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Jan C. Amsterburg

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Marquette Benham
Major professor

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# WHAT'S IN IT FOR ME? AN INFORMATION-TECHNOLOGY CASE STUDY INVOLVING A RURAL PUBLIC SCHOOL DISTRICT

By

Jan C. Amsterburg

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ABSTRACT

WHAT'S IN IT FOR ME? AN INFORMATION-TECHNOLOGY CASE STUDY INVOLVING A RURAL PUBLIC SCHOOL DISTRICT

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Jan C. Amsterburg

The primary purpose of this study was to examine and describe the institutional support and resistance encountered during the implementation of a computer-technology innovation in a midwestern rural public school district. In June 1998, nine midwestern school districts were awarded a 21st Century Learning Center grant through the United States government. Each district was able, at no cost, to establish a completely equipped, state-of-the-art middle school computer clubhouse. This new computer consortium was called SATURN! or Students Achieving Technology Understanding Right Now! (a pseudonym) and included financial support for a computer lab, a full-time site coordinator, student transportation, and technical and administrative assistance from Southwestern University (a pseudonym). Despite more than adequate financial support, successful implementation was not immediate. This phenomenon was due to factors both supporting and resisting the process of school change at this rural middle school site. Knowledge gained from examining the innovation of the SATURN! project will provide practical and useful information to any school district interested in pursuing similar technology programs.

The methodology employed was a single case-based study and used single-case analysis. This study examined how the participants interacted with other school district

individuals and with the university as an organization, and investigated how technology was used to implement the change process. Also explored were the formal and informal networks within and external to the school district and community. The data-collection strategies included the gathering of descriptive data through site visitations and examining individuals' attitudes toward the change event through rich narratives. The data analysis identified patterns along with consistencies and inconsistencies.

The exploratory question posed was: How has one rural school district implemented a computer-technology innovation (i.e., SATURN!), and what does an analysis of this innovation reveal about the process of school change? At the conclusion of this study, four themes emerged: (a) the formation of complex relationships across differing institutions as they established partnerships and how those partnerships affected innovations and change processes; (b) the possibility of creating new organizational structures that value empowerment, participation, and collaboration, and how these values might drive innovation/change; (c) the development of usable, applied communication skills for change agents that assist them in addressing the human side of change, as well as the political and economic frames of the change event; and (d) the need to better understand how an information-technology innovation affects, or not, second-order change and actual learning.

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# CHAPTER 1

# INTRODUCTION TO THE STUDY

## Introduction

Computers in schools! Anyone even remotely connected with the field of education today cannot help but be caught up in this electronic phenomenon! The buzzwords of computers and technology permeate the halls of every school building and school board meeting across the United States and, indeed, throughout most of the world. As computer technology continues to expand and computers become faster and more user friendly, educators and students are becoming increasingly more proficient in applying this innovation to the educational process. Research has indicated that use of computers in schools is a means, and not an end in itself, in the educational process (Dede, 1998).

More nontraditional applications for computers are surfacing as well. For example, another use of technology is growing in popularity and changing the educational landscape: parents using computers to track their children's progress and stay up-to-date on the school and district. The benefit is that people with busy schedules appreciate being able to gain access to information about their children or school any time of the day or night. With more than 90% of schools now being wired for the Internet, there has also been a huge push on the part of federal, state, and local governments, school districts, and parents to improve communication. Various companies are offering for-profit services to school districts that allow the districts to put password-protected school information onto web sites that parents can view (Branch, 2000).

The infusion of technology into education is also gaining attention at both the state and national levels. In what could be the largest move in the nation's history, in 2000 the state of Michigan was planning to spend $110 million to buy 91,000 personal computers for public school classroom teachers, which were to be delivered by the end of the year (Branch, 2000). Other states are sure to be watching Michigan closely to see how this initiative develops. One thing is certain: The digital age has arrived in the public school setting.

Although funding computer purchases will remain a challenge for many school districts, the real obstacle for many districts is to understand the process by which new technology is introduced or adopted. A better understanding of this process can assist in determining how the change process influences the innovation and sustainability of a computer-technology innovation.

In 1991, most school districts in the United States had a few computers, minimal Internet addresses, and an occasional modem to connect their computers to the Internet. Yet, even then, it was clear to futuristic-thinking and -practicing educators such as California teacher Virginia Streeter that the "technology train had indeed left the station." Streeter, who was featured in the first issue of Cable in the Classroom magazine in 1991, presciently stated, "The question is no longer whether the train is going to go, but where is the train going to stop" (Race, 2001).

Since 1991, students have benefited from technology in ways that only a few of the most visionary dreamers could imagine. Students both in and out of the classroom communicate regularly with other students, as well as with learned experts across the country and around the world. They are learning how to research and analyze

information that is available from literally millions of primary and secondary sources; they are able to see phenomena as images on the screen instead of as words on a page; and they are able to create and publish their own creative art and scholarly work for friends, family, and the community, which all the world has the option and capability to see. In one decade, educators have not only hopped aboard the technology train, they are stoking the engine.

Today, 95% of schools in the United States have some form of Internet access, and many have cable modems that allow users to surf the Internet at 500k or faster (early computers' rate of data transfer was much slower). Partly as a result of these increases in connectivity and speed, teaching is undergoing equally dramatic changes. There are still numerous deficiencies to deal with, from insufficient hardware and technical support to inadequate professional development in the needed technology skills, but the digital age has fully arrived in the schools. Today's teachers are definitely using more computer technologies, along with video, than they did in the past.

