994) propose such and adoption analysis should be part of any instructional design process. In addition, according to Bradshaw (2002), difference support factors are needed, based on the faculty members' stages of concern. This emphasizes the need for identifying the SoC prior to staff development. This information, as well as data collected during both formal

and one-legged interviews of the teachers regarding effective training that occurs, will be used to design supplemental professional development activities. These activities will be geared toward propelling laggards and late adopters forward in their implementation efforts.

Characteristics of Professional Development

According to Desimone (2009), “understanding what makes professional development effective is critical to understanding the success or failure of many educational reforms” (p. 181). A considerable amount of research exists regarding best practices in professional development; however, Desimone indicates much of the research points towards five critical features of professional development: content focus, active learning, coherence, duration, and collective participation. These core features incorporate activities that are teacher focused and driven, intentional, directed and situative. In addition, effective professional development requires ongoing efforts supported by follow-up, feedback and time for reflection. Evidence of these characteristics in the context of professional development encourages a positive sense of reform.

Best practices in professional development must commence at and radiate from the core of the system. For this reason, the teachers within the school should drive professional development (Borko, 2004). Involving the teachers in the origins of the change can help them to see the connection between what they are trying to do and the desired effects on students (Lieberman & Miller, 1981). This concept is reflected in the utilization of opinion leaders, such as the teacher coaches employed in this study, to develop and promote the implementation of the SIS. Designing professional development through the teachers is empowering for the change effort, and having a

facilitator who is a member of the change system (Guskey, 1986) will increase the investment in school-level capacity building and cohesion to the goals (Hawley & Valli, 1999).

A key component of professional development is that it be situative (Borko, 2004). First, having the professional development take place within the school setting allows teachers to have the new experiences in non-threatening circumstances (Fullan, 2010). Making the activities as job-embedded as possible (Dede et al., 2009; Guskey, 1986; Guskey, 2000; Hargreaves, 2000; Lieberman, 1995) helps teachers to ease into use of new practices (Guskey, 1986). Second, change typically takes place after teachers see it work in context; by allowing professional development activities to take place in the school setting, and preferably during the school day, teachers can more easily integrate the change into their routine (Bredeson, 2002; Garet, Porter, Desimone, Birman, & Yoon, 2001; Guskey, 1986; Murtaza, 2010). A small caveat to the situative perspective is that site based professional development has a greater potential of success than district wide (Guskey, 2000; Hargreaves, 2009). Situateness was accomplished in this study by incorporating training sessions into the common plan time of the school day. In addition, training initiatives are situated to be just in time for events such as progress reports and report card production.

In conjunction with a situative perspective, an important aspect of professional development is that it is ongoing (Garet et al., 2001; Todorova & Osburg, 2010). Professional development should be dynamic and change to fit the evolving questions and situations (Goderya-Shaikh, 2010; Guskey, 1986; Guskey, 2000; Murtaza, 2010); one-time professional development activities do not allow for the possibility of questions

after the session is complete. Professional development opportunities need to occur over an extended period of time (Dede et al., 2009; Goderya-Shaikh, 2010; Guskey, 2000). Sustained professional development is typically regarded as more than twenty hours (Desimone, 2009; NCLB, 2001; Todorova & Osburg, 2010; Yoon, Duncan, Lee, Scarloss, & Shapley, 2007) although Guskey and Yoon (2009) indicate at least thirty contact hours as necessary for professional development to have a positive effect. To this point, the professional development associated with the implementation of the SIS has encompassed six hours of mandatory training, eight hours of optional training and numerous hours of one-on-one spontaneous or panic driven tutorials.

Summary

In the case of mandated innovations, schools tend to mimic traditional views of organizations. Organizations often take the decision making process for using an innovation out of the hands of their employees and leave their employees to focus on the mandatory implementation and habitualizing of the innovation. This eliminates the first three steps in the innovation diffusion process and leaves implementation and confirmation to the teachers. Considerable research exists on individual teachers' personal diffusion of technological innovations and the implementation of these innovations. This research and best practices in teacher professional development can be utilized throughout the implementation stage as a means for encouraging the diffusion of an innovation in schools. This can be taken a step further by identifying the teachers' stages of concern for the innovation and adapting the professional development to accommodate these concerns.

Table 2-1. Comparison of innovation processes

Rogers' Stages of Innovation Decision Process	Lewin's 3-stage Model for Change
Knowledge Stage <ul style="list-style-type: none"> Recall of information Comprehension of messages Knowledge or skill for effective adoption 	Unfreeze <ul style="list-style-type: none"> Identify existing beliefs, attitudes, behaviors and values Identify need for change Create a disequilibrium
Persuasion Stage <ul style="list-style-type: none"> Discussion of new behavior with others Acceptance of the message Formation of positive image of message and innovation Support for innovative behavior from system 	
Decision Stage <ul style="list-style-type: none"> Intention to seek additional information Intention to try innovation 	
Implementation <ul style="list-style-type: none"> Acquisition of additional info about innovation Use of innovation on regular basis Continued use 	Change <ul style="list-style-type: none"> Resolve uncertainties Identify and implement innovation
Confirmation Stage <ul style="list-style-type: none"> Recognition of the benefits Integration of the innovation into routine Promotion of innovation 	Freeze <ul style="list-style-type: none"> Establish support system Anchor change

Table 2-2. Summary of stages of innovation adoption process

Initiation Stage		Implementation Stage	
Knowledge-awareness sub-stage		Initial implementation sub-stage	
<ul style="list-style-type: none"> • Identification of performance gaps • Awareness of a new innovation 	Attitude formation sub-stage		<ul style="list-style-type: none"> • Trial basis
<ul style="list-style-type: none"> • Climate for change 	Decision sub-stage		Continued implementation sub-stage
<ul style="list-style-type: none"> • Information gathering • Processing 	<ul style="list-style-type: none"> • Formalization of implementation 		

Table 2-3. Hall and Hord's stages of concern definitions

Stage of Concern		Definition	
	6	Refocusing	Exploration of universal benefits or alternatives.
Impact Concerns	5	Collaboration	Focus on coordination and cooperation with others.
	4	Consequence	Focus on impact of innovation on students.
Task Concerns	3	Management	Focus on processes and tasks involved in use of the innovation.
Self Concerns	2	Personal	Focus on demands of the innovation, one's inadequacies, and one's role.
	1	Informational	General awareness and interest for the innovation.
	0	Unconcerned	Little concern about or involvement with the innovation.

Note: Adapted from "Stages of Concern" by G.E. Hall & S.M. Hord, 2011, *Implementing Change: Patterns, Principles, and Potholes*.

CHAPTER 3 METHODOLOGY

This chapter outlines the research design for this study. This study was a mixed-method action research study of the implementation of a new student information system in a rural high school. I chose action research for the design of this study since I was, and continue to be, actively involved in the implementation of the student information system (SIS). As a member of the selection committee, one of the teacher coaches, the person who designs much of the in-house professional development for the high school and one who is frequently called upon for input in technology issues, I am entrenched in the process as an action researcher and committed to the successful implementation of the SIS. As a result of my systematic inquiry into the SIS, I tried to gain insight and effect positive change in the school. In this implementation, I am being utilized by the administration as an opinion leader for the diffusion of the SIS; opinion leaders, according to Rogers (2006) serve as social models for innovations. Action research assumes that teacher researchers are committed to continued professional development and school improvement (Mills, 2011). Implementation typically takes at least three years (Fullan, 2001), and I will continue to direct this process at the high school in the 2013-2014 school year. I believe the system has great potential for the teachers and students alike, provided the implementation is successful.

My role in this research process stemmed from my position within the school district. Although my primary function is as a chemistry teacher, I am consistently utilized as a technology mentor, teacher trainer, and in more recent years as one who designs and delivers professional development for the district teachers and administrators. My technological aptitude and enthusiasm for the integration of

technology in the classroom has endeared me to the network administrator as an ally and resource. As such, I am often asked to participate on technology related committees. This reputation elicited my invitation to participate on the SIS committee and serve as a teacher coach. As a participant in the decision to purchase this SIS and the design of its implementation at the high school, I have a great deal vested in its success. However, as a practitioner scholar, I also feel great responsibility for systematically studying and learning from innovations to improve both my practice and the effectiveness of my school.

Context of Study

In winter of 2011, the GSD administration began a search for a new SIS, which could integrate the three existing separate systems used for teacher classroom management, administration functions such as attendance, scheduling, transportation, and business management for the individual buildings and the district as a whole. As a teacher leader for educational technology and one who frequently plans and delivers professional development and training sessions for teachers, I was asked to be a member of the committee of administrators, technology specialists and teachers who investigated a variety of possibilities and eventually chose as the new system, Infinite Campus.

After its purchase, I became a teacher coach and helped to direct the implementation of the new SIS. Although I assisted in the training of the teacher coaches, my primary focus has been providing the implementation strategies for the teachers at the high school. I provided the high school teachers with both voluntary and mandatory training sessions and access to teacher coaches for support. In addition, I designed a Moodle site where the teachers could access help sheets and guides for

various aspects of the SIS management. This implementation has continued throughout the first semester of the 2012-2013 school year with morning training sessions, one-on-one help sessions, and informational e-mails.

Population and Sample

This study focused on the implementation of a new SIS at Girard High School (GHS). GHS employs 38 teachers, two administrators, two guidance counselors, one nurse and three staff members who utilize the SIS on a daily basis. [Table 3-1](#) indicates the distribution of teachers by departments. Currently, the district utilizes one of the foreign language teachers as an English teacher for part of the year and one of the health and physical education (HPE) teachers is the district athletic director for one-fourth of the school day. I received permission from senior district administration to conduct this research, prior to beginning. In addition, all interview and focus group participants signed an Informed Consent agreement ([Appendix C](#)) prior to participation; respondents of the online survey acknowledged their awareness of the parameters of the research as well. . Once the focus group data were transcribed, typed transcripts were sent to the focus group participants for member checking.

Purpose of Study

The purpose of this research was to identify where the teachers are in their personal implementation of the SIS and what needs to be done in the future to further support this implementation. The goal for this research was to determine what future steps should be taken in order to influence the effective implementation of the new SIS and encourage the teachers to move from compliance of utilization to full incorporation and appropriation of the SIS. Following the decision to purchase and implement the

new student information system beginning in August of 2012, the research questions were,

- Where do the teachers see themselves in terms of the implementation?
- What barriers do the teachers and staff perceive to implementation of the SIS?
- What personal or organizational aspects do the teachers and staff perceive as enabling implementation of the SIS?
- How does the implementation compare to steps taken by other school districts?

The results of this research were used to identify the next steps in the implementation process. The data collected helped to identify the enablers and barriers, which affected the diffusion of the innovation. These steps include necessary professional development activities, organizational support structures, and acting on other factors which I had not been previously identified. According to Enomoto and Conley (2007), “harnessing technology may be more challenging and less predictable than expected because of technological glitches, implementation demands, and individuals acting to meet accountability goals” (p. 165), and this was a definite factor in the implementation.

Damanpour and Schneider (2006) as well as Rogers (2003) indicate that Diffusion of Innovation (DoI) is multidimensional; it can be influenced by either environmental or contextual factors, by characteristics of both the individuals and organizations that adopt the innovation, and by the characteristics of the innovation itself. This study aimed to identify the characteristics and factors that helped to enhance the implementation or hindered it. Specifically, the implementation of an innovation, i.e. an SIS, at a rural high school was studied. The purpose of the research was to identify how well the implementation process worked and if further professional

development is necessary for the teachers to transcend from compliance to incorporation of the SIS. Administration asked the teachers to change from a gradebook system that many saw no problems with to a new system, unfamiliar system. In addition, the transition had to occur during the first semester of the school year. There is no option to revert to the old system, as the district cancelled services with the previous gradebook company and did not renew services with the previous student-parent portal. There was and is considerable pressure, therefore, to ensure the SIS implementation is effective. Although I will continue the implementation process throughout the spring 2013, the data collected and analyzed through this study will be used to target future training in the SIS. As an action researcher, I am committed to utilizing my abilities to draw the teacher into higher levels of comfort and routine, heightened use of the SIS.

In August of 2012, prior to implementing the new SIS, several district administrators were interviewed regarding their views on the implementation process. The administrators included the principals from each of the buildings, the elementary school assistant principal and the director for curriculum and instruction. The focus of the questions that were asked during these interviews ([Appendix D](#)) was the forthcoming implementation of the SIS. At the time of the interviews, the voluntary training had taken place with the teachers and the mandatory training was forthcoming. The administrators all expressed a small degree of concern regarding teacher implementation. As one stated, "It's going to take time for people to become comfortable with the new system; to make it second nature in its use. It is hard to get people to change their routine and it's even more difficult if people think they don't have

enough time to play with it.” Some of the concern originated with what the administration perceived as insufficient training from the corporation. All of the administrators highlighted difficulties that had occurred during the core team training and concerns that the events would have repercussions. They all, also, indicated a great deal of confidence in the teacher coaches’ abilities to provide good quality training events for the staff.

Since this research focused on only the high school’s implementation of the SIS, I revisited the high school principal and district technology coordinator with follow-up questions in February. The building principal directed me to the guidance counselor in charge of Infinite Campus for further information; she was more involved with the teachers and he felt she could better answer my questions regarding the implementation process. The follow up questions included the following: Are you pleased with how the implementation has progressed? What do you feel still needs done? This information provided an administrative point of view regarding the implementation. This was important as the administration drove the change.

Research Design

The implementation process began in February of 2012 with the initial review of student information systems by the committee. A timeline for this process is in [Figure 3-4](#). Training for the administrators, counselors, nurse, and staff members occurred separate from the teachers as these groups utilize different components of the SIS in varying ways.

The administration decided a voluntary, three hour training session would be offered during our summer Teachers’ Academy in August 2012. This session was open to any teacher in the district. The initial professional development was both an

introduction to using the new system and a brief overview of the potential for the new system. According to the National Staff Development Council (2008), professional development (PD) is “a comprehensive, sustained, and intensive approach to improving teachers’ and principals’ effectiveness in raising student achievement (which) fosters a collective responsibility for improved student performance...as supported by activities” (para. 3). In an effort to help teachers make the connection to their students, I made the decision to train the teachers using their live data, rather than using demonstration classrooms with imaginary students. This was done to make the training relevant for the teachers and to ensure they were structuring the administrative settings properly. This also served to provide activities which are situative and job-embedded (Borko, 2004; Dede, et al., 2009; Guskey, 2000; Hargreaves, 2000). As each component of the system was explained and projected for the teachers to see, the teachers mimicked the settings and actions. While I was presenting, the two instructional technology support staff moved through the room to help and troubleshoot any technical issues; the presence of the support staff accentuated the administrative support for successful implementation (Darling-Hammond, 2009; Guskey, 2000; Hawley & Valli, 1999; Murtaza, 2010). I use the term training as opposed to professional development intentionally. Training is an acquisition of skills which will improve one’s performance. At this point in the implementation, the teachers needed to learn the features and functionality of the SIS, therefore training is appropriate.

The mandatory training for the high school teachers occurred during an in-service day before school began. The teacher coaches at the high school, myself and a computer teacher, were responsible for training these teachers. The selection of

teacher coaches from each building to provide training supports Desimone (2011) and Guskey's (1986) emphasis on the importance of utilizing a facilitator who is member of community. This mandatory training followed this same format as the summer academy; however, I was only allotted half the time with the teachers.

Although both teacher coaches were accessible for help throughout the school day, I established two mornings a week for dedicated Infinite Campus help sessions. In addition, the teachers were encouraged to email any immediate questions they had to myself or the other coach. I also developed a resource Moodle site where I uploaded printable handouts and video tutorials should the teachers need to refresh their skills (Figure 3-3). In addition, the middle and high school teacher coaches, as well as the IT staff, became part of an email ring where we could troubleshoot for each other. Any e-mails and communications with teachers were recorded in my implementation journal.

As the lead teacher coach in the implementation process, I work extensively with the guidance counselor in charge of managing the grading process to ensure the teachers are taught techniques which function synergistically with the processes conducted by staff members. As a teacher, I was not familiar with the report card or progress report printing process, so she would identify the components the teachers needed to know, and I would facilitate transmitting that information to the teachers. These frequent interactions with the administrators and other staff members while troubleshooting technological issues helped to identify new training or communications that were necessary with the teachers. For example, the guidance staff had to identify what fields they needed to download for the mid-quarter progress reports and the teachers had to be shown how to flag these fields for the data report. This process

grounded the training so it was anchored in a problem of practice (Darling-Hammond & McLaughlin, 1995; Desimone, 2011). These interactions were also recorded in my journal.

Data Collection

Stages of Concern Questionnaire (SoCQ). Hall and Hord (1987, 2011b) have identified seven Stages of Concern which are relevant when implementing a new innovation. These concerns are classified in three general groups. Self-concerns can range from the individual being unconcerned, simply aware of the innovation in an information sense, or having personal concerns regarding the impact of the innovation. Task concerns focus on managing the new innovation. Finally, impact concerns involve evaluating the consequences of the innovation, collaborating with others to use the innovation, and refocusing universal benefits of the innovation or replacing it. An individual's location amongst these stages can be ascertained through the SoCQ.

The SoCQ was originally designed in the 1970's, and underwent a decade of modification and refinement as it was utilized in major studies. It has been successfully utilized to identify users' concerns regarding a new innovation and to track individual's progress through the stages of concern (Hall, Newlove, George, Rutherford, & Hord, 1991). The validity of this instrument has been verified through correlation within the stages and to other variables (George, Hall & Stiegelbauer, 2006). The Stages of Concern theory has been utilized as a means for evaluating and supporting the implementation of a change process (Gershner, & Snider, 2001; Van den Berg, 1993; Yuliang, & Huang, 2005). It has also been used as a means for developing and supporting professional development (Dobbs, 2004). The majority of the studies highlighted by George, Hall, and Stiegelbauer (2006) as exemplary uses of SoCQ follow

an action research methodology. Coefficients of internal reliability calculated within each study for each stage of the SoCQ indicate a high degree of reliability (George, Hall, & Stiegelbauer, 2006).

Prior to using the SoCQ, I participated in online webinars for the use and interpretation of SoCQ. The SoCQ was customized with the addition of the following elements:

1. A 'Consent to Participate Statement' (Figure 3.1) was added to the opening screen of the questionnaire. Respondents were presented with a 'Continue to the questionnaire' button at the top and bottom of the consent to participate statement.
2. An introductory statement at the top of the questionnaire. The brief statement was designed to provide the respondent with a definition of the innovation being studied.
3. The name of the innovation, Infinite Campus, was substituted for the generic term Innovation throughout the questionnaire.
4. Two open ended questions were added to the survey: What helped you the most implementing Infinite Campus? What else, if anything, would you like to learn about Infinite Campus. The data from these two questions was coded and analyzed with the qualitative data.