According to a survey conducted in 2001 by Cable in the Classroom, 93% of the educators who responded to the magazine's study said they used the Internet to conduct research, communicate with colleagues, seek new ideas and lesson plans, and work on student projects. Technology, then, is being used not only to gather information, but as an active tool to teach critical thinking and media literacy skills that will help students survive in the information age (Race, 2001). Technology also is being used in addressing the needs of classrooms that have moved from teacher-led to student-initiated exercises, from individual to cooperative learning, and from strict grade and subject boundaries to interdisciplinary work that might involve children of various ages and abilities. And

technology is not used merely to respond to changes in education; it creates changes of its own, influencing, for example, the roles of teachers and the scheduling and make-up of classes (Axelson & Hardy, 1999).

School districts are finding new and better ways to reform and enrich education through technology. Students and staff alike are daily employing technology as a tool to access, analyze, use, and communicate information. The vision is that all students can learn, and that the use of technology will enhance the learning experience of each student. If indeed this is the case, then why have not computers and technology been adopted as a standardized, nationwide school reform effort? And when computers have been adopted into an individual school's culture, what happens to that culture and to the curriculum? What does this change look like?

As Stanford University professor Larry Cuban (2001) asked, "How can it be that so much school reform has taken place over the last century, yet schooling appears pretty much the same as it's always been?" Real change requires attention to many organizational issues that rarely are addressed by those installing networks and computers. Effecting authentic change in a school's learning culture demands a comprehensive effort. Taken separately, various individual efforts might make important contributions, but the best approach is to blend many strategies so that they create a compound, lasting effect on the learning culture (McKenzie, 2001).

It is important for members of the school community to understand the change process in order to sustain an innovation. Understanding the orientations and working conditions of the main actors in schools and school systems is a prerequisite for planning

and coping with educational change (Fullan, 1991). A strong change philosophy is also needed for a proposed innovation to succeed. Meijer (1995) specified,

> For the kinds of changes necessary to transform America's education, the work force of teachers must do three tough things more or less at once: change how they view learning itself, develop new habits of mind to go with their new cognitive understanding, and simultaneously develop new habits of work–habits that are collegial and public in nature, not solo and private as has been the custom in teaching. (p. 140)

Changing the attitudes and practices of school personnel, then, is as difficult as it is necessary (Sarason, 1993). School practitioners' vision to embrace a concept is critical if program implementation is to succeed. Virtually everyone who works in a school for any length of time develops vast practical knowledge in areas such as curriculum, child development, discipline, leadership, desegregation, and parent involvement. These rich insights provide credibility to the visions school people have about good education.

The visions of school reform are the prescriptions that have the best chance to be taken seriously, enacted, and sustained by teachers, principals, and ultimately the school district. Many researchers have found a relationship between the presence of teachers' and principals' visions and the effectiveness of their schools. There are many complexities and formidable obstacles to developing a school-based vision of and plan for improvement. Thus, for a program to have a chance for successful implementation, school personnel will need to think through for themselves what they want their school to become and their places in the process, and then set out with conviction to make their vision a reality (Barth, 1990).

As an innovation is implemented in a school or organization, a number of tensions are likely to arise. These tensions may include issues of governance, resource

allocation, human relations, and integration of the innovation into the academic program. Perceived unfairness is another important source of resistance to change as a new innovation is introduced. This perception may be the cause of teacher resistance to change, manifesting itself as resentment of the innovation (Folger & Skarlicki, 1999).

## Problem Statement

I am interested in the many elements inherent in the process of school change and the resulting districtwide ramifications that the implementation of a new program is bound to have. These changes can be as subtle as revising the name of a particular course offering or, at the other end of the change spectrum, as obtrusive as eliminating a program and then implementing a new one. In addition, for the past 10 years I have been concerned about the complexities of implementing computer technology in public schools.

I am now a public school superintendent in a class-B Michigan school district (2,100 students in grades K through 12), and before this I was the superintendent of a class-D school district (255 students in grades K through 12) for four years. Before holding these superintendencies, I served as an assistant high school principal and community education director in another class-B district. Throughout my 24 years as an administrator in three different public school districts, I have witnessed countless proposed educational innovations and many mandates of change. All were well intentioned and, for the most part, carefully thought out, with what I considered to be acceptable plans for successful implementation. Success should have been guaranteed for these program innovations, but it seldom was. For years, I have been curious about

why some programs have been implemented successfully in the mainstream of a public school system, whereas others have failed.

There are several reasons for my interest in why educational program initiatives succeed or fail. First, in my position as a school superintendent, if I support and direct a failed initiative, it might represent a career-ending mistake, just as a successful innovation could provide a lucrative career opportunity at another, more affluent school district. Likewise, but more altruistically, a successful innovation has the potential to be of great educational benefit to the students, and to have a powerful positive effect on the surrounding community.

Second, most school districts do not have money to waste on impractical or unnecessary innovations. A failed innovation may use up the majority of precious "extra" financial resources. Should these funds be expended in vain, there will be little support for future initiatives. Should the initiative succeed, the district will, in all likelihood, support future program innovations. In addition, outside sources of income from federal grants, private foundations, and local stakeholders often hinge on how successful a district has been at implementing new innovations.