All of the staff and faculty (n=37) were asked to complete the SoCQ at the end of January. This was an anonymous, online survey to collect quantitative data regarding the teachers' location in the stages of concern . The invitation was extended during a morning faculty meeting, followed by an email with the link to the survey. After one week, a reminder was placed in the teachers' mailboxes in the form of a thank you card for participating in the survey and a reminder if they had not already done so. Sixty percent of the teachers completed the survey.

Focus groups. Focus groups were used to gather additional qualitative data from the teachers. Volunteers for the focus groups were requested through a verbal

invitation at a faculty meeting and a follow-up e-mail. Four groups of 12 participants were scheduled; one group of two teachers, two groups of three teachers and one group of four teachers. The distribution of the participants was six HPE/Unified Arts teachers, two math teachers, two science teachers, one special education teacher, and one English teacher. These groups met the criteria originally indicated by Merton and Kendall (1946) and reiterated by Morgan (1996): the group's function is data collection for the purpose of research, interactive discussions should be encouraged and the interviewer should prompt the discussion when necessary. Although most of the groups were smaller than typically prescribed (Kitzinger, 1995; Morgan 1996), they provided an organized social setting to gather attitudes, feelings and beliefs regarding the SIS. These sessions allowed me to probe for deeper meaning and encourage participants to expand on what others are saying (Kitzinger, 1995; Merton & Kendall, 1946; Morgan, 1996).

The leading questions for the focus group were based on Hall and Hord's (2011b) Levels of Use interview protocol. The Levels of Use (LoU) provides a snapshot of the ways the innovation is being used by individuals by focusing on the development of the skills associated with the innovation as well as the degree of use of the innovation. The seven levels measured involve observable behaviors include knowledge, acquiring information, sharing, assessing, planning, status reporting and performing. I chose not to use the LoU interview protocol, which is designed for individual interviews, in favor of focus groups, in an effort to increase the comfort level and number of participants. However, this protocol guided my questioning. The leading questions for the focus group are in [Appendix C](#). I served as the facilitator for the focus

groups. Although there is sometimes concern when the interviewer is the researcher that the participants will not be as forthcoming as they may have been with another person, the perceived risk is less of a concern than not obtaining sufficiently deep data.

Implementer interviews. In addition to interviewing administrators within my school district, I also interviewed administrators from three other districts who have previously implemented Infinite Campus as their SIS. This was done to identify how other districts have trained their teachers; this information may provide insight for designing the future professional development or identify issues we have not yet encountered. I tried to solicit interviews from other districts of similar demographics to GSD who had implemented Infinite Campus already. Locally, I knew of one district who was utilizing the SIS; I contacted the technology coordinator of the district via email, requested and was granted an interview. I also solicited interviews directly from two other districts, one in Iowa and one in Georgia. I identified these districts by mining the Infinite Campus community website for school districts who had implemented the SIS within the past four years. Of these two districts, one technology coordinator responded to my interview request. Both of these districts were of similar demographics to GSD (rural and < 1800 students K-12). I also posted in the Administrator's Forum of the Infinite Campus Community Website a request for participation ([Figure 3-3](#)). This forum post elicited a response from a technology coordinator in upstate New York; his school district is slightly larger than Girard School District. The resultant interviews took place via phone. The data from these other school districts was coded and categorized. The questions for these interviews are in [Appendix F](#) and focus on the implementation process.

Researcher journal. According to McCutcheon and Jung (1990) two of the core components of action research are systematic inquiry and reflexivity. Reflexivity involves the researcher critically reflecting on their interactions and influence on the study. This includes the participants and the research procedures (Glesne, 2011). This information can serve as a source of qualitative data regarding the implementation process and both positive and negative issues that arise. As an active participant in this process, I was involved in reflection throughout this study as a means of learning; I maintained a journal of events, actions and thoughts that occur throughout the process. This includes reflections on participant use of the SIS, the interactions I had with them and the administrators, and my personal concerns and thoughts regarding the process. I also used this journal to reflect on what Hall and Hord (2011a) classify as one-legged interviews with teachers. One-legged interviews are brief conversations that change facilitators have with the people implementing the innovation. I documented in my journal any such event in which I participated. This can help provide insight into the attitudes of the teachers and perhaps help to direct necessary training sessions as well.

Data Analysis

SoCQ. Respondents to the survey were presented with 35 statements of concern about the innovation and asked to respond by selecting one of eight choices on a 0 to 7 Likert scale. The choices consisted of: 0 = Irrelevant; 1 = Not true of me now; 2, 3, or 4 = Somewhat true of me now; 5, 6, or 7 = Very true of me now. Low scores indicate relatively low level or intensity concerns for the respondent while high scores indicate relatively high level or intensity concerns. These values are used to calculate the raw score for the teachers' level of concern. Each of the statements in the survey is aligned with a particular stage. The scores the teachers assigned to the statements are

associated with the stage questions and summed. This allowed the answers to the questions to be translated into a raw score which corresponds to percentiles for each stage of concern. After conversion to a percentile, the percentiles were graphed; this provided a visual diagram of the individuals' relative intensity for each of the eight levels of concern. The collected data identified the individual teachers' concern level in the adoption of the SIS at the end of the first semester.

Scoring of the SoCQ was accomplished through a computerized program, which accompanied the purchase of the SoCQ online version. This program compiles the data, calculates the raw scores for each stage, converts them to percentiles and produces a Stages of Concern chart while provides a snapshot of where individuals, subgroups or the entire group's stages of concern. The responses from the survey were sorted by question type; each of the questions corresponds to a particular stage of concern ([Table 3-3](#)). This raw data was analyzed using software provided by SEDL; this software converted the raw scores into percentile scores and graphed a stages of concern profile for each respondent based on their relative intensity for the level of concern. As is recommended by George, Hall and Steinbauer (2006), two questionnaires were hand scored in order to verify the computer output. The quick scoring device may be found in [Appendix B](#).

The guidelines for analyzing the SoCQ as indicated in George, Hall and Stiegelbauer (2006) encourage evaluators to rely primarily on the paragraph definitions for each SoC when analyzing the data. A summary of those definitions is explained in conjunction with the analysis. In addition, George, Hall and Steigelbauer emphasize interpretation should be informed by a holistic perspective, careful examination of high

and low stage scores, and investigation of individual responses (2006). SoCQ data may be interpreted in a variety of ways; interpretation of the peak scores, the first and second highest scores and the overall profiles can be accomplished for the group or by individuals. The group data is based on an average of the individual responses. Since this was a relatively small group (n=22), the group data could be affected by outliers. For this reason, the data was interpreted for the individuals rather than as one group.

An example of a SoC chart is found in [Figure 3-2](#). The results of this questionnaire were used to develop further training for the teachers. According to Hall and Hord (2011b), interventions are the key to the success of the change process. These most typically take the form of training workshops. Therefore, SoCQ was used to drive the content of the subsequent training events.

Qualitative data. A qualitative analysis of the interviews and the focus groups provided data for evaluating the professional development (Glesne, 2011). The data collected through the focus groups and interviews was stripped of identifiers when it was transcribed and analyzed using coding and categorizing. Coding, according to Strauss and Corbin (1998), involves examining and categorizing data in order to identify similar characteristics. These similar characteristics allowed me to map the data and make comparisons amongst the codes. I reviewed the data several times to locate codes and sub codes and categorized the codes. Using the constant comparative method, I compared and contrasted the data as I collected it for categorizing into codes in order to understand how the data related to my research questions. As codes became saturated, the categories developed (Glaser, 1965). As I reviewed the codes, I refined them until they were no longer repetitive, and grouped the codes based on

patterns in the data to create an organizational framework (Glesne, 2011). Categorizing the codes lead to the development of common themes.

A general concern of qualitative research is the reliability of the coding process. A means of increasing reliability, however, is by using inter-rater reliability techniques. This involves two researchers analyzing the data and a comparison of the resultant codes (Armstrong, Gosling, Weinman, & Marteau, 1997). Another graduate student coded and categorized two of the focus groups for me. After coding independently, we met and discussed the similarities and differences between our codes. The codes we developed separately differed primarily in semantics. For example, I indicated a code as training issues and she referred to it as needing training. I added the code experiencing technical difficulties after our discussion; I had the content of this code embedded within another code, however my peer pointed out the importance of this as a barrier to use.

Triangulation of data. Utilizing a variety of instruments for collecting the data, the SoCQ, focus groups, interviews of other school districts, and my journal, allowed for triangulation of data and increased the credibility of the study (Mills, 2011). The triangulation matrix ([Table 3-2](#)) shows the correlation between the data collected and the research questions. This triangulation increased the internal validity of the study as well. External validity is limited due to the small sample size and the nature of the action research project. The goal of this action research study was specific to my school district, therefore its generalizability is limited.

Limitations

Although the entire teaching staff was asked to participate in the survey for this study, it was not a requirement of the implementation process. This created an even

smaller sample size and therefore reduces the generalizability of the study. In addition, the survey was presented online. As a result, the data may be skewed towards those who are more comfortable utilizing technology. This study was also limited by the interview sampling technique; although the entire staff was asked to participate in the survey process, volunteers populated the focus groups. The volunteer nature limits the transferability of the results.

Rogers (2003) accentuates another limitation of this or any similar study. He indicates that research on diffusion of innovation may be subject to pro-innovation bias. Rogers suggests, however, that this may be limited if the innovation is studied during the implementation phase as occurs during this study. My own researcher bias, therefore, must be acknowledged. Not only was I involved in choosing the SIS, but also I am instrumental in developing and presenting the training and PD. As a result, I naturally wish to not only see the implementation succeed, but I also desire the teachers to believe I made a good choice in recommending this system. In addition, I have worked at the school district for twenty years and have worked with 14% of the faculty for all twenty years. In addition, only 11% of the faculty has been hired within the past five years, so I have worked with the majority of the teachers for the past 15 years. Additionally, I socialize with three of the teachers outside of school on a regular basis. These factors may influence my research and consequential analysis of the data. Since this implementation study began on my initiative and not as a work assignment, the evaluation was less vulnerable to bias. By using a researcher journal and by recognizing the potential of my own bias (Mills, 2011), I will minimize the potential effects of this bias. This study is delimited, as the teachers involved were high school

teachers at the same school district. All of these teachers teach in the same building and are provided identical professional development and supplemental training opportunities. Although the entire district is implementing the new SIS, I made a conscientious decision to only use the grades 9-12 teachers as part of this study. This is primarily a result of the direction the different building administrators wanted for the implementation and the actions of the teacher coaches in the buildings. The middle school teachers are utilizing the SIS in the same manner as the high school teachers, however the method for training and professional development differed significantly. In addition, the elementary school administration chose to utilize the SIS in a minimal way and was, therefore, not comparable to the high school in terms of use.

Summary

In order to design effective professional development or training activities, in particular for technological innovations, one must be aware of where the individuals are in terms of their stages of concern (Hall & Hord, 1987). The use of the SoCQ allows for personalization and specialization of professional development activities designed to further a teacher's level of use of the new SIS. Through an analysis of the SoCQ, activities will be designed to help the teachers progress through the implementation process.

Table 3-1. Demographics for GHS

Department	Number of faculty	Percent of faculty
Business Education	2	5.3%
Foreign Language	2	5.3%
Art/Music/Home Economics	3	7.9%
English	5	13.2%
Mathematics	5	13.2%
Social Studies	5	13.2%
Science	6	15.8%
Learning Support	6	15.8%

Table 3-2. Triangulation matrix for data collection

Research Questions	Data Sources		
	SoCQ	Focus Groups	Journal
Barriers to implementation?	X	X	X
Enablers of implementation?	X	X	X
Effective Strategies?	X	X	X
Current implementation?		X	X

Table 3-3. Statements on the stages of concern questionnaire arranged by stages

Stage 0	
3	I don't even know what the innovation is.
12	I am not concerned about the innovation.
21	I am completely occupied with other things.
23	Although I don't know about the innovation, I am concerned about things in the area.
30	At this time, I am not interested in learning about this innovation.
Stage 1	
6	I have a very limited knowledge about the innovation.
14	I would like to discuss the possibility of using the innovation.
15	I would like to know what resources are available if we decide to adopt the innovation.
26	I would like to know what the use of the innovation will require in the immediate future.
35	I would like to know how the innovation is better than what we have now.
Stage 2	
7	I would like to know the effect of reorganization on my professional status.
13	I would like to know who will make the decisions in the new system.
17	I would like to know how my teaching or administration is supposed to change.
28	I would like to have more information on time and energy commitments required by the innovation.
33	I would like to know how my role will change when I am using the innovation.
Stage 3	
4	I am concerned about not having enough time to organize myself each day.
8	I am concerned about conflict between my interests and my responsibilities.
16	I am concerned about my ability to manage all that the innovation requires.
25	I am concerned about time spent working with non-academic problems related to the innovation.
34	Coordination of tasks and people is taking too much of my time.
Stage 4	
1	I am concerned about students' attitude toward the innovation.
11	I am concerned about how the innovation effects students.
19	I am concerned about evaluating my impact on students.
24	I would like to excite my students about their part in this approach.
31	I would like to use feedback from students to change the program.
Stage 5	
5	I would like to help other faculty in their use of the innovation.
10	I would like to develop working relationships with both our faculty and outside faculty using the innovation.
18	I would like to familiarize other departments or persons with the progress of this
27	I would like to coordinate my efforts with others to maximize the innovation's effects.
29	I would like to know what other faculty are doing in this area.
Stage 6	
2	I now know of some other approaches that might work better.
9	I am concerned with revising my use of the innovation.
20	I would like to revise the innovation's approach.
22	I would like to modify the use of the innovation, based on the experiences of our students.
31	I would like to identify how to supplement, enhance, or replace the innovation.

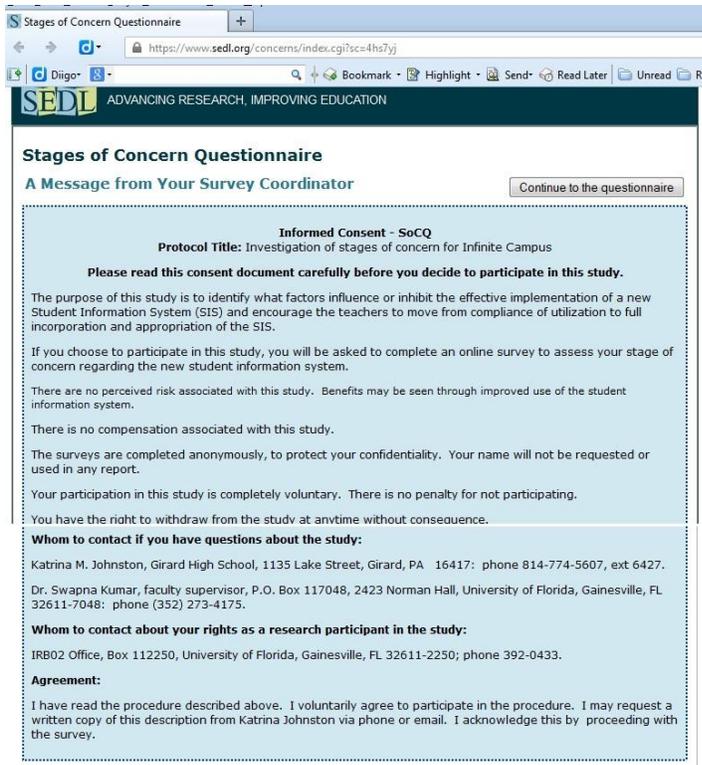


Figure 3-1. Informed consent for SoCQ

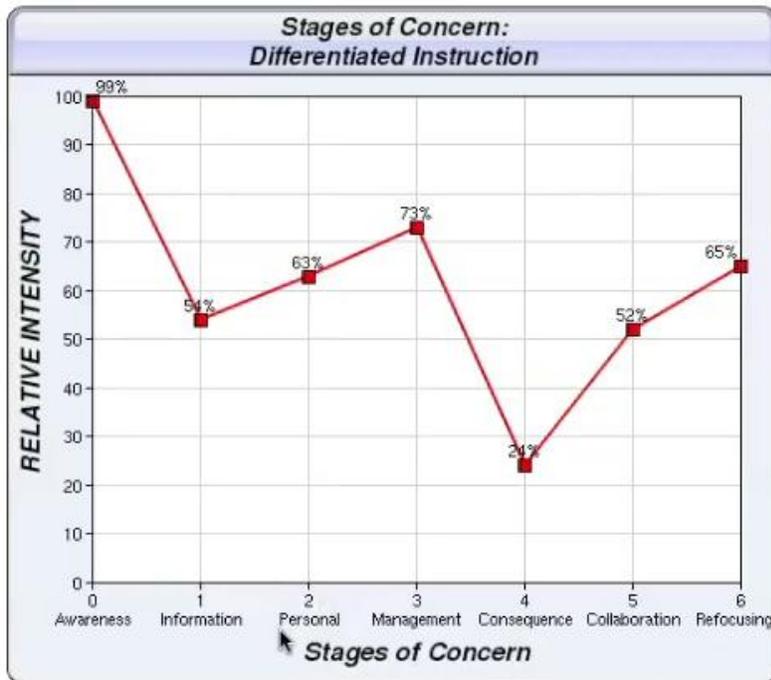


Figure 3-2. An example of a Stages of Concern chart

2 Tutorials and Support Documents

Powerpoint from Summer Academy

This is the Powerpoint I used for the Summer Academy. It highlights many of the things you can do with IC, but it is not all inclusive as I bounced back and forth between this and the live site.

IC Roster Documentation

IC Attendance Documentation

IC Grade book documentation

Attendance Powerpoint

How Do I Take Attendance?

HOW DO I CREATE CATEGORIES FOR FORMATIVE AND SUMMATIVE??

IC_Categories.pptx.mp4

Figure 3-3. A screen shot from the reference Moodle



Figure 3-4. Timeline for implementation

Doctoral Research Today 10:21 AM #1

katjohnston Junior Member
Join Date Aug 2012
State PA

Hello,

I am a high school teacher in PA as well as a doctoral candidate at the University of Florida. My research is focusing on the implementation process my school district has gone through during this past year as we have put Infinite Campus into place. My doctoral committee would like me to interview several other districts who have implemented IC so that I might not only compare what we have done, but also possibly get some ideas for continuing our implementation. So, this is a plea for people to be interviewed! I am interested in talking with people who were in charge of the implementation with the teachers (technology coordinators). Ideally, I am looking for districts with similar demographics (rural, ~ 1700 students K-12), but beggars can't be choosers! If you are interested in participating in my research, I can be reached at the email below. The interview can take place either via email or phone.