The last and perhaps most significant reason I am interested in the success or failure of educational program initiatives is the human or emotional cost involved. This concern is probably the most complex because it involves a combination of administrators, teachers, other staff members, and often board members and other community stakeholders, who have personal agendas and their own views and beliefs concerning the proposed innovation. As a reflective practitioner, I am aware that the emotional costs involved in program innovation embrace the domains of school change,

communication, loss, and the concept of fair social change and justice. All of these emotional costs contribute to and ultimately affect the rate of adoption and the fate of a program innovation.

The most significant piece of any school improvement venture is the success (adoption in some form) or failure (discontinuance) of a new initiative? Ultimately, the innovation's rate of adoption will determine its success or failure (Rogers, 1983, 1995). The problem, then, is understanding the nature of school change, which begins in an isolated setting. In particular, what is the nature of school change at the local level? How is an innovation diffused in a local school setting, and how do the players involved make sense of the change?

There is a dearth of research specifically related to the topics of concern in this research. Searches of ERIC documents revealed only scant information concerning the variables of interest in this study. Further, using the electronic resources of a university library, I located few studies resembling this one, although several dissertations have been written on support of and impediments to diffusion of innovation in schools. Through e-mail, I also contacted Everett Rogers, noted pioneer in research on diffusion of innovation, regarding this study. He replied that he knew of "no other project like it, . . . which could be both good and bad for the researcher!" (personal communication, October 21, 1998).

## Purpose and Objectives

My primary purpose in this study was to examine and describe the institutional support and resistance encountered during the implementation of a computer-technology

innovation (SATURN!) in a midwestern rural public school district (Winbald Area Schools, a pseudonym). A secondary purpose was to put forward an emergent theory regarding a computer-technology innovation process in a rural school setting by employing theories and concepts of school change and communication.

The SATURN! (Students Achieving Technology Understanding Now!) project was sponsored by a federal government 21st Century Learning Center grant administered by Southwestern University (also a pseudonym). This innovation involved the implementation of a computer klubhouse (klubhouse with a "k" was a registered trademark of Southwestern University) at Winbald Middle School. The SATURN! project is described in detail in Chapter 4. To better understand and explain the program-implementation process, I explored the events and features of the change process to discover the extent to which this particular innovation became integrated into daily practice, as a result of institutional support and despite resistance.

Many change initiatives have been launched with the best of intentions, only to eventually fail (Cuban, 1990). Meanwhile, other innovations ultimately have been sustained and woven into the regular K-12 educational programs and become successfully institutionalized. Thus, an objective in this study was to investigate the reasons an innovation succeeds or fails. Another objective was to identify what financial and educational supports were in place, what the major barriers to program implementation were and what barriers remained, and where the most support originated.

## Research Question

To guide the collection of data with which to fulfill the purpose of this study (to examine and describe the institutional support and resistance encountered during the implementation of a computer-technology innovation [SATURN!] in a midwestern rural public school district), I posed the following overarching research question:

> **How has one rural school district implemented a computer-technology innovation (i.e., SATURN!), and what does an analysis of this innovation reveal about the process of school change?**

## Need for and Importance of the Study

This case-based research study has the potential to make significant contributions to the educational field in the areas of practice and research. Of particular interest to researchers will be the examination of an innovative computer-technology program at the middle school level, evaluating the successes and failures of this program and identifying the institutional factors supporting or impeding the innovation's adoption.

Current research indicates that there is educational value in teaching with technology and providing after-school programs for middle school students (University of North Carolina, 1998). Researchers have stressed the expanding role that technology must play in educating at-risk and rural students. New practice in instruction can provide meaningful learning experiences for all children, especially those who are at risk for educational failure (Hixson & Tinzmann, 1990). However, most rural school districts possess few additional resources, and therefore are especially limited in exposure to technological opportunities (Lee, 1997).

Smaller rural schools also face social, economic, and recreational limitations that are not as apparent in suburban school systems (Schmuck & Schmuck, 1992). Therefore, a computer-technology initiative such as SATURN! can provide students cutting-edge technology, as well as a social gathering place. This setting provided a rich and diverse domain in which to study the innovation.

Moreover, because little research is available on similar projects, the study findings will advance this field of research. The knowledge gained from this research will be of value to many other school districts that are contemplating the adoption and innovation of new programs in their schools. The fate of new programs seldom is definite or predictable, yet one certainty that exists is that, even under the best of conditions, there will be myriad impediments to any innovation process. Thus, it is critical for school personnel to understand the ramifications of the innovation process. With this understanding, school districts will be more capable of implementing and sustaining program innovations.

## Setting for the Study

The setting for this study was the Winbald Area School District, one of nine districts participating in the SATURN! initiative. Winbald is a small, isolated, rural community that is located far from the university, library, and museum resources associated with life in large, urban cities in this midwestern state. The Winbald community is low in population and income, and high in the percentage of children who are being reared in poverty. The community has a median household income well below

the state average and a percentage of children living in poverty that is significantly above the state average (Garner, 1991).

The school district covers approximately 120 square miles and consists of 935 students and 40 teachers. The middle/high school, where the SATURN! klubhouse is located, has approximately 400 students, 15 teachers, 2 principals, and 2 secretaries. The context of the school district and the community is discussed in greater detail in Appendix A.

## Assumptions

In conducting this study, I made the following assumptions concerning institutional support for and resistance to implementing the SATURN! project in the Winbald school district:

1. The project would have little effect on teaching and learning because only a limited number of teachers were involved in the project.

2. Although teachers may have resisted it, the initiative would be instituted because of the rapid influx of advancing technology, and students would spend more time on the computers and in the computer lab than before the initiative.