Thank you for your help in advance!

Katrina Johnston
tjohnston@gsd.k12.pa.us

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Figure 3-5. Forum post soliciting other districts

CHAPTER 4 RESULTS

Introduction

The purpose of this study was two-fold. First, I wanted to determine the progress high school teachers in the Girard School District (GSD) had made in their personal implementation of the newly adopted Student Information System (SIS). Second, I wanted to identify how to work with the high school teachers to move from simple compliance with the utilization of the SIS to full incorporation and appropriation of system during the next school year.

I collected data through various instruments. Quantitative data was collected through the Stages of Concern Questionnaire (SoCQ). Twenty-two teachers or 60% of the faculty responded to the request to complete the SoCQ. None of the teachers reported difficulty accessing or completing the survey, although one teacher expressed some confusion with the content of the questions. The demographics of the reporting teachers are in reported in [Table 4-1](#) and [Table 4-2](#).

Qualitative data was obtained through four focus groups, interviews with technology administrators from three other districts, and my journal. Additionally, one-legged interviews were conducted with the technology administrator, the director of guidance, a building administrator and the attendance secretary. All of the respondents were offered copies of the transcripts to review, however no one requested the documents. The identified codes and sub-codes for the focus groups and administrator interviews are in [Tables 4-3](#) and [4-4](#), respectively.

This chapter is organized by the source of the data collection: the SoCQ analysis, focus group findings, administrator interview findings, and journal findings.

Within each of these sections, the relevance to the research questions is explained: the SoCQ is relevant only to research question 1, while the focus groups provided data relevant to research questions 1-3 and the interviews with administrators from the other districts provided the data for research question four.

Stages of Concern Questionnaire

The Stages of Concern Questionnaire (SoCQ) was the primary source of data used to answer the question: Where do the teachers see themselves in terms of the implementation? This survey instrument was an online version of the SoCQ ([Appendix C](#)) that was completed by sixty percent of the faculty (n=37). The SoCQ identifies the relative intensity the teachers express, relative to the seven stages of concern. Stage 0 is the Unconcerned Stage where teachers have little concern about the innovation. Stages 1 and 2 are self-concern stages. At Stage 1, Informational, the teachers have a general awareness or interest in the innovation, while at Stage 2, Personal, they focus on the demands of the innovation and their role or inadequacies with it. Stage 3, Management, is a task-concern stage; the teachers are focusing on the processes and use of the innovation. Finally, Stages 4 through 6 are impact-concerns; the teachers are focusing on relationships and the innovation. In Stage 4, Consequence, teachers focus on the impact of the innovation on students, in Stage 5, Collaboration, focus is on coordination and cooperation with others, and finally, in Stage 6, Refocusing, teachers focus on universal benefits of the innovation or an alternative to the innovation.

Respondents were presented with 35 statements of concern about the innovation and asked to respond by selecting one of eight choices on a 0 to 7 Likert scale. The choices consisted of: 0 = Irrelevant; 1 = Not true of me now; 2, 3, or 4 = Somewhat true of me now; 5, 6, or 7 = Very true of me now. Low scores indicate relatively low level or

intensity concerns for the respondent while high scores indicate relatively high level or intensity concerns. This data were analyzed macroscopically through a percentile graph, by an analysis of the individual teachers' item analysis and through a group item analysis.

Percentile graph. Once the survey was completed, the respondents' raw scores were converted into percentiles and plotted on a graph (Figure 4-1) to show the relationship between the relative intensity and the stage of concern. A high percentile score in Stage 0 (Awareness) indicates the individual has low concerns, attention, or interest in the innovation. One of the statements associated with Stage 0 summarizes the intent of this stage: I spend little time thinking about the SIS. In an interpretation of the peak scores (Table 4-5), 77% of the respondents showed Stage 0 as their high score. This means that 17 of the 22 teachers indicated they are not concerned with the SIS. In the case of innovation users, as these teachers are, a high Stage 0 does not mean the teachers are not using the SIS, it refers to the teachers being more worried about other tasks (George, Hall, & Stiegelbauer, 2006). In addition to the 17 teachers who exhibited their highest level of concern at stage 0, two of the teachers showed their highest concern peaking at stage 1 (Informational), one indicated their highest concern at stage 2 (Personal), and one teacher showed a peak at stage 5 (Collaboration). Stage 1, the informational stage, indicates the teachers have an awareness of the innovation and are interested in its general characteristics, effects and requirements for use. These teachers want to know more. Stage 2, the personal stage, is defined as teachers are uncertain of the demands of the innovation and their adequacy for meeting those demands. These teachers are exhibiting egocentric tendencies. Finally, Stage 5,

the collaboration stage, is where the individual focuses on finding ways to work with others in relation to the use of the innovation.

Item analysis. An item analysis of individual teachers' responses for the stage identifying statements revealed a Q-sort of the survey items. That is, the questions associated with specific stages were consistently marked either high or low; there was little irregularity or inconsistency within the questions in each stage. [Table 4-6](#) provides an example of a Q-sort of the survey items where Stages 1-5 show consistent low marks for the identifying questions. Stage 0, however, has a range of 5 points on the question responses and does not show consistency of response. This inconsistency is even more evident when one looks at the data for the entire group ([Table 4-7](#)). This raw data represents the sum total responses from all of the teachers for the statements in the survey.

Eighty-eight percent of the respondents whose highest percentile was in Stage 0 responded either 0 or 1 to question 3, "I am concerned about another innovation." This response was abnormal when compared to the remaining four questions associate with Stage 0. This result was similar in Stage 1, although it occurred to a much lesser degree. Question 14, "I would like to discuss the possibility of using the innovation" received a lower response than the other questions. The inconsistency of the responses to the Stage 0 statements may indicate confusion about the questions or that the respondents did not read the statements carefully. This could only be ascertained if I could review the data with each of respondents, but since the surveys were completed anonymously, I am unable to do so. Because of this anomaly, I chose to focus on both

the first and second highest stages of concern for the participants (Table 4-8), rather than just the first highest stage of concern (Table 4-5).

The analysis of the second highest peak on the individual stages of concern profiles indicated the majority of the respondents are operating in Stages 1 and 2, respectively. Eight of the twenty-two respondents, or 36.4%, have their second highest percentile peak in Stage 1. A high Stage 1 indicates the teacher wants more information about the SIS. Seven of the twenty-two respondents, or 32%, have as their second highest percentile peak Stage 2. A high Stage 2 suggests the respondents have high personal concerns about the SIS, but they are not resistant to its use.

The seven remaining respondents split between Stages 3 and 6. Four of the respondents, 18%, have as their second highest stage, Stage 3. This is the management stage where teachers tend to be concerned about the process and tasks of using the innovation. The other three respondents have their second highest peak in Stage 6.

None of the teachers identified as either their first or second highest peaks in Stage 4, consequence. This indicates they have little concern regarding the impact of Infinite Campus on their students. In addition, only one teacher exhibited as their highest stage of concern Stage 5, collaboration. Typically, a person with a high Stage 5 is an administrator or team leader; it is likely that this respondent is the other teacher coach.

Of the 22 responses, only one teacher exhibited an unusual first and second highest response combination. This was the person who indicated a highest peak at Stage 2 and the second highest at Stage 6 (Figure 4-2).

First and second highest peaks are typically adjacent stages. This combination, the high peak at Stage 2 and second highest at Stage 6, suggests the person has strong ideas about how to do things; these ideas may be positive, but they are more likely negative toward the SIS. The 'tailing up' at Stage 6 is typical of people who have ideas that would drastically alter or replace the innovation (George, Hall, & Stiegelbauer, 2006).

Summary. Analysis of the SoCQ provided data to indicate where the teachers are in terms of their use of the SIS. The majority of the teachers (77%) indicated their greatest intensity of concern at Stage 0, Unconcerned. Thirteen percent of the teachers indicated their highest concerns were personal concerns, two had their highest peaks at Stage 1 and one person at Stage 2. The remaining nine percent of the teachers (two teachers) were split between task-concerns (Stage 3, Management) and impact-concerns (Stage 5). An analysis of the second highest stage of concern for the teachers shows the majority of the teachers have intense self- and task-concerns; only one person's second highest peak was Stage 0 and three displayed their second highest concerns at Stage 6. Seven teachers presented second highest concerns at Stage 1 and another seven showed their second highest peaks at Stage 2; these are the self-concern stages. Finally, four teachers presented their second highest concerns at Stage 3, the task-concern stage.

Focus Group Findings

Twelve people participated in the four scheduled focus groups. There were 2-6 people in each focus group. Six unified art/HPE teachers, two English teachers, two math teachers, one science teacher and one special education teacher participated. These eight women and four men account for 32% of the faculty at the high school. The

themes that emerged from the analysis of focus group data are organized below according to research questions one, two and three respectively. These themes are: teachers' comfort level, barriers to implementation, enablers to implementation, and suggestions for training.

Teachers' Comfort Level

The focus groups provided insight into the teachers' comfort level using the SIS after 6 months of implementation. Teachers in the focus groups expressed their frustration toward the SIS and discussed their general use of the SIS.

Frustration toward SIS. In the implementation of a program or technology, there is bound to be some degree of frustration amongst the participants, as was the case in this research. Fifty percent of the focus participants indicated frustration with some point of Infinite Campus (IC). This was sometimes directed toward a particular aspect of the program, e.g. one teacher said, "I hate the [message] 'Are you sure you want to leave this page?'..." This frustration was sometimes also due to difficulties with the functionality of the program, as was the case with one teacher: "I didn't use the seating chart in there because when I tried to use it, I couldn't get it to work." Some participants simply exuded a general frustration with the SIS. One teacher declared, in reference to learning the new system, "I am just trying to survive this experience." The teachers' frustrations expressed during focus groups were focused on the software (the student information system) itself and not directed at the implementation process or the training received. Presenting frustrations with the system, such as these mentioned, is characterized as self-concerns, which are Stages 1 and 2. This corresponds with the SoCQ data where 64% of the teachers presented either Stage 1 or 2 as their first or second highest intensity peak.

Despite these frustrations, however, the teachers are at least managing daily functionality. One of the primary functions the teachers use the SIS for is taking attendance every class period. Prior to using Infinite Campus, teachers took homeroom attendance on paper and sent it to the office with a student, and class period attendance was also on paper and turned in at the end of the day. The 'live' nature of attendance in the SIS allows teachers and the administration to track students more effectively. Taking attendance is a priority for administration because the students need to record a minimum number of seat hours per year. To affirm teachers were completing this component of the SIS, I had a discussion with the attendance secretary at the beginning of the second quarter. She indicated teachers were correctly taking attendance more frequently than at the beginning of the year. To confirm this, I mined the teacher attendance data for both September 2012 and February 2013. I chose September because it was the first full month of using the SIS; we began taking attendance with it on August 27th, 2012. In addition, February was the first month of our second semester of using the SIS. In September, an average of 4.7 teachers per day were not logging their attendance for two of their three classes. In February, that number decreased to an average of one teacher per day was not logging their class attendance two of three teaching blocks. Eighty-five percent of these occurrences occurred with physical education teachers who did not have internet access in the gym locker room. This issue was identified and resolved by the end of the first grading period. This data supports the statement that the teachers are managing daily functionality.

Use of SIS. During the focus groups, I asked the teachers “Are you using IC at a proficient level, basic level or below basic level?” This question was designed to provide data relative to research question 1: where do the teachers see themselves in terms of the implementation? The terms, proficient, basic and below basic, are ones the teachers are familiar with due to standardized testing. Proficient implies the teacher can function with very little help from others and try to troubleshoot on their own. Basic suggests the teacher needs help from others to function or are using the minimum components required for daily functioning. Below basic implies the teacher is struggling with utilizing IC on his/her own. Seven of the 12 participants in the focus group reported a basic level of comfort and use while five indicated they believed they were proficient at using the SIS. One teacher stated, “I feel comfortable with the basics now. I can get my deficiencies in and I get the grades in, although it still feels a little uncomfortable.” Another responded, “I am at a basic level. I can do the daily things, but if I run into problems or don’t know how to do something, I know I can just come running to you and you can help me fix it quickly.” This statement of minimal use of the SIS was a strong theme in all of the focus groups. Two-thirds of the focus group participants responded similarly to the teacher who said:

To be honest I just use it for attendance and my grades. Much like my iphone and my ipad, I only use 2-5% of what it is capable of doing, and I just use it as my go-to for whatever I need and that is it.

The other one-third of the teachers in the focus group expressed confidence in their use, as this teacher stated: “I am proficient. All of the directions you have given us have been very clear, and I typically don’t have a problem following those.” These teachers related they were using more aspects of the SIS, such as the reports and student information components.

Although the teachers are using the system, the focus group data revealed that they do not necessarily feel good about doing so. Some teachers expressed difficulty accepting the new SIS. As one of the teachers stated, “I kind of felt that way and yet I caught on to what I have to catch on to without much trouble I guess. So, maybe it was just me getting upset about something new.” Although there have been barriers to implementation, one teacher stated, “When we first started, I thought it was absolutely miserable, and I am used to it now.” As the year has progressed, I am hearing fewer complaints regarding the system and am receiving fewer help requests.

Barriers to Implementation

The focus groups provided data for answering research question 2: What barriers do the teachers and staff perceive to implementation of the SIS? Perceived barriers to implementation revealed by teachers during focus groups included time issues, technology issues, clinging to the old system, and teachers not understanding the functionality of the SIS. Data collected from one-legged interviews is incorporated to supplement that collected from the focus groups.

Time. Time was a barrier named by several teachers to implementing the new SIS. Some teachers stated they really “don’t have the time to play with it,” while others referred to the processing mechanism of the SIS as taking up a lot of their time. The SIS allows teachers to input assignments and grades through different avenues. The time lapse for switching between these tasks, since it is a web-based system, depends on the connection speed and, in the case of the school, the number of users draining the bandwidth. One teacher compared accessing the different modules of IC with her prior use of Excel as a grade book. “It [the new SIS] is very cumbersome. I hate the wait to switch between the grade book and assignments. They managed to take what I

used to do with a simple spreadsheet and make it aggravatingly slow and difficult to use.”

Problems with technology. During the implementation, teachers experienced hardware related glitches. One teacher indicated the SIS “does not run with other programs, freezes the computer and requires restarting.” This is the only such instance of a computer requiring a restart brought to my attention; therefore, it is unclear if this is an issue with the program or with the computers.

The teachers’ frustrations with the software were partially a result of teachers learning the system and partly due to system updates by IC that changed settings in the system. We also experienced growing pains with respect to using different web-browsers. During the teacher coach training in May of 2012, the company representative indicated they technically supported Internet Explorer and Mozilla Firefox, however, Mozilla Firefox and Google Chrome tended to work better. The teachers in the district typically use Internet Explorer as their web-browser, because there is a short cut to it on their desktop. During the initial summer training, the other teacher coaches and I conveyed this information to the teachers and encouraged them to change to another web-browser. Most of the teachers switched to one or the other web-browsers to accommodate this.

Then, in January 2013, Infinite Campus issued the statement that they were experiencing issues with Java and it might be necessary to use a different web-browser to access the SIS. This message was not effectively conveyed through our technology department to the teacher coaches until we encountered a wave of panicking teachers with Java errors. We also encountered server errors with IC’s hosting site, which

caused some teachers stress. These problems were reflected in the focus group comments where one teacher stated, “the other day I put in grades in it [the new SIS] three times and when I went to save is when the thing [the SIS] went down and I had to keep typing them in. It was very frustrating.”

In addition to the aforementioned issues, teachers reported a degree of technology anxiety. During a focus group, one teacher stated, “I am not panic-y anymore, so that is good. I think it is just because I don’t feel very comfortable with technology that I was feeling pretty panic-y when we started with it. But now, no!” Two other teachers also indicated they felt their own trepidation working with technology was a barrier to their use of the SIS. One related she knew her own technological shortcomings were causing problems and contributed to her lack of confidence using the SIS while another stated she had finally become comfortable with the new system and the change to the new system had “sent her brain into a tizzy.”

Technology issues were also a barrier identified through the one-legged interviews I conducted with the administrators and guidance counselors. The entire district experienced some technological growing pains as we implemented the new SIS. Our initial rollover of student data from our old system to the new in July 2012 did not work perfectly. Groups of data did not copy over at all and some data that categorized under the wrong parameters. This required manual attention by the administrative staff and guidance counselors. According to one of the administrators, the fact that, “no one in IT has an education degree, so they do not know what information the teachers need” caused some gaps in the databases. The administrators also expressed some concern regarding the data roll-over that occurred; it was not clean and therefore required time

consuming attention by the secretaries for corrections. Through these casual conversations, the administration also expressed concern for teachers who tend to be technological laggards. As one person told me, “The ___ department, now that’s a group that needs one-on-one training; none of them have successfully posted their grades yet!”

Clinging to the past. A natural response to the anxiety some teachers felt working with the SIS is to hold on to that which they are comfortable. According to Ertmer, Ottenbreit-Leftwich, and York (2006), intrinsic barriers to technological change include teachers’ beliefs, their vision of the technological innovation, and their own lack of confidence. Teachers’ attitude toward the new system and the lack of confidence perpetuated by anxiety are intrinsic barriers reflected in this code. The theme clinging to the old system is characterized by two sub-codes, a) teachers’ lack of understanding of the capabilities of the new SIS and b) general concerns.

In order to understand the sub-code regarding teachers not understanding the functionality of the system sufficiently, some background knowledge is required. Prior to the implementation of Infinite Campus, GSD used Prosoft as our student information system. This system was used exclusively by administration and their support staff; teachers had no contact with this system other than knowledge that this system pulled the grades from our electronic grade books to print deficiencies and reports cards. According to the administrators, a major impetus for looking for a new SIS was Prosoft (the old SIS) did not communicate well with our existing grade book. When the costly decision was made to go to Infinite Campus, not only were Prosoft and our old electronic grade book system eliminated, but we also eliminated our web-based

student/parent/teacher portal, Edline since IC provided such a portal. Edline was a low functioning learning management system (LMS), which interacted with our grade books and allowed parents and students to view their grades. This system was eliminated as well because IC had a parent portal and according to our technology administrator, “[the corporation] promised a learning management system was soon to be developed.”