3. The early adopters of the initiative would become more computer literate than other participants or nonparticipants.

4. If a majority of staff did not support the innovation, problems would arise in implementing it.

5. The degree to which the computer initiative was adopted would depend on administrative and staff support, and time of implementation.

## Delimitations

This is not an impact study, and no hypothesis was tested. Further, I did not evaluate classroom teachers' use of computers, computer hardware or software, funding options and sources, state or federal education policy, or teaching styles. Neither did I evaluate any portion of the SATURN! project.

Rather, I used case-based analysis to examine the extent of institutional support for and resistance to the implementation of a SATURN! middle school computer klubhouse. This study was limited to one rural public school district that was a participant in the Southwestern University-directed 21st Century Learning Center grant. Hence, the initiative was backed by considerable funding.

## Theoretical Framework of the Study

The framework of this study comprised change and communication theories. This section provides a brief introduction to each theory. Chapter 2 contains an in-depth review of writings on each of the theories.

The first theory of interest is change theory, particularly as it relates to organizational (school) change. Field theory and force field analysis (Lewin, 1952) offer fundamental descriptions of change that many organizations have used in an attempt to both direct and understand the systemic change process. Force field analysis is used to gain perspective on all the forces in favor of or against a particular plan so that a decision can be made that takes into account all interests. As a tool for managing change, force field analysis is an excellent diagnostic tool for assessing the forces supporting and resisting a change effort (Hoekstra, Vink, & A Fa, 1998).

The analytical lens used in this study was grounded in the study of school change. During the past three decades, schools have experienced rapid and rampant change. These changes have appeared as mandates for reform from state and federal authorities, as well as local reform efforts. Reforms pose certain technical demands on individuals' knowledge, skill, judgment, and imagination. In that sense, the implementation problem at the classroom level is real. But reforms also convey certain values and worldviews.

Reforms communicate a vision of what it means to learn and what it means to be educated. They communicate a vision of schools and teaching, of students and teachers. They are, to some degree, compatible with the organizational structures and cultures in which people work. In these crucial ways, powerful reform ideas engage teachers in a broad consideration of the educational enterprise, both in and beyond the classroom.

To make sensible critiques of proposed reforms requires studying their underlying assumptions; their social and historical context; the degree to which they are congruent with teachers' existing beliefs, commitments, and practices; their probable consequences for students; and the ways in which they vary or converge across communities (Little, 1994). These aspects of change are exemplified by the cultural-web model of school change (Bolman & Deal, 1997) depicted in Figure 1.1. This model suggests the interrelationships between the change event of SATURN! and the following themes of school change: grassroots involvement, top-level support (power and authority), informal/outside support, perceived fairness, communication processes, shared beliefs and values, human-people orientation, and meaning/value added. According to the model, these themes directly influence the extent to which a school change initiative such as SATURN! is implemented.