The simultaneous elimination of Prosoft, the electronic grade book, and Edline along side of the implementation of IC caused unforeseen confusion. I did not realize teachers were making this association until I began the focus groups. At that point, it became clear that the teachers did not understand that the SIS is not a learning management system. This misconception has generated a great deal of distress. For example, one teacher indicated, “I used a class web-page when we had Edline, and I miss the functionality of that. And I know the students miss being able to save information to Edline.” Another teacher reiterated this, stating:

I was hoping that Infinite Campus had a 'blackboard' type capability where teachers could post assignments and generate discussion threads/groups. This was available on the previous software we were using. Now this must be done on a separate website.

In addition to not understanding the functionality aspect, some teachers associate a decrease in student use of the portal with the change in systems. At least one person in each of the four focus groups indicated they did not think the students are using the portal as much as they used the old system. One teacher reflected, “When we had Edline, they were always checking on their grade and asking me questions. I am not seeing that as much anymore. Some of them say they don’t know how to use it.” Unfortunately, I do not have data from the old system to substantiate this statement.

An important factor in the context of teacher comments is that many teachers did not experience problems with the old grade book program and did not perceive the deficits of the previous SIS. In addition to the lack of communication regarding the new SIS and missing our old learning management system, teachers have identified very specific features of the old grade book over which they lament and which are missing from the new system. These include:

- Completed work grade versus actual grade
- The auto-save feature of our old system
- The format of the spreadsheet export
- Controlling when grades are posted to the parent portal

Enabling Implementation

Focus group data also provided information to address the third research question: What personal or organizational aspects do the teachers and staff perceive as enabling implementation of the SIS? Themes that emerged concerning organizational aspects were mandatory training sessions and the presence of teacher coaches in the building. Although I attempted to construct a formal communication network through the development of a Moodle page, the only personal aspects consistently mentioned by the teachers were hands-on time with the system and self-created, informal networks with their peers

Mandatory training. During the focus groups, I asked teachers what has helped them to implement the SIS. A consistent response was the initial training that took place in August, which teachers praised. Teacher comments included, “The pre-school in service that we received outlining Infinite Campus was the most helpful in learning to use Infinite Campus,” and, “The direct instruction that we received and that trainers took

the time to help with questions and problems (were most helpful).” General training at the beginning of the year, the periodic instructional handouts during the grading period and trial and error were all mentioned as beneficial. In addition to the initial training, teachers indicated the just-in-time sessions at key points of the year were useful. “The mini-lessons on the subject matter when issues rise up are beneficial.” Both the initial training and the just-in-time mini-lessons were compulsory events; these provided the minimum data the teachers needed in order to move forward with the SIS.

Utilizing the teacher coaches. An organizational aspect highlighted by many of the teachers was the presence of the teacher coaches in the building. “I think that the teacher coaches are one of the best things that we did.” It conveniently worked out that the teacher coaches were on different floors of the high school, and thus provided easy access to all of the teachers in the building. As one teacher stated, “I think they worked well because they are in the building and the experts.” The teachers were genuinely appreciative of the access to experts in the form of the teacher coaches. As one teacher indicated, the convenience was indispensable: “I just come next door to you when I have a problem.” Another teacher pointed out, “I think having access to you and R. was critical. If I couldn’t call you or come running up here, it could have been a disaster.”

The teachers realized the teacher coaches were being stretched to their limits in terms of time. Their comments revealed that they were aware the coaches were busy and were hesitant sometimes to request help as a result. One teacher suggested the teacher coaches either needed to be increased in number or they needed release time

in order to help the other teachers. Another teacher who expressed her concern about infringing on the teacher coaches' time reiterated this as well:

But once we got through that, the good thing was that you were around and there were people around. But, you just feel like you don't want to keep bothering everybody. I mean, how many people had to ask you questions at that point? You were probably, just, had that going on and couldn't do your regular work.

Although the teachers know the coaches are there to help and utilize them, there was some apprehension because the coaches are all full time teachers with the coaching as an additional responsibility. One teacher indicated that even though she may have had questions, she did not ask them.

I know R. is right there next door, but she's got a full schedule just like me and I don't want to bother her! So, I just keep her for emergencies and so it would be nice if I knew she had a block devoted to that and then I would feel so bad about ...maybe that was her duty or your duty or something...then I wouldn't feel so bad about it.

Hands on practice. Many of the teachers indicated that simply time with the program was beneficial for their implementation. The desire to have "time to navigate the program on my own, just working with it" was a theme that peppered the discussions with the teachers. One teacher suggested that having time to work with the live data during the initial training session would have made the transition easier; in actuality the teacher coaches did have the teachers use their live grade books during that training. A common sentiment was that practice and guided practice with the teacher coaches was an important component of learning the SIS.

Seeking help from peers. One's peers are typically a source of help during times of change. Several teachers attested that conversations with their co-workers enabled their implementation efforts. One teacher stated, "I am pretty fortunate in my corner. M. is there and A. and sometimes C. and we are pretty good at helping each

other. We can hash it out. We are pretty good about asking and answering questions.” Some teachers are relied upon more than others because they are known to be technologically savvy; one teacher substantiated this statement, stating her peers asked her how-to questions about three times per week.

Sometimes, however, relying on one’s peers can hinder the learning process because teachers, like anyone else, will ‘help’ a friend by just fixing the problem. A member of our office staff commented to me after a training session, “It’s like dealing with 40 children in a class. No one wants to raise his or her hand. We have a few that just don’t care and we have others that figure someone else they hang out with will know how.” Some of the teachers have technology proficient friends they can always turn to, and as one of the helping teachers pointed out, it is simply faster to fix what the person is doing wrong than to show them what they are doing wrong. In addition, this quick fix lessens the struggling person’s stress level. I have observed, however, that these struggling people are continuing to struggle, even after six months of use. The same people consistently contact me at progress report or report card time for help posting their grades and adding comments to the reports.

Another example of seeking help from an extended group of peers is the Campus Forum. Infinite Campus itself supplies an expanded peer support network online; Campus Community is supported by the corporation and available to all users. All of the teachers were instructed, during the initial training, on how to access the community. We directed the teachers on setting up an account that would automatically log them into the Community if they clicked on the link in their teacher portal. I spent time reading the forum posts before we began the implementation and subscribed to the

forums to keep myself abreast of issues others were having and updates from the corporation. In addition, the other high school teacher coach used it frequently as a source of help when teachers have questions she cannot answer. I conducted a focused one-legged interview where I asked everyone I encountered if they had used the community to access information. All but one of fifteen teachers asked replied no, and few remembered its existence, even after I mentioned it.

As a means of support, the participants in the focus groups indicated they utilized their peers in the building for help with the SIS. With the exception of the other teacher coach, no one used the community forum provided through Infinite Campus.

Suggestions for Training

The focus groups also provided information towards the comprehensive purpose of this study, moving forward with the implementation through continued professional development. The teacher identified their own training preferences as well as suggestions for training parents and students.

Teachers' training preferences. The training that was established at the beginning of the school year, consisted of both the voluntary and mandatory trainings that were conducted in large groups as arranged by the administration. The two voluntary summer sessions were comprised each of 34 and 28 K-12 teachers, and all of the mandatory sessions at the high school were full staff, or 37 teachers. The voluntary sessions interspersed throughout the school year were open to the entire faculty, but ranged from one to seven teachers, depending on the topic covered. During the focus groups, several teachers indicated they would prefer the trainings to take place in smaller groups, rather than as a complete faculty. Teachers also felt the optional training sessions I held, which were geared towards moving further into implementing

different components of IC, should be mandatory. These sessions encompassed topics that not only would make a teacher's day-to-day functions easier, but also would push them to more complete implementation. They realized the importance of them but, as one teacher stated, "Maybe the informal sessions need to be mandatory rather than voluntary. Otherwise the bulk of the teachers will never get the information because they won't come to the training." This statement reflects the lack of time teachers feel they have in a typical day and their reluctance to giving up that time unless they are made to.

Training for parents and students. One theme is the importance of training both parents and students how to use IC and encouraging them to utilize the portal. One of the outside district administrators indicated they conducted public relations campaigns with the parents to encourage and support the use of the parent portal. The teachers in the focus groups also indicated the need to train the parents and the students because they do not see the students accessing their grades through the portal. As one teacher told me, "Many students have not been able to get on IC and therefore have not taken the opportunity to check on their grades and assignments, which I feel is a vital part of them keeping on top of their learning." The students were shown how to log on and create a username and password during an extended homeroom period in September. Just as the students were shown how to log in, a letter was send home to the parents with their activation code and directions for accessing the new system. I documented in my journal several conversations with parents who were having difficulty using the portal or had no knowledge of the new system. In addition, during parent conferences in both October and February, I created accounts for any of

my students' parents who visited. According to a report generated in IC ([Figure 4-3](#)), 31% of the high school parents have accounts and they average one check-in per week. In addition, 613 students have IC accounts and they average one or two check-ins per week. These numbers, however, could be misleading. As a comparison, I analyzed the data from my classes; 22% of my students and 58% of their parents who have accounts have never logged in to IC other than to set up their initial account. This seems to give credence to the focus group data regarding lack of use of the student/parent portal.

Administrator Interview Findings

The interviews of the technology coordinators at other districts provided information relative to the fourth research question: How does the implementation compare to steps taken by other school districts? In an effort to compare the implementation we undertook with that of others, I interviewed the technology coordinators at three different school districts, one in Iowa, one in New York and one in Pennsylvania. The taxonomy for the coding of these interviews is in [Table 4.2](#). The data revealed that the implementation we undertook was very similar to other schools. Most likely, this attribute originates from the company supplying the SIS. As part of the purchase price, the company provides training to what they refer to as administrators, building coaches (secretaries) and teacher coaches. The teacher coaches undergo training with a train-the-trainer model in order to complete the implementation. Each school district, however, completed the implementation a little bit differently and made the process their own. The themes from the interviews included planning for implementation of the Infinite Campus, training the teachers and recommendations.

Planning for Infinite Campus

All of the district coordinators I interviewed emphasized the importance of planning prior to implementation. This planning included data roll-over, identification of which 'rights' the teachers needed, when each of the components or modules of IC would be activated for use, and student, parent and teacher training. One coordinator indicated they carefully staged their implementation to occur over several years. The other two districts used a mid-year implementation model. These two districts put the program in place in September, but did not push it live with the teachers until January. This allowed the technology department to work with live student data and identify any issues in the data conversion or potential training issues. The importance of planning long term was essential not only for good data conversion, but also for teacher training. One coordinator indicated to me, "It [the mid-year implementation] gave us time for data conversion and also gave us better time for trainings. We didn't have to try to dodge summer vacations to make sure everyone was able to attend training." According to one of the technology coordinators, the mid-year conversion was completed to enable the transfer of data and to allow for running real-time data on both a staging and preview site. The rationale behind a delayed implementation with the teachers was to work out any technical issues before the teachers began using the system. As one coordinator indicated,

The whole first semester we were moving things over and seeing how things were going to work. We could kind of work out some of the bugs so that by the time we rolled with it we had some real live data in there and we were ready for a lot of the problems the teachers would have.

In conjunction with long term planning, all of the districts interviewed conducted their implementation in phases; they implemented modules of the SIS with different

areas of the district over time. Two of the districts did the conversion of their electronic data over 8 months prior to teachers using the new SIS. They rolled the student data over to IC during the summer and ran the new SIS synchronously with their old systems until January. They felt it would have been rushing the implementation, as reflected in the statement, “Since we decided in April, it would have been a very tight time frame to start with Infinite Campus in August.” All three of the districts interviewed only used the attendance module with the K-2 teachers for the first year of the implementation, but implemented attendance immediately with the other grade levels. Likewise, the districts used the grade book module of the SIS with their middle and high schools and phase in the elementary school after one year. Two of the three school districts implemented the student/parent portal in conjunction with the teacher grade books.

Perhaps the most calculated implementation was that at the New York school district. That district implemented the attendance and report card module the first year, added the grade book to the middle and high school the second year, and rolled out the parent portal the third year. The technology coordinator stated, “We are at the point where we are using everything we had planned on using. And really with minimal push back from the teachers due to the slow phase in.”

Training the Teachers

As a component of the training provided through the company, Infinite Campus encourages the use of what they refer to as teacher-coaches. These teacher coaches are trained by Infinite campus and in turn train the teachers of the district. This was, therefore, a consistent theme with all of the districts. One administrator said,

We had teacher coaches at every building and within multiple departments. My assistant and I were the district wide coaches. This was very effective

because it gave our district real-time resources if and questions or issues came up after implementation started.

The districts used the teacher coaches to assist during professional development time and conduct the training sessions. In some cases the teachers were paid a stipend, but in others, they didn't get any extra money, one administrator explained, "they just rose to the occasion."

All of the school districts used the turnkey training provided by Infinite Campus for the development of teacher coaches as the experts. Once trained, the teacher coaches and the technology staff used departmental meetings to train the rest of the faculty. In addition, they created and distributed multiple step-by-step instructions with screen shots. The districts that implemented the SIS half way through the school year used demographics to create small learning groups. The administrators explained to me, "We had groups of teachers, by content area, come in before school for a day at the high school level. Middle school was able to do this during a team time that they have scheduled into their day." The district that stretched their implementation out over several years used voluntary grade book training during the preliminary implementation phase and followed this with mandatory training when the complete implementation occurred.

There are bound to be positive, negative and interesting reactions from teachers when implementing change. The districts that had some resistance from teachers were districts that had previous grade books and parent portals in place. This is similar to the resistance I experienced; we also had a previous electronic gradebook and a parent portal in place. One coordinator indicated,

The resistance you get from your teachers, the pushback...it was incredible the first time we tried to get our teachers to use Max school[their old grade

book program]. There was a lot of resistance because they liked doing things the way they were before, but once you had the first months of pushback and they got it, it became routine and it's not even in question.

Recommendations

At the conclusion of the interviews, I asked the technology coordinators for their recommendations to people who were planning to implement Infinite Campus. The recommendations ranged from pre-implementation through training.

Pre-implementation. The administrators provided three pre-implementation suggestions. These included:

- Create ownership from the beginning.
- Have a plan for implementation.
- Roll out Infinite Campus mid-school year.

First, the administrators felt that including as many people in the decision making process helped to make the transition to the new system efficient and it also helped to head off potential resistance to the SIS. As one administrator stated,

I would go back one step even before adopting Infinite Campus, in the selection process of the new product. I think it's really important to have key stakeholders involved in the selection. When we did that, we had four vendors come and we evaluated, and we interviewed and all that. I think that created a sense of ownership for people

The second pre-implementation suggestion focused on looking forward, on having a plan for implementation. All of the administrators emphasized the importance of inputting the initial data into the new system. "Try to make sure your data conversion is clean. It makes the implementation go a lot smoother if there are limited data mistakes." Another suggestion was to define roles prior to implementation and identify the access rights for different groups of people. In addition, one administrator suggested:

I think having a road map was really helpful. One of the big concerns was, that we heard a lot from the teachers, you're going to make us use the grade book! And you're gonna make us do attendance and the parents are going to be able to see our grades...and you know. We laid it out for them and showed them how, yes, eventually that is going to happen, but we've got two years to get there.

The third pre-strategy proposed was to effect the transition after the start of the school year. The two administrators who used this technique stressed the invaluable aspect of working through any issues that occurred before the system went live with all of the teachers. In addition, the beginning of a school year tends to be chaotic; these districts felt a mid-year conversion would be less stressful for the teachers.

Training. Although not a suggestion for implementation, the administrators called attention to the fact that it is important to realize the complexity of the SIS. The program goes well beyond being a means for taking attendance and maintaining grades. It also allows access to student information, K-12, such as transportation, discipline reports, individual education plans, standardized test scores and more.

With this "so much more" in mind, once the teacher training begins, the administrators suggested two main points:

- Teach the basics and then supplement training, as needed.
- If possible, hire a dedicated IC coach.

It was suggested too, that the implementation occur in small increments, rather than attempting to use all of the modules and their features from the beginning. All of the administrators felt staging the training throughout the year in a just-in-time format was most beneficial.

In addition, the breadth of the SIS led every technology coordinator to lament over not having a person dedicated to IC support. The complexity of the system and

the need for someone to troubleshoot problems in real time with the teachers led an administrator to state their dismay at not employing a full-time teacher coach for the first year of implementation. Another administrators indicated:

It would be nice to have a position within the district that is strictly only Infinite Campus/student information system support. I think we could utilize a lot of the reporting features and data more if someone was dedicated to just that.

The consensus from all three school districts was that having a dedicated expert in the district to drive the teacher component of the implementation would have been helpful.

Journal Findings

My journal entries provided a means of reflecting on the implementation as it occurred. In addition, I used my journal to track the interactions I had with the teachers, administrators and other teacher coaches. I recorded, by date, any formal interactions I had with the teachers, and I recorded email conversations into my journal. Upon analysis of these notes, several themes emerged.

As I coded and analyzed my journal, several themes were prevalent. Naturally, much of the journal highlighted my formal and informal interactions with the teachers. A second theme centered around communications that took place between myself and the teachers or the other teacher coaches. Third, my journal highlighted the collaboration between all of the teacher coaches. Finally, my frustrations with the teachers, the SIS, and the implementation were evident in my reflections.

Interacting with Teachers

During the implementation process, I provided help to the teachers in a variety of ways. I responded to requests for one-on-one help from the teachers in person, on the phone and via email. When it was necessary to communicate information to everyone

in the building, I provided direction through emails or verbally at faculty meetings. I recorded two district-wide training sessions, five building wide just-in-time training sessions, four small group sessions, and I lost count of the number of phone, email and face-to-face interactions I had with teachers. The first week alone was overwhelming in terms of individual help requests; this combined with my normal teaching duties caused me to neglect recording all of the help requests I received. After the first week, the individual help requests lessened to an average of four requests a week for the first quarter of the school year and two requests per week for the second. These numbers did increase slightly during report card periods.

The large group sessions provided a means for getting the information out to all of the teachers quickly, but as the teachers indicated, the small group sessions seemed to be more effective for learning. The voluntary summer academy sessions, in particular, were difficult. Despite the presence of two technology support people, it was challenging to progress through the information. These were also challenging to me because they were open to all of the teachers in the district and I am not familiar with any of the elementary teachers and few of the middle school teachers. The large group building sessions were more manageable because I knew all of the teachers.

My journal notes highlighted my belief that the most effective of the large group sessions were the just-in-time training at progress report time, the end of the first grading period, and the end of the first semester. These allowed the teachers to learn the system in increments, without becoming too overwhelmed with the system. The instruction for these sessions lasted approximately five minutes and the remainder of

the time was spent with the actively working with the grade books and requesting help when needed.

The formal, large group sessions that took place at the high school were mimicked at the middle school. The middle school did not, however, offer voluntary training sessions or open sessions every Tuesday and Thursday morning as we did at the high school. I am very disconnected from the elementary school and therefore do not know anything about their training in-house.

Communicating Effectively

While I shared technology coach duties with another teacher at the high school, because of my research interest I became the unofficial messenger to the teachers. Although the teachers came to both of us with questions, we would communicate with each other and the guidance office and distribute any communications regarding technology issues from my email address to provide a single point of information and to be able to better track it. Dealing with day-to-day functionality issues became second nature to me as the semester progressed. There were instances, however, when technology issues not related to daily use of the program itself proved very frustrating. We had several instances, for example, where the company would push through updates and global settings were changed. Here is an excerpt from my journal about this:

1/19/2013. This was a horrible week in terms of technology support from the company. The grades are not calculating correctly and I have been doing a lot of PR with the teachers to try to smooth it over. I had G. send out an email concerning the issues; I thought it would be more comforting coming from the administrator that we are working on the problem.

Shortly after the beginning of the school year, the network administrator gave the teacher coaches administrative rights for the system. This was beneficial for two

reasons. First, having the administrative rights allowed us to communicate more effectively. If a teacher was having a problem, or if there was a concern voiced by one of the coaches, we could log onto the system as that particular person to see the issue live. This saved us the time of having to share screen shots back and forth through email. The administrative rights also gave us the opportunity to make global changes for all of the teachers rather than waiting for the IT staff to be available and then have to explain the needed changes to them.

The second benefit of administrative rights was that it provided a means for accessing student data to help facilitate the use of the student and parent portals. Without these rights, the teacher coaches would not have been able to reset student passwords or provide activation codes to parents so they could access the portal

Collaborating with teacher coaches. The administrative rights provided the teacher coaches with a means of communicating with each other within the SIS. Almost the instant the SIS went live with the teachers, the teacher coaches from the middle school and high school, as well as the technology specialists for the district, also formed a trouble-shooting email ring. When questions cropped up that people could not answer, all of these individuals participated in a back-and-forth discussion to solve the problems. Not only did this provide consistency between the building in terms of settings and actions, but it also provided support for the teacher coaches. Although they are now generally familiar with the educational components of the SIS, including the technology specialists in the discussion also gave us access to the IC corporate support staff. The corporation only allows one 'point person' for communication between the district and their help desk. For consistency and as a matter of

convenience, one of the IT specialists became our designated point person; she could easily stay on hold or await a return phone call when it was necessary.

The high school and middle school teacher coaches also collaboratively created all of the handouts used for training sessions. This maintained consistency between the two buildings and assured teachers moving between the buildings were using the same methods.

The email interactions became an invaluable support group, especially through the first grading period. There were frequent emails between us regarding what we were seeing in IC and how it was behaving. Especially at the beginning of the year, before we had ironed out the settings, it was common for the grade books of two different people to be responding to the data in different ways. It was common to have a screen shot of IC emailed to all of the coaches with the subject line, "Are you seeing this too?!?!" It was comforting to know if I could not answer a teacher's question or identify what a particular setting should be, an answer or commiseration was only a mouse click away.

Personal Frustration

Although my fellow teacher coaches were invaluable in terms of personal support and implementing the SIS with the teachers, there were times when I felt they perpetuated some problems with the implementation. One of the frequent complaints I heard about the SIS from teachers was that it did not function as Edline did. As I indicated previously, one of the issues that caused push-back from the teachers was my realizing the teachers needed clarification in the distinction between an LMS and an SIS. At one point during a training session, I was surprised by the comments a teacher coach made to the teachers. I noted in my journal, "During our meeting with the

teachers today, X said multiple times, "I don't like this aspect of IC" or "I like how we used to be able to do..." I also was a little frustrated with having to hand hold to the point of completing teachers' tasks for them. A teacher in the focus group pointed this out to me:

[KJ]: So I am enabling you? [Teacher]: Definitely. I mean, your handouts and directions have been very clear, and I am sure I could figure some of these things out on my own, but it is so much easier to just run up to you and then it is fixed in less than ten minutes.

In addition to fixing issues directly for the teachers, the teacher coaches had the ability to log in as the teachers and quietly fix settings that were incorrect. Especially at the beginning of the school year, we did this simply because it was easier than trying to get the teachers to change something and we, as a group, did not want them to think the system constantly needed tweaking when it was simply a learning curve on our part relative to appropriate settings. For example, at the beginning of the year the other coach and I walked the teachers through setting up their first quarter grade calculation settings. When it came time for progress reports, a similar session was used. This time, however, I directed the teachers to use a "fill all" button for the grading scale settings. After the training, the other coach pointed out the "fill all" had changed a calculation setting as well. Rather than trying to explain what the teachers needed to do in an email, because the training was really just-in-time, the IT staff and the coaches sat down and in ten minutes had logged into the system as all of the teachers and changed the setting. This process was also used at report card time. Several teachers had not cleared their progress report comments or had added new comments on top of the old; as a result one student, with an F, was 'In danger of failing,' has 'Actual grade is less than 50%,' and had multiple 'Does poorly on tests' comments. The administrative rights

allowed the guidance counselor and the teacher coaches to clean up the comments for the teachers. This truly was, on our part, a function of time and maintaining our sanity.

This function was also very useful for checking gradebooks if teachers had questions and we could not physically get to them to see the problem. It was common for a teacher to call or email in the middle of a class with an urgent issue. Since I could not leave my classroom to address it, I would log on as the teacher so I could see their concerns. Although this function was beneficial to the coaches and the guidance office, it also, in some cases, led teachers to think they were doing everything right. In a discussion with the guidance coordinator, she indicated when the second grading period rolled around she had to go into 25% of the teachers' gradebooks to make changes because they did not follow the posting sequence correctly. In her eyes, the report cards needed to go out and there was not time for the coaches to go to each of these teachers and show them what they were doing wrong. I understood the changes needed to be made, but doing so in this manner can give the teachers a false sense of accomplishment. For example, she stated to me, "It is just easier to fix M's gradebook than to tell him he did it wrong." Whereas M, in a focus group meeting stated to me a few days later, "I've got my grades down, and I have my attendance and I am functioning." He is not aware he does not have it down. This example really identified the problematic nature of this issue for me.

I was also frustrated with what appeared to be a lack of communication between the IC corporation and our technology department. Since I am not part of that department, I cannot report what communications actually transpired, however it seems as if there could have been more direction offered during the initial roll-over to the new

system. The coaches, IT staff and director of guidance spent a great deal of time trying to identify what fields needed to be flagged for different reports and more specifically what the settings needed to be in the grade books for the grades to calculate and print correctly on the report cards. In a conversation with the network administrator, his frustration was apparent regarding the grade book settings and 'rights' for the teachers and what he called the lack of direction in these issues from the company. After having conversations with the technology coordinators at the other districts, I am not clear whether it was lack of direction or that our technology coordinator did not know what to ask. As I have gone through this process and worked intimately with the IT staff, I have come to realize that a great deal of miscommunication occurs because the technology staff does not understand the education lingo that teachers use and they themselves have never used an electronic grade book. I went back and forth with an IT staff member for an entire day regarding posting grades. It was interpreting posting grades as the function we do at the end of a quarter (the sequence is literally called "Post to Quarter") while she used the term post to mean enter the score. I would like to think if a teacher had been involved in the data transfer and system initiation meetings we would have had fewer setting errors.

Summary

The data from the focus groups, one-legged interviews, administrator interviews and my journal were collected and analyzed in order to answer the four research questions that informed this study. This data suggests not only where the teachers are in their use of the SIS, but more importantly, what needs to be done in the future to further support the implementation of IC.

Research question one asked: where do the teachers see themselves in terms of the implementation. The Stages of Concern Questionnaire shows the majority of the teachers are operating with high levels of both self- and task-concerns. They are still dealing with personal functionality issues, but they are progressing towards management concerns, which focus on the application of the SIS in their classroom. This was supported by evidence from the focus groups and my journal that indicated teachers are dealing with some frustrations with the change and the technology, but are becoming more comfortable with the SIS as time progresses.

Research question two dealt with the barriers the teachers and staff perceived in the implementation of the SIS. According to the focus group data and my journal, these barriers were the time teachers' spent working with the system, technology problems, and teachers' preference for the old SIS.

Research question three enquired: what personal or organizational aspects do the teachers and staff perceive as enabling implementation of the SIS? The factors identified by the teachers and staff included mandatory training sessions, the availability of the teacher coaches and peer interactions.

Finally, research question four addressed the implementation that had been completed by other schools: How does the implementation compare to steps taken by other districts? The data provided both similarities and differences in both planning for the implementation of Infinite Campus and in training the teachers. The main similarity was the use of teacher coaches for training and support. Differences included the pace of the implementation and the timing of the beginning of the implementation with the teachers. Administrators also provided recommendations for those going through an

SIS implementation in the future. These suggestions included careful planning of the process, phasing in the SIS, just-in-time training for the teachers and having a full time teacher coach in place.

Chapter 5 compares these results with the existing literature and describes how the results will be used in the continuing implementation of the SIS at Girard High School.

Table 4-1. SoCQ demographics of participants by subject area taught

Subject Area Taught	Math	Science	English	Social Studies	Unified Arts/HPE	Special Education	Not Indicated
	3 (14%)	3 (14%)	2 (9%)	3 (14%)	9 (41%)	1 (4.5%)	1(4.5%)

Table 4-2. SoCQ demographics of participants – years of service

Years of Service	1-5	6-10	11-15	16-20	21+
	1 (4.5%)	4 (18%)	7 (32%)	9 (41%)	1 (4.5%)

Table 4-3. Focus groups taxonomy

Overarching Themes	Codes and Sub-codes
Using Infinite Campus	Using different components Using student information Keeping attendance Using various features Indicating positives Admitting understanding Expressing surprise Recognizing benefits Indicating negatives Time consuming Expressing frustration Identifying barriers Clinging to the Past Misunderstanding the SIS Unclassifiable concerns
Training	Learning infinite campus Playing with the System Training Sessions Training benefits
Seeking Help	Wanting more information (already taught) Using teacher coaches Enabling teachers By coaches By support staff
Suggesting Future Training	Seeking help from peers Suggesting training for parents and students Suggesting format of training

Table 4-4. Administrator interview taxonomy

Overarching Themes	Codes and Sub-codes
Planning for IC Implementation	Deciding factors Staging the Implementation Rolling out IC
Training the Teachers	Using teacher coaches Identifying training methods Dealing with the teachers
Using the Portal	
Making Recommendations	Recommending Administrative Decisions Recommending Training Options

Table 4-5. Frequency of highest concerns stage for individuals

	Highest Stage of Concern							Total
	0	1	2	3	4	5	6	
Number of Teachers	17	2	1	1	0	1	0	22
Percent of Teachers	77.3%	9.1%	4.5%	4.5%	0%	4.5%	0%	99.9

Table 4-6. Example of raw scores collected from a participant's SoCQ

Stages	Raw Scores						
	0	1	2	3	4	5	6
	Q3: 3	Q6: 2	Q7: 2	Q4: 4	Q1: 3	Q5: 1	Q2: 4
	Q12: 3	Q14: 1	Q13: 1	Q8: 1	Q11: 1	Q10: 1	Q9: 1
	Q21: 1	Q15: 0	Q17: 0	Q16: 1	Q19: 1	Q18: 1	Q20: 1
	Q23: 5	Q26: 1	Q28: 1	Q25: 2	Q24: 1	Q27: 1	Q22: 1
	Q30: 6	Q35: 2	Q33: 0	Q34: 2	Q32: 1	Q29: 1	Q31: 1
Totals	18	6	4	10	7	5	8
Percentiles	96	30	21	34	4	5	17

Table 4-7. Raw data for all participants of SoCQ

Stage 0	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6
Q3: 24	Q6: 59	Q7: 38	Q4: 46	Q1: 42	Q5: 33	Q2: 51
Q12: 73	Q14: 26	Q13: 53	Q8: 33	Q11: 45	Q10: 33	Q9: 35
Q21: 86	Q15: 48	Q17: 42	Q16: 41	Q19: 36	Q18: 24	Q20: 43
Q23: 96	Q26: 62	Q28: 49	Q25: 52	Q24: 36	Q27: 40	Q22: 40
Q30: 98	Q35: 35	Q33: 43	Q34: 37	Q32: 42	Q29: 49	Q31: 50

Table 4-8. Percent distribution of second highest stage of concerning relation to first highest stage of concern

Highest Stage of Concern	Second Highest Stage of Concern (%)							Participant Percentage (%)	Number of Participants
	0	1	2	3	4	5	6		
0 Unconcerned	0	41	29	23.5	0	0	6	77.3	17
1 Informational	0	0	100	0	0	0	0	9.1	2
2 Personal	0	0	0	0	0	0	100	4.5	1
3 Management	0	100	0	0	0	0	0	4.5	1
4 Consequences	0	0	0	0	0	0	0	0	0
5 Collaboration	0	0	0	0	0	0	100	4.5	1
6 Refocusing	0	0	0	0	0	0	0	0	0
Total	0	36.4	32	18	0	0	13.6		22

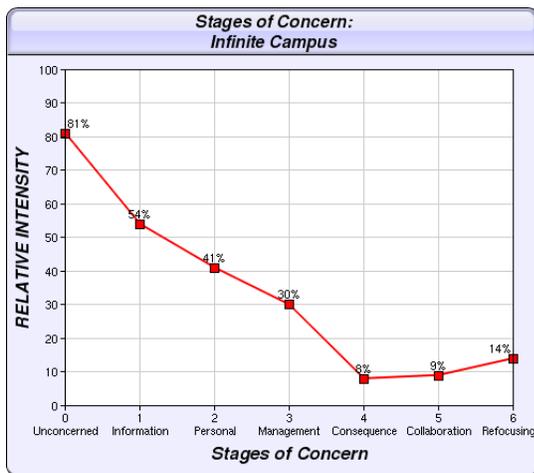


Figure 4-1. Stages of concern graph from one participant

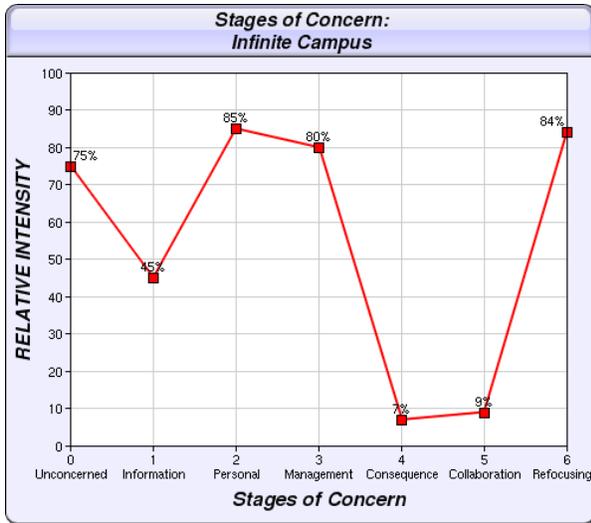


Figure 4-2. Respondent data of an unusual combination of first and second highest peaks

12-13 GIRARD HIGH SCHOOL 1135 LAKE ST. GIRARD PA 16417 Generated on 03/09/2013 05:05:10 PM Page 1 of 1	Portal Usage Summary Report Start Date: 09/12/2012 End Date: 03/09/2013 School Year: 2013
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GIRARD HIGH SCHOOL										
Grade	Students	Student Accounts	Student Logins	Average Weekly	Parent Accounts	Students Having Parent With Account	Parent Logins	Average Weekly		
All	613	613 100.00%	19011	744	171	188 30.67%	4645	182		
09	150	150 100.00%	5852	229	53	49 32.67%	1600	63		
10	158	158 100.00%	4844	190	55	53 33.54%	1520	60		
11	152	152 100.00%	3150	124	46	45 29.61%	1357	54		
12	153	153 100.00%	5165	202	42	41 26.80%	522	21		

Figure 4-3. Screen shot of portal usage

CHAPTER 5 FINDINGS AND MOVING FORWARD

The purpose of this chapter is to look at the findings from Chapter 4 and discuss them. This chapter begins with a summary of the study. This is followed by a review of the findings and how they compare to the literature in the context of each of the research questions. The second part of the chapter contains suggestions for the continued implementation of Infinite Campus (IC) in the Girard School District (GSD), based on the results of this study. The third part of this chapter identifies the implications for future diffusions of innovations in other educational settings.

Summary of the Study

The purpose of this research was to identify where the teachers are in their personal implementation of the Student Information System (SIS) and determine what needs to be done in the future to further support this implementation. The impetus for this study was the purchase and implementation of a new SIS, Infinite Campus(IC) in the Girard School District (GSD). This study focused on the implementation at one school in the district, Girard High School. Four research questions guided the path for this research:

- Where do the teachers see themselves in terms of the implementation?
- What barriers do the teachers and staff perceive to implementation of the SIS?
- What personal or organizational aspects do the teachers and staff perceive as enabling implementation of the SIS?
- How does the implementation compare to steps taken by other school districts?

The first question was necessary in order to determine how to help the teachers move forward with the implementation. Questions two and three focused on the types of activities that have influenced and potentially could continue to influence the

implementation of the SIS. The final question sheds light on aspects of implementation I did not consider in the past, but that shaped the continuing implementation process.

Triangulation of Data

Independent coding of the focus group data by a peer enhanced the inter-reliability of the codes. In addition, the data resulting from the focus groups, administrator interviews and the teacher-researcher journal contained similar themes. The overlapping nature of these themes from a variety of data sources, as indicated in [Figure 5-1](#), supports the validity of the study. Not only were there common themes amongst the three data sources, but there were also shared themes between the focus groups and my journal and between my journal and the administrator interviews. All three data sources provided codes for utilizing IC, communicating with the teacher coaches and identifying benefits of the SIS. In addition, as indicated in the Venn diagram in [Figure 5-1](#), my journal and the focus groups shared three codes beyond the aforementioned three. In addition, my journal and the administrator interviews had an additional code in common.