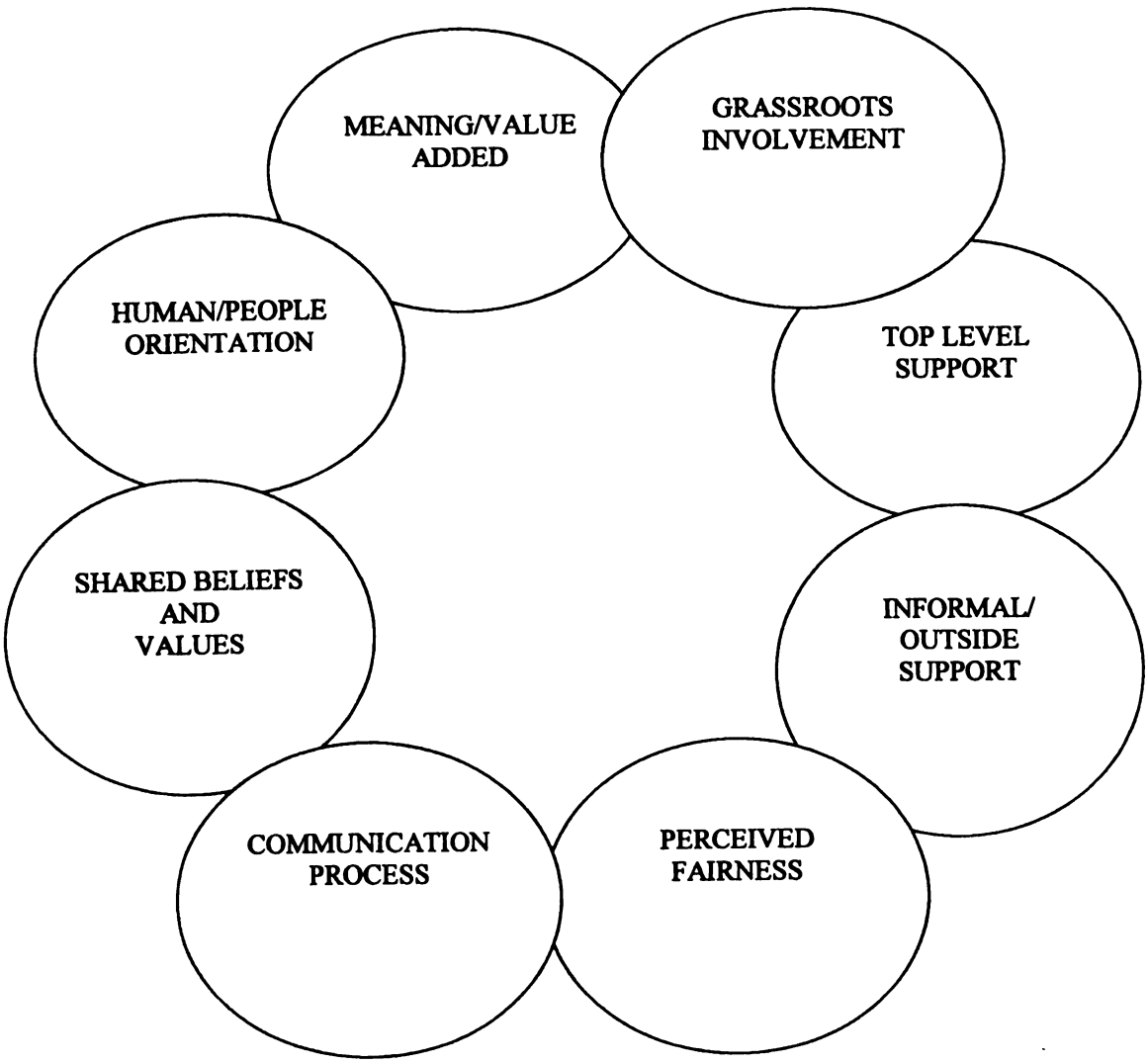


Figure 1.1: Themes of school change–a cultural web. (From Reframing Organizations (2nd ed.), by L. G. Bolman and T. C. Deal, 1997, San Francisco: Jossey-Bass.)

Fair social change and justice (Habermas, 1984/87) concerns the need to focus thinking about organizational change from the broader aspects that affect the organization as a whole, to the psychological adjustments that individuals in the organization must make during the actual implementation process (Siegal et al., 1996). Perceptions of fairness are tied to trust in and commitment to the organization and its leaders. When individuals believe they are being treated fairly, they are likely to accept the changes that are presented to them.

The other theory of interest in this study was communication theory. Rogers's (1995) diffusion-of-innovation theory was used as a framework for understanding the communication process. Rogers's book Diffusion of Innovation provided the basis for understanding how an innovation, such as the creation of the middle school SATURN! computer klubhouse, was implemented or diffused from a state university to a rural public middle school setting. School change and communication theories provided insight into the problems of resistance and failure that historically have accompanied the implementation of new educational ideas.

The main aspects of the diffusion process as they relate to this study are shown in Figure 1.2. A communication channel is the means by which messages get from one individual to another. The effectiveness of the communication channel determines the extent of an innovation's adoption. The social system constitutes the boundaries within which an innovation is diffused; this system is composed of individuals, groups, and organizations. The innovation-diffusion process leaves visible traces that affect the social (school) system, either by embracing or rejecting the innovation, and these traces can then be measured for any effect on the social system (Rogers, 1995).