Findings Related to the Literature

Research Question 1

Research question one was: where do the teachers see themselves in terms of the implementation? The Stages of Concern framework suggests that as teachers implement a change, they progress through concerns of varying intensities. After acquiring enough information to address a particular concern, they move from one stage to the next (Hall & Hord, 2011b). The Stages of Concern Questionnaire (SoCQ) completed by the participants, through a high Stage 0 score, the teachers have a low level of concern or anxiety relative to the SIS. Although this may be interpreted as

indifference, because one of the highest rating questions on the entire survey, “I spend little time thinking about IC” was in this stage, another possibility exists. It is also possible that, since the teachers have been utilizing the system for six months, they have either worked through the intensity associated with the new SIS or pushed the intensity of their concern to a back burner. This is further supported by an analysis of the Stage 0 statements where high values persisted with the statement, “I am preoccupied with other things at this time.” This high score may also be interpreted as apathy due to the contingent authority decision to diffuse the innovation. Since the teachers had no choice but to implement the system, they would be unconcerned with it. The Stage 0 statements have a history of being problematic. During the validity and reliability testing originally conducted when the SoCQ was developed, Stage 0 questions typically proved to be confusing to the respondents (George, Hall, & Stegelbauer, 2006). Modification to the Stage 0 questions addressed these issues; however, it is possible that this could still be the case in the survey. Without conducting individual interviews with the respondents to re-affirm their reported relative intensities, it is not possible to say with certainty that they did or did not understand the statements. These interviews were not possible in this study since the respondents completed the SoCQ anonymously. The high degree of unconcern indicated by the Stage 0 SoCQ score does not mean, however, that the teachers are functioning at the highest levels. Although most of the teachers think they are at least operating the SIS on a functional basis, this is not really the case. The fact that the guidance counselor had to make changes to twenty-five percent of the teachers’ grade books because they did not post their semester end grades properly is testament to this statement. Teachers can take

attendance with the SIS and carry out the basic functions of the grade book, but very few teachers go beyond the basics or complete the basics without errors. This appears to be due primarily to either teachers' frustration with the system or time issues. According to Hall and Hord (2011a), it is expected that the teachers, at this point in the implementation have personal concerns (Stages 1 and 2) and will continue to peak at management concerns (Stage 3) throughout the first year of a technological innovation. This is reiterated by van den Berg and Ros (1999) who identified task concerns (Stages 1 and 2) as being emphasized during the implementation stage of a diffusion. The SoC reported by teachers in the questionnaire confirms these assertions and is evident in the group's stages graph ([Figure 5-2](#)).

Also evident from the group SoC graph is the extremely low intensity level for consequence. The teachers are still learning the SIS and therefore may have not yet realized the potential it has for affecting student learning. As professional development continues and the teachers progress through Stages 1,2 and 3, they will be encouraged to explore this aspect.

Research Question 2

Research question two addressed barriers to implementation: what personal or organizational aspects do the teachers and staff perceive as barriers to implementation of the SIS? Damanpour and Schneider (2006), as well as Rogers (2003), indicate diffusion of innovation (DoI) is multidimensional. That is, it is influenced by either environmental or contextual factors, by characteristics of both the individuals and organizations that adopt the innovation, and by the characteristics of the innovation itself are typical. The themes in this study regarding barriers to implementation

corresponded to these influencing factors in the form of time issues, technology issues, resistance, and impeding learning.

Time issues. As with all new technologies, it takes time to learn how to use the SIS. Availability of time is a key condition in particular for technology implementation (Ely, 1990; Ertmer, Ottenbreit-Leftwich, & York, 2006). In this study, time issues took several different forms. Some teachers indicated they needed more time to learn how to navigate the system. This was divided between the amount of time spent in training and simply hands on time in the classroom. As the district approaches the end of the first year of use, the latter issue should become less of an issue. These time issues are typical first-order extrinsic barriers to technological innovations (Ertmer, Ottenbreit-Leftwich, & York).

Technology issues. Frequent computer down time also served as a detriment to implementation as it generated frustrations in the teachers. This down time typically displayed itself as teachers not being able to log in to the web-based SIS or having difficulty switching between different screens. This is similar to the hardware issues and resultant participants' frustrations as reported by Barrett (1999) in an analysis of administrative use of a SIS. In Barrett's study, the local area network was unable to keep up with the new technology and as a result the participants thought the system was malfunctioning. According to Enomoto and Conley (2007), technology glitches such as those experienced in this study can affect the momentum of the innovation. In the implementation of the innovation in this research, Java errors experienced district wide and the unpredictability of the IC servers at grade posting periods were unanticipated problems that affected the attitude of the teachers and therefore the

implementation as well (Vracking, 1995). Technological issues are a typical category of resistance (Zaltman & Duncan, 1977) which can be lessened by a supportive environment. The teacher coaches provided the supportive environment in GSD. Their efforts to trouble shoot issues for the teachers, time by the technical staff and administrators using the system, and the move by the corporation to install a site-based server to lessen technical interruptions from their end should lead the way toward decreasing the technology glitches.

Resistance. Resistance to the SIS in this study primarily took the form of clinging to the old system. The teachers were very comfortable and familiar with the old system and understood how to make it function. This complacent resistance (Ford, Ford, & MacNamara, 2001) is grounded in the teachers' success or lack of failure with the old system. The teachers were frustrated with not knowing how to make the new SIS do what the old grade book did. As a result, they lamented over the loss of the old system. The psychological barriers (Zaltman & Duncan, 1977) associated with the perceived benefits of the old system served to create an underlying current of resistance to the new SIS. However, resistance to change is inevitable (Ertmer, 1999) and expected in change research (Fullan, 2010). When studying a laptop initiative, for example, McGrail (2006) reported codes of ambivalence and resistance, even though participants acknowledged the benefits of the program. The teachers in McGrail's study exhibited conflict with the institutional control implementing the technology, its use in the general curriculum and, and professional identity. Yet they identified technology use as a positive in the classroom.

Hindering independent use. Both the teacher coaches and the guidance counselor negatively affected teacher learning in different ways. The teacher coaches impeded the teachers' learning how to use the SIS by both doing basic tasks for them and by repeatedly showing them how to do certain functions rather than encouraging them to play with the system and re-visit handouts from training. The guidance counselor's hindering of the teachers' learning by fixing errors instead of showing the teachers how to fix them, however, is potentially more detrimental. Schimmel and Muntslag (2009) identify seven classes of learning barriers in organizational change. Three of these barriers, absence of dialogue and absence of or poor feedback, are evident here. By making the changes for the teachers, without them knowing they made mistakes, the guidance counselor has perpetuated those mistakes. The teachers she helped cannot accommodate and learn the system if they do not realize what they are doing is wrong. Through these actions, the teacher coaches and the guidance counselor have together hindered the implementation process.

Research Question 3

Research question three dealt with enabling implementation: what personal or organizational aspects, including strategies or communication networks, do the teachers and staff perceive as enabling implementation of the SIS? The diffusion of the SIS was an organizational change, however the individuals within the organization were the ones implementing the SIS. For this reason, both personal and organizational factors could have enabled the implementation. Personal factors include peer support groups and individual attention from the teacher coaches while organizational factors include the district-wide implementation of the SIS, school-wide trainings provided by the teacher coaches, and the shared purpose of maintaining daily attendance.

According to Frank, Zhao, and Borman (2004), schools are social organizations. As such, communication networks often play a critical role in implementing change and reforming through social channels is typical and encouraged (Cuban, 1990; Fullan, 1991). Although formal peer networks were not established as a component of the training in GSD, the teachers turned to each other for support and guidance. And, although it can be seen as an organizational aspect, the teacher coaches also served as a personal communication network for the dissemination of information and knowledge.

Technology coach programs have been studied extensively (Cole, Simkins, & Penuel, 2002; Polselli, 2002). Chuang, Thomson and Schmidt (2003) highlight a number of these programs in both higher and secondary education. The teacher coach program initiated by the Infinite Campus corporation was beneficial in the implementation of the SIS in the GSD. The teacher coaches provided situative professional development (Borko, 2004; Bredeson, 2002; Dede, et. al, 2009; Desimone, 2009; Garet, et al., 2001) and helped to create a transparent link between the professional development and implementation of the SIS (Bradshaw, 2002). The teacher coaches act as opinion leaders (Rogers, 2003), providing administration with a means to encourage the implementation through well respected and capable members of the faculty.

Finally, although the teachers did not see it as a benefit, the organizational routine of taking attendance every period provided a repetitive and recurring structure, which helped to encourage the use of the SIS and its implementation (Feldman, 2000). Many teachers indicated they really liked the live attendance feature, and as such, they

are starting to use extension of it, such as checking the attendance throughout the day and monitoring student absences over a longer course of time. This module is beneficial as it allows teachers to identify if a student is absent, in suspension, or is skipping their class. The old grade book system did not have an electronic attendance; paper attendance was sent to the office once in the morning and once at the end of the day and tracking students' whereabouts during a day was nearly impossible.

Research Question 4

Finally, research question four involved other districts that use the SIS: how does the implementation compare to steps taken by other school districts? There were several similar components in the implementation processes of GSD and the other school districts interviewed in this study such as the use of in-house training and teacher coaches. In addition, there were significant differences in implementation strategies including phases for the implementation and mid-year conversions.

In terms of similarities, all of the schools interviewed, as well as GSD, utilized in-house teacher coaches as the primary means for training the faculty. The company recommends this strategy, and everyone agreed it was a valuable component of their implementations. A second commonality was attempting to get buy-in by involving teachers in the decision making process. GSD did not do this to the extent of one of the other districts, who involved twenty teachers, secretaries and nurses in the planning process. The GSD administration invited two teachers, the coaches at the high school, to participate in this process. Although this was an attempt at soliciting buy-in, the effort was lack-luster and insufficiently planned.

There were as many differences between the other districts and GSD, although the most prominent one was the mid-year conversion. GSD introduced the new SIS at

the beginning of the school year, less than two months after converting the student data to the new system. The other districts implemented the system behind the scenes at the beginning of the school year, but they did not implement it with the teachers until January. Also apparent in the interviews was the difference in phases of implementation. All of the districts rolled out the system in unique ways that fit with the goals of their particular implementation plans. None of the districts, except GSD, attempted to implement the grade book, attendance, and parent and student portals at the beginning of the same school year.

Teacher-Researcher Reflection

This was an action research study. Therefore, this section details my own learning and growth throughout the process of collecting and analyzing data. This section is organized by two themes, what surprised me during this process and what I learned throughout this process.

What Surprised Me

There were several points that surprised me as I conducted this research. Probably foremost was the push back toward the new SIS from the teachers. I knew it existed, but I was surprised by the fervor of it. For example, one teacher stopped me in the hall one day and stated she does not know what it is about IC, but she just does not like it as much as our old system. She thinks maybe it is the small font. I thought to myself, "For all the functionality we now have, font size is an issue?" In some cases, it almost appeared as if the teachers thought if they voiced their opinion enough, we would go back to the old system. I know I am biased to the system because I helped to select it, but I really find it difficult to understand how people cannot accept the SIS for what it is and simply move on. I did get very frustrated during a training session on

generating reports and I started tallying how many times I heard the phrase, “but with the other grade book I could...why can’t I do that with this?”

In addition, the number of teachers who indicated they missed having the Edline LMS surprised me. Edline had nothing to do with our grade book, other than as a location for posting the grades for students and parents to see (something that IC does automatically). It appears that it is that control of being able to post the grades when they want to that they miss. The old system required a teacher to intentionally post their grade to Edline; this was something the administrators encouraged everyone to do, but as a contractual issue could not require the teachers to do. As a result, some teachers posted frequently, either once a week or after every test, while others posted once a quarter. The administration was frustrated with the old system because of the issues getting people to post at all. The guidance counselor indicated to me in a conversation, “I know the teachers don’t like the fact that everything is posted instantly...” This is another one of those points that aggravated me, because there is a check box when a teacher adds an assignment that hides the assignment from the portal. One click while they are entering the assignment would keep it from posting to the parents.

It also surprised me that I found myself frustrated with the implementation process several times throughout this study. Frustrations included not being in complete control of the implementation, annoyance with my peers for their apathy, and irritation with the corporation for technological glitches that always seemed to crop up during a pull of the grades. Because of this research, I took on a great deal of ownership for the implementation. This caused me to take personally the negative attitudes toward the system, but it also made me try harder to make people see how

easy the system was to use and its benefits. I was surprised at my response to the teachers during this process. I realized, especially as the focus groups took place, that I was bitter towards some of the teachers' attitudes. As a stakeholder in the success of the implementation, I grew frustrated with what I perceived as the teachers picking apart the system rather than using it for what I saw and continue to see as its benefits. I believe the system has an incredible amount of potential and look forward to the advantages the district will enjoy when the implementation is complete. I have come to the realization throughout this process that I did not focus enough on clarifying the SIS to the teachers at the beginning of the implementation. One of the key points Hall and Hord (2011b) make is that what the innovation is and what it is not needs to be very clear. Had I done this from the beginning, the issues regarding LMS and SIS might never have emerged.

What I Learned Through my Journal

Through the focus groups, I became aware of several key points relative to training. Many of these points were not mentioned specifically by teachers, but rather are the impressions I received and interpretations I made because of their tone and comments. First, I learned that the training materials I provided were useful and appreciated. Several teachers throughout the semester thanked me for providing handouts to supplement the training sessions and in particular one teacher thanked me for increasing the font size on the last handout distributed. The only criticism I received regarding the actual trainings was that the teachers did not like the large group sessions, and unfortunately, that configuration was what I was directed to do for the mandatory trainings. I, too, was not happy with the size of the summer institute classes

in particular. I realize the administration was excited so many people wanted to get a jump start on learning the SIS, but the learning conditions were far from ideal.

Throughout this process, I also learned that teachers are similar to adolescent learners; they want to be surrounded by their friends when they are learning something new because their friends will provide the support they need as they personally use the program. In conjunction with this, I came to the realization that teachers in large groups will tell you they understand, but in actuality, they do not and are timid about asking. Much like adolescents, adult learners are afraid to ask questions in front of their peers. Fourth, I was reminded of the fact that adult learners too have a variety of learning styles, and it is just as important to address these learning styles as it is to do so with my students.

Finally, I realized that I need to do a better job extolling the benefits and possibilities of IC and emphasize components of the system that may be relevant to particular teachers (Fullan, 2010). Although the system was being mandated by the administration, as a designated opinion leader, I should have expressed the system's relative advantage more effectively. I think, however, that I too fell into the trap of feeling I did not have enough time to train the teachers. The beginning of the school year felt very rushed and chaotic, so this important part of implementation was lost.

Delimitations and Limitations of the Study

This study was delimited to high school teachers at the Girard High School. Although the SIS was implemented district wide, I chose to focus on the high school's implementation. This decision was made as I was a teacher coach for the high school and was more vested in the implementation there than in the other buildings.

Rogers (2003) indicates that research on diffusion of innovation may be subject to pro-innovation bias. Rogers suggests, however, that this may be limited if the innovation is studied during the implementation phase as occurs during this study. I am very aware of my personal bias in this research as I was involved in choosing the SIS and was instrumental in developing and presenting the training and PD. As a result, I naturally wish to not only see the implementation succeed, but I also desire the teachers to believe I made a good choice in recommending this system. My personal bias could also have influenced the interpretation and coding of the results. This bias was minimized by using inter-coder reliability (Trochim, 2006). The similar codes developed independently by my peer and I showed the consistency with my codes. In addition, our discussions of the codes helped to identify similar themes between the data sources.

The validity of this study was enhanced by the use of a validated survey instrument, SoCQ, that was administered anonymously. This survey was graded according to the methods outlined by George, Hall, and Stiegelbauer (2006) as encouraged by Hall & Hord (2011b).

The study is also limited due to the small number of participants. Twenty-two of thirty-seven teachers participated in the SoCQ (60%) and twelve (32%) participated in the focus groups. One hundred percent of the HPE/Unified Arts teachers participated in the SoCQ.

Only one English teacher participated in the survey, and I had no social studies teachers participate in the focus group, thus not all of the departments were equally represented.

Continuing Implementation

The primary purpose of this research was to identify what needs to be done in the future to support the continued implementation of the SIS. Although this research focused on the high school, the recommendations that are made here are transferrable to the middle and elementary schools as well. This is important as in order to effect change, the behaviors of the group as a whole must be targeted (Burnes, 2004). It is possible that teachers may transfer between buildings, therefore it is essential that consistency exists. There are two key points crucial to the continued successful implementation of the SIS. First, the current teacher coach position must be continued; ideally this should be a full time position split between the middle and high school. Second is continued professional development on the SIS. According to Ertmer (2005), when approaching a technological innovation, the teachers need to understand how it can meet their needs; the professional development, therefore must extend beyond the basics of IC that they have learned up to this point. It is critical that the teachers not only learn more about the SIS, but also are given options to replace the LMS, which has clouded their thoughts. Although training and professional development are synonymous in education, a conscientious shift to professional development will be made for next year. Training implies a set of instructions or tasks that are learned; this has been the case during the first year of implementation as the teachers have simply learned how to use the basics of the program. Moving into the second year of implementation the focus will be on the integration of the system in order to make data driven decisions regarding student learning. There are few components the teachers have not been introduced to in the system; a concentrated effort will be on the application of the system.

The following sections outline the role of the teacher coach and the design of the future professional development based on the stages of concern questionnaire data, as well as best practices in professional development according to Desimone (2009).

Dedicated Teacher Coaches

The teacher coaches in this diffusion of innovation provided situative professional development (Borko, 2004; Bredeson, 2002; Dede, et. al, 2009; Desimone, 2009; Garet, et. Al, 2001) and helped to create a transparent link between the professional development and implementation of the SIS (Bradshaw, 2002). The teacher coaches acted as opinion leaders (Rogers, 2003), providing administration with a means to encourage the implementation through well respected and capable members of the faculty. They were and must continue to be an integral component of moving forward. Although we will be crossing the one-year mark next fall and are well on our way toward full implementation, it is important for the district to dedicate a person to helping the teachers with IC. This position is necessary for several reasons. First, IC has been beta testing a new version of the grade book, which will be available in May. The technology coordinator has indicated to me his intent to upgrade to the new version for the fall 2013 semester. A dedicated IC coach will provide the support the teachers need to continue facilitating the implementation and deal with the impending changes. In addition, a dedicated teacher coach, someone who either has a reduced teaching schedule or is a full time teacher coach for the district, will free the high school guidance counselor from the extensive amount of time she has to put into trouble shooting and fixing the system and allow her to resume he counseling duties. Although this research focused on the district's high school, the other teacher coaches were also being pulled in too many directions. At our middle school, the computer teacher (one of the teacher

coaches) functioned much like the high school guidance counselor and spent an exorbitant amount of time trouble shooting and fixing teachers' grade books. A dedicated IC coach could move between the buildings and relive the stress on others.