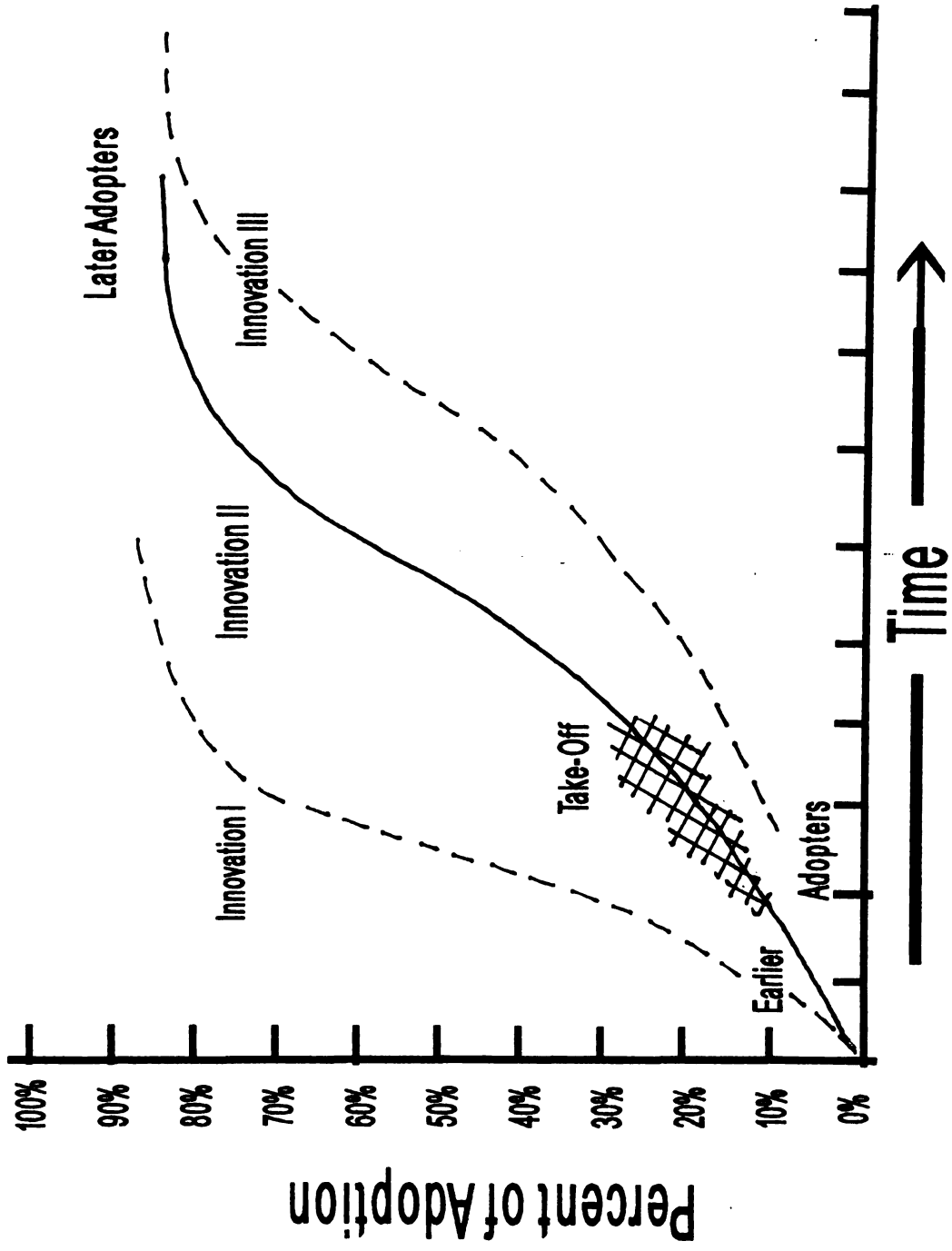


Figure 1.2: The diffusion "S" curve. (From Diffusion of Innovation (3rd ed.), by E. Rogers, New York, Free Press, 1995.)

## Definitions of Terms

The following terms are defined in the context in which they are used in this dissertation:

Diffusion of innovation. The change aspect of communication theory, which concerns the means by which an innovation is communicated through certain channels over time among the members of a social system (Rogers, 1983).

Institutional personnel. Both the administrators and teaching staff of the Winbald public school district, as well as SATURN! project personnel from Southwestern University.

SATURN! klubhouse. A computer lab located at Winbald Middle School that was used for instruction during the school day and for after-school enrichment.

# CHAPTER 2

# REVIEW OF LITERATURE

## Introduction

My purpose in this study was to examine and describe the effect of institutional support and resistance encountered during the implementation of a computer-technology innovation in a rural public school district. Using change and communication theories as lenses, I examined the factors that enhanced and impeded the implementation process. This chapter contains a review of literature on the overarching concepts constituting the theoretical framework for the study. First, writings on school change and culture are discussed. Next is a review of literature and research on force field analysis. The third section is a discussion of writings on diffusion of innovation. Technology implementation as it relates to school change is the focus of the fourth section.

## School Change and Culture

Rapid change has been forced on modern society by unprecedented technological advancements. The computer is now a pervasive part of our lives, affecting us both as human beings and as educators. As early as 1974, curriculum author James Macdonald, believing we had entered a new hierarchical level with the electronic world, predicted the massive impact that technology would have on society. The institutionalization of nuclear and electronic technology, although dependent on what industrial predecessors have contributed, is an operating pattern, a cultural milieu that has never existed before.

The sense of powerlessness and impotence that people may feel is not a sign of alienation in the traditional Marxian sense. Rather, it is a reflection of the state of human beings to the extent that we transfer psychological states grounded in a premodern society. From an industrial-psychological perspective, people are indeed powerless when one considers destructive nuclear capacity and people's dependence on computers and power sources simply to maintain their existence. No longer are we dominated by the owners of the tools of work; rather, we are dominated by the need for survival and power sources. We have, in effect, created the first man-made gods in material form. We have created a human condition that, should it collapse through disaster or human direction, would destroy rich and poor alike. Now all people must serve the technical "gods" in some nonthreatening way in order to ensure social and perhaps personal survival (Gress & Purpel, 1988). In late fall 1999, concern about the possible global catastrophe resulting from the Y2K (year 2000) problem only served to highlight Macdonald's prediction. This dramatic shift toward technology has caused organizations such as schools to address the change process and understand the effects of technology on the institutions' social structure.

Therefore, it is no surprise that dramatic change is also a fact of life in human systems (Siegal et al., 1996). Humans are rapidly moving toward a world in which the geopolitical boundaries that have been the hallmarks of civilization are fading (Toffler, 1980). Yet, unlike other areas, this social and technological change has hardly affected or altered the "power relationships" in schools (Sarason, 1996). However, these power relationships are now changing rapidly as teachers and administrators who are

comfortable with technology and proficient in its use are becoming the "new leaders" in many schools.

Tensions are bound to arise during the implementation of new programs. From a human resource perspective, people have good reason to resist change. No one likes feeling anxious and incompetent. Changes in routine practices and procedures undercut people's ability to perform with confidence and success. When told to do something they do not understand or do not believe in, people feel puzzled, anxious, and insecure. Lacking the skills and confidence to implement the new ways, they resist or even sabotage them, awaiting the return of the good old days (Bolman & Deal, 1997).

Contemporary organizations are immersed in a virtual cyclone of change as they strive to adapt to the ever-increasing demands of their domestic and global markets. School districts are no different as they attempt to embrace change and adapt to new innovations such as computer technology within the reality of the traditional school structure.

Unfortunately, many change initiatives undertaken by organizations with even the best of intentions are often destined for failure at some point during their implementation. In most cases, failure can be attributed to a number of factors, including inappropriately conceived future states, resistance by organization members, faulty implementation strategies during transition periods, or simply a lack of knowledge regarding important aspects of change management on the part of managers (Siegal et al., 1996).

Planned change activities should be precipitated by gathering information about the organizational features that can be changed, such as identifying who in the school district delivers what in the way of new technology. Also to be considered should be the

intended outcomes of changes that affect teaching and learning, the causal mechanism by which those changes are to be achieved, and the contingencies on which successful change depends, such as staff morale and the perception of justice among staff members (Folger & Skarlicki, 1999).

Lewin (1958) described three basic steps that are inherent in any change process. The first step involves "unfreezing" the present level of behavior. Unfreezing as a concept entered the change literature early to highlight the observation that human behavior was based on "quasi-stationary equilibria" supported by a large force field of driving and restraining forces. For change to occur, this force field had to be altered under complex psychological conditions because just adding a driving force toward change often produced an immediate counterforce to maintain the equilibrium. This observation led to the important insight that the equilibrium could be moved more easily if one could remove restraining forces because there were usually already driving forces in the system. Unfortunately, restraining forces were harder to get at because they were often personal psychological defenses or group norms embedded in the organization or community culture. The full ramifications of such restraining forces were understood only after decades of frustrating encounters with resistance to change.

The second step inherent in the change process is called movement and involves taking action to change the organization's social system from its original level of behavior or operation to a new level. The third step, called refreezing, involves establishing a process to ensure that the new types of behavior will be relatively secure against reverting to previous modes of operation (Lewin, 1958).

Schein (1992) provided an example of organizational (school) change that develops from Lewin's three-step process. According to Schein, unfreezing is the process of creating motivation and readiness for change. There are three ways to accomplish this. The first is disconfirmation, when members of the organization experience a need for change, which, in turn, motivates them to embrace change. The second is the introduction of guilt or anxiety involving the establishment of a perceived gap between what is not currently working well and a desired future state. The third is the creation of psychological safety, providing an environment in which people feel safe enough to experience disconfirmation and induction (Siegal et al., 1996).

Schein (1992) also linked styles of leadership to the cultures and subcultures that exist within organizations, and traced them back to their very foundations. Such different leadership practices result in varying abilities of organization members to problem solve and survive. As organizations grow, they may create increasing numbers of subcultures with conflicting values and beliefs, thereby adding to the tension involved in program innovation.

According to Bolman and Deal (1997), there are four frames that should be critically examined and understood, in order for leaders to guide organizations successfully. These are (a) the political frame, which focuses on power, conflict; and coalitions; (b) the structural frame, which encompasses goals, roles, coordination, and control; (c) the human resource frame, which looks at individuals' skills and needs; and (d) the symbolic frame, which emphasizes the importance of culture, meaning or symbols, rituals, and stories within an organization. Bolman and Deal wrote,

> As ambiguity increases, the political and symbolic frames become more relevant. The political frame expects people to be rational in pursuing self-interests, but contests among individuals and interest groups often become confused and chaotic. The symbolic frame sees symbols as a way of finding order, meaning, and truth in situations too complex, uncertain, or mysterious for rational or political analysis. (p. 272)

The urge and the ability involved in the change process are two different things. Any kind of change is an organic process composed of many competing elements, an inevitable force with a life of its own. Change is shaped by external forces– technological, competitive, and regulatory innovation or the decline and rise of whole industries and regional economies that engineer a break with the past. There are psychosocial elements of change to be considered, as well as the discontinuities in power that change provokes. The stages that companies (schools) go through are rational resistance to change; the search for people to blame; increased informal communication, i.e., "hall chat," and concomitantly, lower productivity; faction formation; the emergence of informal leadership; and realignment of relationships. Change may seem chaotic, but it follows similar patterns, no matter what the context.

Bringing about real change is difficult because transforming the culture of an organization means changing the values and worldviews of its people. People do not come by their values lightly, and they do not check those values at the schoolhouse door, so they surely do not easily relinquish their values (Zucchermaglio, Bagnara, & Stucky, 1995). People experience change as loss, even if they accept the need for or inevitability of change. Change, like loss, requires time to repair (Marris, 1975). School administrators, as well as project personnel, loom large as change agents in directing a

change initiative. As such, they must be aware of the implications of the loss factor that change might represent for the school culture.

It is important to recognize that real change, whether desired or not, represents a serious personal and collective experience characterized by ambivalence and uncertainty. If the change works out, it can result in a sense of mastery, accomplishment, and professional growth. The anxieties of uncertainty and the joys of mastery are central to the subjective meaning of educational change, and to its success or failure, a fact that has not been recognized or appreciated in many attempts at educational reform (Fullan, 1991). For an innovation to take place, then, it is critical to be cognizant of the emotional side of this process.

All real change involves loss, anxiety, and struggle. Because they fail to recognize this phenomenon as natural and inevitable, people tend to ignore important aspects of change and misinterpret others. Change may come about because of natural events, because deliberate reform is imposed upon us, or because we voluntarily participate in or initiate change when the current situation is dissatisfying, inconsistent, or intolerable. In any of these cases, the meaning of change will rarely be clear at the outset, and ambivalence will pervade the transition. Innovation cannot be assimilated unless its meaning is shared (Marris, 1975).

Deep changes are at stake when people's basic conceptions of education and skills are involved–that is, their occupational identity, their sense of competence, and their self-concept. The need and difficulty for an individual to develop a sense of meaning about change is manifest. Further, change consists of a sophisticated and none-too-clear dynamic interrelationship among the various dimensions of change. Beliefs

guide and are informed by teaching strategies and activities; the effective use of materials depends on their articulation with beliefs and teaching approaches. Many innovations entail changes in some aspects of educational beliefs, teaching behavior, use of materials, and more. Whether or not people develop meaning in relation to all aspects is the fundamental problem (Fullan, 1991).