Employing a dedicated coach could also help to transition away from the enabling that has occurred. The coach would have the time to identify who is having problems and rather than simply fixing the problem, work with the teachers to eliminate them. The dedicated coach could also provide the training that is still needed to carry the teachers to more proficient use.

It is expected that teacher coaches, whether as a supplemental position as they were this year or as a full time position as recommended, will be utilized by the district during the second year of implementation. These teachers will design and facilitate the professional development for the teachers regarding Infinite Campus.

Professional development for continuing the implementation process will be offered during our voluntary teachers' summer academy. Two different sessions will be offered. A beginners session will be scheduled for teachers who are new to the district and new to Infinite Campus. In addition, a refresher session will be offered to review setting up classes, printing reports and accessing data. Once the school year begins, a professional development series will be offered throughout the school year during the teachers' common plan time. Mini-sessions will be offered once a week from 7:15AM – 7:45AM.

Professional Development Aligned with SoCQ

The identification of the teachers' stages of concern through the use of the Stages of Concern Questionnaire (SoCQ) will help to structure future professional development activities. Hord, Rutherford, Huling and Hall (2004) as well as Bradshaw

(2002) state that different support factors are needed for teachers with different levels of concern. Since the teachers' areas of concern regarding the SIS were identified, these concerns can drive staff development to meet the current needs of the teachers (Hall & Hord, 1987; Sandholtz, 2001). An example of the effectiveness of this process occurs in Anke and Finch's 1997 study of High Schools That Work and Hope's (1997) study of microcomputers with elementary school teachers.

The high percentage of teachers at Stage 0 in the SoCQ was indicative of the innovation already being implemented. A high score in Stage 0 after implementation has begun indicates the teacher is intensely aware of the innovation, not that they are unaware of it. For this reason, the professional development needs to focus on the second highest peaks for most of the teachers and the first highest for those who did not peak at Stage 0. Excluding the high Stage 0 values, the teachers' SoCQ identify with Stage 1, informational concerns, Stage 2, personal concerns, and to a lesser extent, Stage 3, management concerns, the training interventions should address these concerns. Various means of addressing the concerns are identified in [Table 5-1](#). Incorporating these proposed interventions with best practices in teacher professional development will propel the implementation forward.

Stage 1 concerns. Stage 1 concerns are informational concerns. Teachers at this stage are still learning the basics of the system and probably do not realize the potential of the system. These teachers are likely the laggards and late adopters. Professional development for these teachers needs to focus on learning how to use the system in small increments, but these steps need to pique their interest in learning more. It is important that the teacher coach be enthusiastic about the SIS. This can be

transmitted through e-mail bursts that capture attention or short media presentations at faculty meetings.

Stage 2 concerns. Stage 2 concerns are personal in nature. The teacher coach must be both empathetic and encouraging with these teachers. This can best be accomplished in one-on-one situations or small, self-chosen groups where the teachers will not feel threatened.

Stage 3 concerns. Teachers with high concerns in Stage 3 are likely operating the basics of the system efficiently and are ready to utilize it in more applications. They are very comfortable and adept at the components they currently use, but these teachers likely have questions about using the SIS more. Professional development for these teachers should be one-time sessions that give directions for specific, higher level implementation; these sessions should reflect specific questions the teachers bring to the teacher coaches. These teachers would also benefit from an e-mail bulletin which briefly shows and explains a new feature of the system. Because these teachers are beyond the personal concerns, they would also benefit from a Frequently Asked Questions page to refresh their memory on components they do not utilize on a daily basis. In addition, they could be recruited to either help other teachers personally or contribute to the FAQ site.

Professional Development Aligned with Desimone

Integrating the SoC based interventions with professional development practices will allow the teachers to be more successful with their implementation of the SIS. In addition to aligning the professional development with the Stages of Concern, the proposed professional development activities should also align with Desimone's (2009) critical features of PD as outlined in [Table 5-2](#). According to Desimone (2009),

structuring professional development with the five critical features will instigate an activity, which increases a teacher's knowledge and skills and as a result changes a teacher's beliefs and attitudes. This table matches Desimone's critical features of professional development with the aspects of the Infinite Campus professional development proposed for the 2013-2014 school year. The parameters for the professional development are recommended for all future PD regarding Infinite Campus.

Content focus. It is likely we will begin the new school year with a new version of the SIS being used, therefore it is natural for the school year will begin with a refresher course that is supplemented with the changes. Half-hour sessions will also be created to reflect the SoC. One session per week will be offered; these will rotate between directed toward a particular stage of concern and refreshers for progress report and grading periods.

Coherence. Coherence will be maintained as the teacher coach(es) is/are longstanding members of the faculty; both of the high school coaches this year have been in the district for 20 years (Guskey, 1986). In addition, the professional development is driven by the long term plan (Bredeson, 2002; Plair, 2008) for the teachers to use the SIS to make data driven decisions regarding student learning. The professional development will also continue throughout the 2013-2014 school year (Dede, et al., 2009;Garet et al., 2001; Goderya-Shaikh, 2010; Guskey, 2000).

Active learning. The path from implementation to routine use must be anchored in the problem of practice; professional development must address the how and why of using the SIS as a tool for administrative, communicative, and instructional tasks. As a

means of addressing the different stages of concern, a variety of levels and topics will be offered to the teachers in an ala carte fashion. This way the training can be differentiated and based on the teacher concerns (Hall & Hord, 2011b; Donovan, Hartley, & Strudler, 2007). In following this previously referred to statement made by a teacher, “I don’t even know what I don’t know,” I will provide some of the topics to be discussed; however, many topics will be chosen by the participants (Lieberman, 1995). According to Moore and Benbaset (1991), one of the strongest predictors of an innovation’s rate of adoption is its relative advantage. Therefore, expressing this better to the teachers, though a ‘Did you know IC can do this...?’ series will help to continue and encourage the implementation process. A brochure will be generated to highlight potential of the SIS and promote a schedule of future training sessions.

Duration. Although the recommended eight hours of professional development does not meet the minimum of 20 hours recommended (Desimone, 2009; Guskey & Yoon, 2009), contractually this is the maximum the administration can enforce. All mandatory training must occur either during the 40-minute common plan time before the start of the school day or on an in-service day. The in-service days are typically more formal professional development sessions or reserved for curriculum writing. I do have a two-hour block of time for a large group mandatory meeting during an in-service day in August; the remaining 6 hours means the teachers will participate in 12 PD sessions over the 36 weeks of school.

Collective participation. With the exception of the initial session, the professional development activities will take place in small groups of the teachers’ choice. This is important for several reasons. First, the peer relationships of such

groups allow for the continued implementation of the innovation through social channels (Cuban, 1990; Fullan, 1991). According to Lave (1991), learning is social and revolves around active engagement in the world; as people become active members of communities that they can identify with, they assiduously learn and apply new knowledge to their practice and reflect together and support one another (Oliver, 2011). This is particularly important for those operating at Stages 1 and 2. Second, since members of a community of practice must conventionally be volunteers (Schrum, 1999), allowing the teachers to choose their groups and choose their PD sessions will provide a created sense of volunteerism. In addition, this will help to create a support system amongst the teachers within the small groups and allow the PD to be anchored in the problem of practice (Darling-Hammond & McLaughlin, 1995; Desimone, 2011).

Conclusions for GSD

The Girard School District (GSD) made a decision to purchase IC and to require its implementation throughout the district. The diffusion of an innovation through an authority decision, such as this, follows the base tenets of Rogers' (1995) Theory of Diffusion of Innovation. However, mandated use of an innovation does not subscribe to the rational choice aspect as is indicated through Stage 0 of the Stages of Concern Questionnaire. In fact, the mandatory adoption of the new SIS caused Stage 0 of the SoC to show misleadingly high scores for this stage. Despite this, the SoCQ was helpful in identifying peak levels of concern in the task concern region.

As we move forward, the GSD needs to continue to build on the implementation that has begun (Kotter & Cohen, 2002). An implementation as such typically takes three to five years to accomplish (Hall & Hord, 2011b), so we have barely begun. The GSD, without perhaps knowing it, has embodied Lewin's (1951) change model. By

eliminating the old SIS, electronic grade book and LMS, the disequilibrium of the unfreeze stage was accomplished. Throughout this year we have made efforts to coordinate the change and implement the new SIS. As we move into next year, we must continue this change process toward refreezing the schools into a stable environment, which utilizes the SIS to its potential. Continued support and education of the teachers' exploration of the functionality of the new SIS through a dedicated teacher coach, additional mandatory training that maximizes the use of small group supports, and a FAQ page that is current and accessible, may build confidence, skill and a sense of ownership and familiarity with IC. Assisting the parents and students to become more comfortable in the use of the new SIS will permit a community of users within the district and provide teachers with a greater sense of the usefulness of the data they are entering to the learning community. An integral step in cementing the implementation and moving into what Rogers (2003) refers to as 'routinization,' is to make the teachers realize that Infinite Campus is not just an electronic grade book, but rather, it is a system for collecting student data for the purpose of making data driven decisions in their education. Making data driven decisions regarding student learning will be an indicator that implementation is complete and the district has moved to confirming the innovation.

Implications for Others

Throughout this study, I learned a great deal not only regarding the implementation process of an administrative technological innovation, but also about the diffusion process as a whole. As a result of this research, I have compiled suggestions not only for implementation, but for the selection of an SIS as well.

Selecting a new SIS. Rogers'(2003) first three stages of diffusion, knowledge, persuasion and decision, can shape the implementation process. Although this initial phase was not the focus of my study, I gained great insight to this process from the interviews with other district administrators. I recommend that the committees searching for a new SIS not only investigate the functionality of the information systems, and how those functionalities meet the needs of the school, but also question other districts regarding their own implementation processes.

The committees that make the decision to choose a new SIS must involve all of the stakeholders in the preliminary DoI process. These stakeholders should include administrators, administrative support staff, business office personnel, teachers, parents, and a representative of any staff member who will potential utilize the SIS. For the sake of buy-in, the size of this group can be important.

Implementation. Through analyzing the data, I have identified several recommendations for those going through such an implementation in the future. These include:

- Clear communications
- Pacing (time)
- A controlled implementation
- Adequate teacher support (teacher coach)
- Professional development

It is essential to ensure there is clear communication regarding the functionality of the SIS (what it is and what it is not). In addition, it is important to clarify the requirements the teachers will need to fulfill during the implementation and use of the system. According to Hall and Hord (2011b), a major reason diffusion of innovation in an organization fails is lack of understanding regarding the nature of the change and the

implementation process. In a discussion of the change, it is important to communicate the pacing of the implementation. This is critical for buy-in by the teachers. It is suggested that the implementation be accomplished in a slow manner with either a mid-year implementation or one that occurs over the course of a year. This will allow the system to be run (live) behind the scenes in order to work out any kinks in the system. In addition, this will allow those controlling the implementation to provide voluntary training up to implementation this will allow those with technology anxiety to work through the process slowly and gain confidence.

Someone who uses the SIS on a daily basis and works with the teachers should lead the training and support efforts. Retaining a full-time teacher coach for at least the first full year of implementation will allow support of teachers, consistency in training, and enhanced ability of technology staff to view the technology through the eyes of the teachers. The teacher coach should provide just-in-time training to small groups of teachers throughout the first year and offer 'accelerated' training to the early adopters of the innovation.

Recommendations for Future Research

As Hall and Hord (1986) indicate, not all teachers will evolve to the consequence, collaboration, or refocusing stages of concern. Therefore, in terms of research, it would be interesting to identify is there a certain critical mass of teachers that need to evolve to this stage for before full implementation of an SIS can be said to have occurred. Also, it would be interesting to examine the characteristics of those teachers who do not evolve to these stages even though the majority of their peers do. It would be useful to identify the reasons for this sub-group of teachers not moving forward, such as resistance to change, lower level of instructional technology and computer skills than

other faculty, or some other combination of factors that might be addressed differently in training. Know this information may drive the dynamics of the groups during professional development or the structure of the training itself.

Another area for future research related to the topic of this study revolves around the results of the SoCQ. One element of interest is the high intensity of Stage 0 exhibited in the SoCQ. The high percent of teachers showing Stage 0 as their highest peak, a semester after the implementation has begun, does not follow George, Hall and Stiegelbauer's (2006) example of a typical user of the innovation. A typical user tends to have a lower Stage 0 and highest peaks at Stages 3-5; this was not the case for this study, yet all of the participants are users of the innovation. Another area of interest regarding the SoCQ revolves around the statement Hall and Hord (2011) make that mandates "automatically lead to significantly higher Stage 2 Personal concerns" (p.84). This did not occur in this study, either; the first and second highest peaks for the SoCQ were Stages 0 and 1. Further investigation is needed to identify why these results were not typical of mandated innovation users. A possible explanation is that due to the contingent authority of the implementation, the teachers are unconcerned because concern is essentially futile. Since the teachers have no choice but to use the new SIS, expressing concerned over the implementation will not change the diffusion of it. There could also be another underlying factor, which has yet to be identified.

Conclusions

Innovation implementation can have tremendous benefits, if the implementation is done intentionally and with regard to best practices. Innovations such as the student information systems schools adopt to automate the collection and reporting of data in educational facilities can affect student learning when teachers reach the point in the

implementation where they are making data driven decisions using the SIS. The implementation of a technological innovation in an organization, such as that in this study, is a long-term process. As such, the implementation must be monitored and periodically re-evaluated for effectiveness and progress.

Toward this effort, the purpose of this research was to identify what future steps should be taken to influence the effective implementation of the new SIS in the Girard School District and encourage the teachers to move from compliance of utilization to full incorporation and appropriation of the SIS. Lessons learned through this study indicate careful planning prior to implementation, providing sufficient time for the implementation to occur, and utilizing teacher coaches are beneficial to advancing through the diffusion process. Being cognizant of these points can lessen the resistance to implementation and help schools to facilitate the change efficiently. In addition, implementation with the teachers needs to occur in phases; teachers must first be trained on the use of the SIS and shown how to carry out basic functions and then be provided with professional development activities to encourage integration of the SIS as a tool for making data driven decisions. Finally, it is important to realize an SIS is not an instructional innovation that is used with the students; rather it is an organizational innovation. For this reason, consistency in training and use is a necessity throughout a school district.

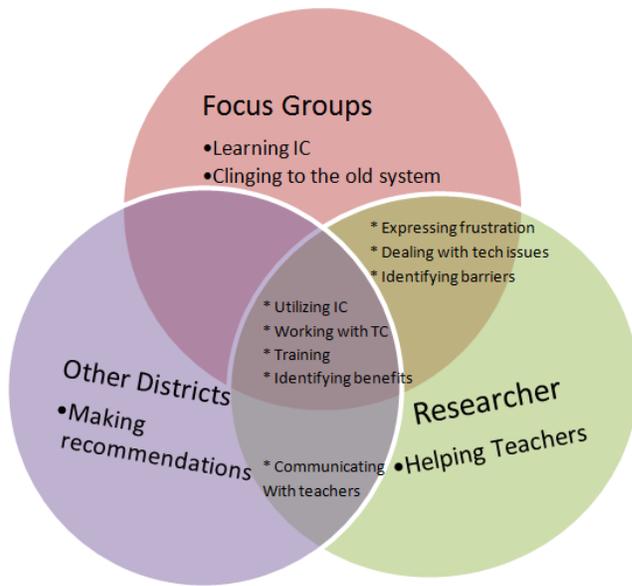


Figure 5-1. Triangulation of data

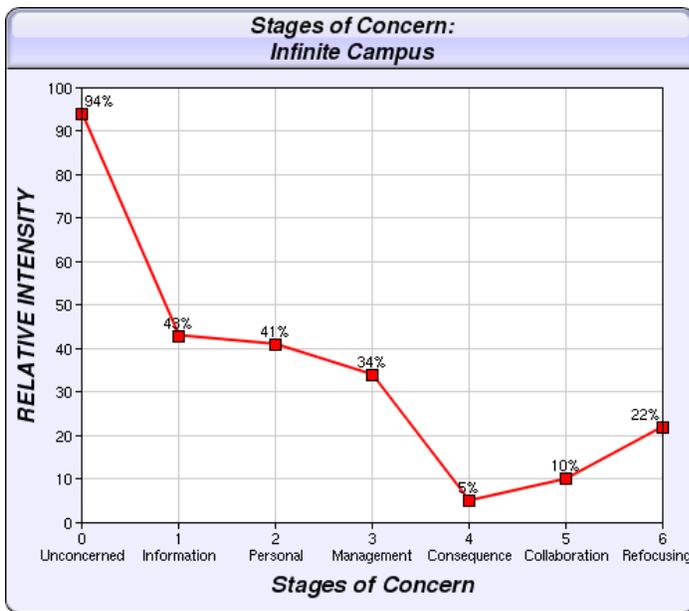


Figure 5-2. Group SoC data.

Table 5-1. Proposed PD interventions to sustain implementation

Stage of Concern	Appropriate Intervention (Hall & Hord, 2011b)	Proposed action in PD
Stage 1 Informational	<ul style="list-style-type: none"> • Share descriptive information • Identify potential of the system • Express enthusiasm • State realistic expectations 	<ul style="list-style-type: none"> • Create a flier which highlights current use and potential use • Identify and share a realistic time frame for continued training
Stage 2 Personal	<ul style="list-style-type: none"> • Be encouraging and a cheerleader • Emphasize personal feelings • Be consistent regarding expectations and use 	<ul style="list-style-type: none"> • Provide training in small groups to minimize discomfort with asking questions. • Allow participants to choose their sessions with their friends. • Require mandatory attendance at four sessions per quarter for the first semester.
Stage 3 Management	<ul style="list-style-type: none"> • Provide person-specific how-to's • Provide a Website with FAQ • Provide an assigned time for expert innovators • Demonstrate effective use and provide hands-on practice • Send emails with tips • Establish a buddy system or support group 	<ul style="list-style-type: none"> • Create mini-sessions designed for a wide range of abilities. • Design PD sessions as hands-on using live data. • Reorganize the Moodle site as a FAQ site. • Email weekly updates. • Encourage additions to FAQ site.

Table 5-2. Correlation of Desimone’s critical features of PD (2009) and the proposed PD

Critical Features of PD	Aspect of PD
Content Focus	<ul style="list-style-type: none"> • Use of Infinite Campus; remediation and advanced topics.
Active Learning	<ul style="list-style-type: none"> • Anchored in problem of practice • Topics are teacher driven • Goals driven by long-term plan to eventually make data driven decisions using the SIS.
Coherence	<ul style="list-style-type: none"> • Facilitator is member of the community • Ongoing and sustained . Training will continue throughout the year. Recommend four trainings per quarter.
Duration	<ul style="list-style-type: none"> • Intentional • Minimum of 8 hours of training if above guidelines are accepted. • Administrative investment
Collective Participation	<ul style="list-style-type: none"> • Anchored in problem of practice • Small groups will lend towards collaboration and sharing. • Situative; job-embedded

APPENDIX A
IRB APPROVAL



PO Box 112250
Gainesville, FL 32611-2250
352-392-0433 (Phone)
352-392-9234 (Fax)
irb2@ufl.edu

January 7, 2013

TO: Katrina M. Johnson

FROM: Ira S. Fischler, PhD; Chair 
University of Florida
Institutional Review Board 02

SUBJECT: **Exemption of Protocol #2012-U-1367**
Implementation of a Technological Innovation: Factors Influencing the
Adoption of a New Student Information System

SPONSOR: None

Your protocol submission was reviewed by the IRB. The Board has determined that your protocol is exempt based on the following category:

45 CFR 46.101(b)(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects

Should the nature of your study change or if you need to revise this protocol in any manner, please contact this office before implementing the changes.

IF:dl

APPENDIX B INFORMED CONSENT – SOCQ

Appendix C

Informed Consent - SoCQ

Protocol Title: Investigation of online teacher professional development and teacher implementation factors, strategies and challenges

Please read this consent document carefully before you decide to participate in this study.

Purpose of the research study:

The purpose of this study is to identify what factors influence or inhibit the effective implementation of a new Student Information System (SIS) and encourage the teachers to move from compliance of utilization to full incorporation and appropriation of the SIS.

What you will be asked to do in the study:

If you choose to participate in this study, you will be asked to complete an online survey to assess your stage of concern regarding the new student information system.

Time required:

Approximately 15 minutes.

Risks and Benefits:

There are no perceived risk associated with this study. Benefits may be seen through improved use of the student information system.

Compensation:

There is no compensation associated with this study.

Confidentiality:

The surveys are completed anonymously, to protect your confidentiality. Your name will not be requested or used in any report.

Voluntary participation:

Your participation in this study is completely voluntary. There is no penalty for not participating.

Right to withdraw from the study:

You have the right to withdraw from the study at anytime without consequence.

Whom to contact if you have questions about the study:

Katrina M. Johnston,
6427.

6

Reviewed by:
University of Florida
Institutional Review Board 02
Protocol # 2012-U-1367
Date of Review: 12/20/12

Dr. Swapna Kumar,
Gainesville, FL 326

Whom to contact about your rights as a research participant in the study:

IRB02 Office, Box 112250, University of Florida, Gainesville, FL 32611-2250; phone 392-0433.

Agreement:

I have read the procedure described above. I voluntarily agree to participate in the procedure. I may request a written copy of this description from Katrina Johnston via phone or email. I acknowledge this by clicking on the Next button and proceeding with the survey.

7

Reviewed by:
University of Florida
Institutional Review Board 02
Protocol # 2012-U-1367
Date of Review: 12/20/12

APPENDIX C SOCQ PERMISSION



SEDL License Agreement

To: Katrina Johnston (Licensee)
[Redacted]

From: Nancy Reynolds
Information Associate
SEDL
Information Resource Center-Copyright Permissions
4700 Mueller Blvd.
Austin, TX 78723

Subject: License Agreement to reprint and distribute SEDL materials

Date: November 14, 2012

Thank you for your interest in using the **Stages of Concern Questionnaire** (SoCQ 075) published by SEDL in *Measuring Implementation in Schools: The Stages of Concern Questionnaire* written by Archie A. George, Gene E. Hall, and Suzanne M. Stiegelbauer in 2006, as Appendix A, pages 79-82; it is also available in electronic format as SEDL's *Stages of Concern Questionnaire (SoCQ) Online* (which can be purchased on the SEDL website at <http://www.sedl.org/pubs/catalog/items/cbam21.html>) and in the book *Taking Charge of Change*, revised ed., published in 2006 and written by Shirley M. Hord, William L. Rutherford, Leslie Huling, and Gene E. Hall, on pages 48-49.

SoCQ 075 will be referred to as the "work" in this permission agreement. SEDL is pleased to grant permission for use of the work cited above by the Licensee in a dissertation titled *Implementation of a Technological Innovation: Factors Influencing the Adoption of a New Student Information System* at the University of Florida in Gainesville, FL. The following are the terms, conditions, and limitations governing this limited permission to reproduce the work:

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2. No adaptations, deletions, or changes are allowed with the exceptions of substituting the words "the innovation" with a word or phrase that participants will recognize, such as the name of the innovation or initiative, and adding questions to identify demographic indicators of participants before or after the instrument, but otherwise, the wording and order of items cannot be changed. No derivative work based on or incorporating the work will be created without the prior written consent of SEDL.

Voice: 800-476-6861
Fax: 512-476-2286

www.sedl.org

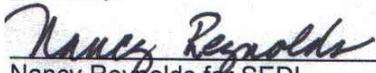
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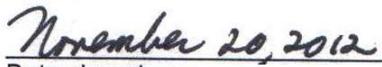
I'm e-mailing you a PDF of this agreement. Please print and sign one copy below, indicating that you understand and agree to comply with the above terms, conditions and limitations, and send the original back to me. If you wish to keep a copy with original signatures, please also print, sign, and return a second copy and, after I receive and sign it, I'll return it with both of our signatures to you.

Thank you, again, for your interest in using SEDL's **Stages of Concern Questionnaire**. If you have any questions, please contact me at 800-476-6861, ext. 6548 or 512-391-6548, or by e-mail at nancy.reynolds@sedl.org.

Sincerely,

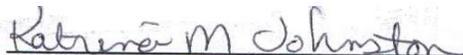


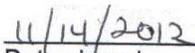
Nancy Reynolds for SEDL



Date signed

Agreed and accepted:

Signature: 



Date signed

Printed Name: Katrina M. Johnston

APPENDIX D
STAGES OF CONCERN QUESTIONNAIRE

Name (optional): _____

The purpose of this questionnaire is to determine what people who are using or thinking about using various programs are concerned about at various times during the adoption process.

The items were developed from typical responses of school and college teachers who ranged from no knowledge at all about various programs to many years' experience using them. Therefore, **many of the items on this questionnaire may appear to be of little relevance or irrelevant to you at this time.** For the completely irrelevant items, please circle "0" on the scale. Other items will represent those concerns you do have, in varying degrees of intensity, and should be marked higher on the scale.

For example:

- | | |
|-------------------------------------------------------|--------------------------------------------------|
| This statement is very true of me at this time. | 0 1 2 3 4 <input checked="" type="radio"/> 5 6 7 |
| This statement is somewhat true of me now. | 0 <input checked="" type="radio"/> 1 2 3 4 5 6 7 |
| This statement is not at all true of me at this time. | <input checked="" type="radio"/> 0 1 2 3 4 5 6 7 |
| This statement seems irrelevant to me. | <input checked="" type="radio"/> 0 1 2 3 4 5 6 7 |

Please respond to the items in terms of **your present concerns**, or how you feel about your involvement with **this** innovation. We do not hold to any one definition of the innovation so please think of it in terms of your own perception of what it involves. Phrases such as "this approach" and "the new system" all refer to the same innovation. Remember to respond to each item in terms of your present concerns about your involvement or potential involvement with the innovation.

Thank you for taking time to complete this task.

0	1	2	3	4	5	6	7
Irrelevant	Not true of me now		Somewhat true of me now			Very true of me now	

Circle one number for each item.

1. I am concerned about students' attitudes toward Infinite Campus.	0	1	2	3	4	5	6	7
2. I now know of some other approaches that might work better.	0	1	2	3	4	5	6	7
3. I am more concerned about another innovation.	0	1	2	3	4	5	6	7
4. I am concerned about not having enough time to organize myself each day.	0	1	2	3	4	5	6	7
5. I would like to help other faculty in their use of Infinite Campus.	0	1	2	3	4	5	6	7
6. I have a very limited knowledge of Infinite Campus.	0	1	2	3	4	5	6	7
7. I would like to know the effect of Infinite Campus on my professional status.	0	1	2	3	4	5	6	7
8. I am concerned about conflict between my interests and my responsibilities.	0	1	2	3	4	5	6	7
9. I am concerned about revising my use of Infinite Campus.	0	1	2	3	4	5	6	7
10. I would like to develop working relationships with both our faculty and outside faculty using Infinite Campus.	0	1	2	3	4	5	6	7
11. I am concerned about how Infinite Campus affects students.	0	1	2	3	4	5	6	7
12. I am not concerned about Infinite Campus at this time.	0	1	2	3	4	5	6	7
13. I would like to know who will make the decisions in the new system.	0	1	2	3	4	5	6	7
14. I would like to discuss the possibility of using Infinite Campus.	0	1	2	3	4	5	6	7
15. I would like to know what resources are available if we decide to adopt Infinite Campus.	0	1	2	3	4	5	6	7
16. I am concerned about my inability to manage all that the Infinite Campus requires.	0	1	2	3	4	5	6	7
17. I would like to know how my teaching or administration is supposed to change.	0	1	2	3	4	5	6	7
18. I would like to familiarize other departments or persons with the progress of this new approach.	0	1	2	3	4	5	6	7

0	1	2	3	4	5	6	7
Irrelevant	Not true of me now		Somewhat true of me now			Very true of me now	

Circle one number for each item.

19. I am concerned about evaluating my impact on students.	0	1	2	3	4	5	6	7
20. I would like to revise Infinite Campus's approach.	0	1	2	3	4	5	6	7
21. I am preoccupied with things other than Infinite Campus.	0	1	2	3	4	5	6	7
22. I would like to modify our use of Infinite Campus based on the experiences of our students.	0	1	2	3	4	5	6	7
23. I spend little time thinking about Infinite Campus.	0	1	2	3	4	5	6	7
24. I would like to excite my students about their part in Infinite Campus.	0	1	2	3	4	5	6	7
25. I am concerned about time spent working with nonacademic problems related to Infinite Campus.	0	1	2	3	4	5	6	7
26. I would like to know what the use of Infinite Campus will require in the immediate future.	0	1	2	3	4	5	6	7
27. I would like to coordinate my efforts with others to maximize Infinite Campus's effects.	0	1	2	3	4	5	6	7
28. I would like to have more information on time and energy commitments required by Infinite Campus.	0	1	2	3	4	5	6	7
29. I would like to know what other faculty are doing in this area.	0	1	2	3	4	5	6	7
30. Currently, other priorities prevent me from focusing my attention on Infinite Campus.	0	1	2	3	4	5	6	7
31. I would like to determine how to supplement, enhance, or replace Infinite Campus.	0	1	2	3	4	5	6	7
32. I would like to use feedback from students to change the program.	0	1	2	3	4	5	6	7
33. I would like to know how my role will change when I am using Infinite Campus.	0	1	2	3	4	5	6	7
34. Coordination of tasks and people is taking too much of my time.	0	1	2	3	4	5	6	7
35. I would like to know how Infinite Campus is better than what we have now.	0	1	2	3	4	5	6	7

Please complete the following:

1. How long have you been involved with Infinite Campus, not counting this year?
Never ___ **1 year** ___ **2 years** ___ **3 years** ___ **4 years** ___ **5 years or more** ___

2. In your use of Infinite Campus, do you consider yourself to be a:
non-user ___ **novice** ___ **intermediate** ___ **old hand** ___ **past user** ___

3. Have you received formal training regarding Infinite Campus (workshops, courses)?
Yes ___ **No** ___

4. Are you currently in the first or second year of use of some major innovation or program other than this one?
Yes ___ **No** ___

If yes, please describe briefly:

Thank you for your help!

George, A. A., Hall, G. E., & Stiegelbauer, S. M. (2006). *Stages of Concern Questionnaire (SoCQ) online*. Available from <http://www.sedl.org/pubs/catalog/items/cbam21.html>

APPENDIX E QUICK SCORING DEVICE FOR SoCQ

Stages of Concern Quick Scoring Device

SoCQ 075

A Date: _____
 Site: _____ SS#: _____
 Innovation: _____

Stage 0	1	2	3	4	5	6
3 _____	6 _____	7 _____	4 _____	1 _____	5 _____	2 _____
12 _____	14 _____	13 _____	8 _____	11 _____	10 _____	9 _____
21 _____	15 _____	17 _____	16 _____	19 _____	18 _____	20 _____
23 _____	26 _____	28 _____	25 _____	24 _____	27 _____	22 _____
30 _____	35 _____	33 _____	34 _____	32 _____	29 _____	31 _____

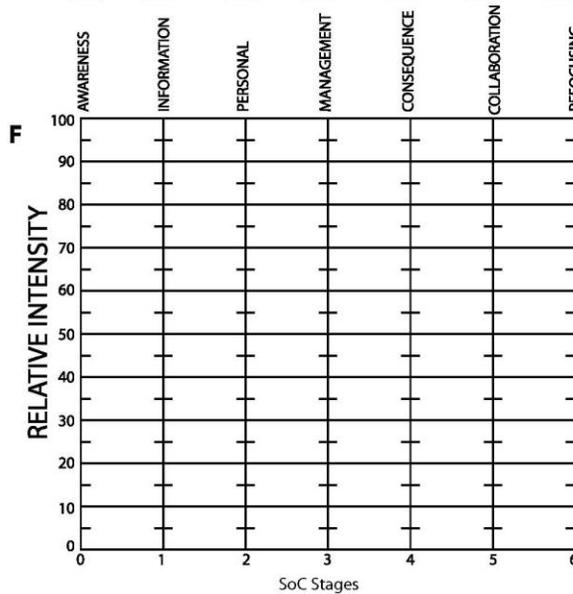
Raw Score Totals
Percentile Scores

C _____
E _____

D

Five Item Raw Scale Score Total	Percentiles for:						
	Stage 0	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6
0	0	5	2	1	1	1	1
1	1	12	12	5	1	2	2
2	2	16	14	7	1	3	3
3	4	19	17	9	2	3	5
4	7	22	21	11	2	4	6
5	14	22	26	15	3	5	9
6	22	35	28	18	3	7	13
7	31	34	31	22	4	9	14
8	40	37	35	27	5	10	17
9	48	40	39	30	5	12	20
10	55	42	41	34	7	14	22
11	61	45	45	39	8	16	26
12	69	48	48	43	9	19	30
13	75	51	52	47	11	22	34
14	81	54	55	52	13	25	38
15	87	57	57	56	16	28	42
16	91	60	59	60	19	31	47
17	94	63	62	63	21	36	52
18	96	66	67	69	24	40	57
19	97	69	70	72	27	44	60
20	98	72	72	77	30	48	65
21	99	75	76	80	33	52	69
22	99	80	78	83	38	56	73
23	99	84	80	85	43	59	77
24	99	88	83	88	48	64	81
25	99	90	85	90	54	68	84
26	99	91	87	92	59	72	87
27	99	93	89	94	63	76	90
28	99	95	91	95	66	80	92
29	99	96	92	97	71	84	94
30	99	97	94	97	76	88	96
31	99	98	95	98	82	91	97
32	99	99	96	98	86	93	98
33	99	99	96	99	90	95	99
34	99	99	97	99	92	97	99
35	99	99	99	99	96	98	99

Concerns Based Systems International



APPENDIX F
FOCUS GROUP INTERVIEW QUESTIONS

- 1) How do you use Infinite Campus daily?
- 2) To put it in terms we use with our students, are you using IC at a proficient level, basic level, below basic level?
- 3) How confident are you in using SIS in your daily work?
- 4) In your teaching position, what do you see as the strengths and weaknesses of Infinite Campus? Explain.
 - a. Have you made any attempt to do anything about the weakness?
- 5) What do you see as being the benefits for you of Infinite Campus?
 - a. In what way have you determined this? Are you doing any evaluating, either formally or informally, of your use of Infinite Campus?
 - b. Have you received any feedback from students? What have you done with the information you got?
- 6) Talk to me about any staff development you've had on the SIS/IC system .
(Probe: has it been helpful or not? Why?)
 - a. What were some positive and negative experiences you have had with the introduction of the SIS during the 2012-2013 school year?
- 7) In terms of support,
 - a. What forms of support have helped you to feel more comfortable?
 - b. What additional support could improve your level of comfort?
 - c. What did you think was the most important thing in supporting you in your adoption and use of SIS? Explain.
- 8) How has the environment (i.e., equipment, technology support) helped or hindered your ability to learn and use Infinite Campus?
 - a. How supported did you feel when it came to adopting and using SIS especially in the sense of communication and training.
 - b. What additional things could have been done in order for you to feel more supported?
- 9) Since changing to the new system, how has your job changed in terms of the way you managed grades, attendance and student information?

- 10) Are you currently looking for any information about Infinite Campus? What kind?
- 11) Are you working with others (outside of anyone you may have worked with from the beginning) in your use of Infinite Campus?
- a. Have you made any changes in your use of Infinite Campus based on this coordination?
 - b. How do you work together? How frequently?
 - c. What are the strengths and the weaknesses of this collaboration for you?
- 12) As you look ahead to later this year, what plans do you have in relation to your use of Infinite Campus? Are you considering making any changes to how you use the system?
- 13) Can you think of anything else you want to share with me with reference to the experiences in going through the change management strategies and SIS adoption?

APPENDIX G
INTERVIEW QUESTIONS FOR OTHER SCHOOL DISTRICTS

- 1) When did you decide to purchase Infinite Campus (IC) as your SIS?
 - a. Was implementation immediate or was it a staged process?
- 2) How did you implement IC with your teachers?
 - a. What influenced this decision?
 - b. Did you use the training provided by the company?
 - i. Was this training effective?
 - ii. Did you augment this training?
 - c. Did you utilize teacher coaches within the buildings or one coach district wide? Did you think this was effective?
- 3) Do you think there was anything unusual you did with your implementation that others may not do?
 - a. Why did you do this?
 - b. Do you think it was effective or not? Why?
- 4) At what point (months/years) do you think your teachers reached full implementation?
 - a. Is IC being used to communicate with parents? Are they using IC?
 - b. How are you using IC to make data driven decisions regarding student learning?
- 5) In hindsight, is there anything you would have done differently with your implementation? Explain.
- 6) What advice would you give to another district that is adopting IC?

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BIOGRAPHICAL SKETCH

Katrina Johnston is an experienced educator. As a chemistry teacher for 20 years, Katrina has not only incorporated technology into her classroom, but has also encouraged and trained others to do so. This is accomplished through planning and providing professional development for teachers and presenting at regional technology conferences. In addition to chemistry education and technology incorporation, Katrina's research interests include implementing change in schools, blended learning, and teacher professional development.