The emotional side of change has been either ignored or miscast (Fullan, 1991). Jealousy is an additional facet of the change process that researchers have largely ignored. Yet it is a prevalent force involved in all aspects of the implementation of program innovations. Jealousy can be a mask for individuals' fear that they will not be able to get what they want, or frustration that someone seems to be getting what is rightfully theirs, even if they are too frightened to reach for it (Cameron, 1992).

Habermas (1984/87) contended that the goal of both social science and philosophy is fair social change and justice. Because change creates adversity, issues of fairness are salient to those who bear the hardships of organizational change. The concept of fair social change and justice addresses the need to focus thinking about organizational change from the broader, general patterns of change that affect the organization as a whole, down to the difficult psychological adjustment that individual members of the organization must make during the actual implementation process (Siegal et al., 1996).

Only recently has the field of school change begun to develop a technical orientation to justice–how to address issues of justice directly with specifically designed intervention strategies. The original impetus to study issues of justice was that individuals would have a wide range of cognitive and behavioral reactions to treatment or

conditions they perceived as fair or unfair. More recently, the study of organizational justice has focused on how the agents of the organization, primarily leaders, treat those subject to their authority (Tyler & Bies, 1990).

Perceptions of fairness are tied to trust in, and commitment to, one's leaders and one's organization. When individuals see themselves as treated fairly, they are more likely to accept the changes presented to them. They are also more likely to engage in "organizational citizenship" behaviors. Such outcomes as these provide strong support for the idea that change seen as basically fair and just will have a greater chance of success than change not seen as such (Stephens & Cobb, 1999).

Even though there have been many reform efforts, schools function much the same as they did 100 years ago. Computer-technology innovations are now forcing change and restructuring. Successful restructuring (school reform) will come about through second-order changes, such as altering the culture and structure of schools, and not first-order changes, which only change and improve current practice (Fullan, 1991). The potential for change is represented by the difference between current practice and the future state to which a change may take them. Change needs to be authentic, or the veteran teachers will too quickly say, "Here we go again!" and impede the change process (Sergiovanni, 1996).

Through the trial and error of constantly experiencing attempts at school reform, the educational community has learned that the process of planned educational change usually is much more complex than anticipated. The process of educational change in modern society is so complex that the greatest initial need is to understand its dynamics (Fullan, 1991). The main purpose of educational change is to help schools accomplish

their goals more effectively by replacing some structures, programs, and/or practices with better ones. There is a need to move away from an organizational basis for understanding education to an understanding of education as an individual-driven, learner-centered activity (Stiegelbower, 1994).

Changing the culture of the institution may be the real agenda in implementing a program such as SATURN! The new perspectives on change differ from the earlier, technologically based frameworks. According to these new ideas on change, this is an issue of constant learning for all, not a one-shot implementation effort. These ideas on change also take into account the value of collaborative work in the process of change, work that institutionalizes the interactions among different levels and participants in the system, that addresses both global and specific concerns, and that respects all elements of the system for what they can contribute, not for what they conventionally are (Stiegelbauer, 1994). Thus, the culture of the traditional K-12 district must be considered in its entirety, and not strictly by component (such as a grade level or department) when considering a program implementation such as SATURN!

Several flaws currently exist in the majority of school-restructuring processes. One such flaw is ignoring the effect of history on the school culture and setting. It is also important to look at the break in the change process–exactly why did the initiative fail? (Popkewitz, 1991). Historically, change initiatives have experienced a high rate of failure. Change is now necessary because our current culture is different from the previous one. With the advent of computer technology and program innovation, there is mounting pressure from state and local politician to increase the use of technology in public schools. However, many politicians involved with using technology as a school

improvement panacea cannot agree on the best technology-implementation process. Even the best technological planning and political pressure have not always worked to effect change (Fullan, 1991).

## Force Field Analysis

In any change initiative, there are forces working for and against the implementation process. One approach that is used to identify the positive and negative factors affecting implementation is field theory (Lewin, 1951), also known as force field analysis. According to field theory, any event is a result of a multitude of factors. Recognizing the necessity of fairly representing these interdependent factors is one aspect of field theory. A change in any of the factors might alter the result or influence the change.

Force field analysis is a technique for formally specifying and analyzing the various forces acting in a given situation or affecting a given problem. It is a way to obtain a view of all the forces in favor of or against a plan (making possible or obstructing a change) so that a decision can be made that takes into account all interests. The forces that help achieve the change are called driving forces, and those that work against the change are called restraining forces. In effect, force field analysis is a specialized method of weighing pros and cons. Such analysis helps generate options by examining the forces (groups, personnel, resources, relationships) that can help achieve or work against a project's objectives. The process involves using surveys, brainstorming, task groups, and other sensing tools to gain insight into the causes, perceptions, and ideas related to these forces. It is more effective to weaken the

restraining forces than to increase the strength of the driving forces. Simply pushing harder against the restraint is likely to increase the strength of the resistance (Hoekstra et al., 1998). Force field analysis was used to help guide this study.

## Communication and Diffusion-of-Information Theory

In 1943, Thomas Watson, the founder of International Business Machines (IBM), thought that the world market could accommodate about five computers! In 1967, an IBM computer costing $167,500 could hold only 13 pages of text. How times have changed as we enter the new millennium! Computer power has increased dramatically, in accord with a principle known as Moore's law after Gordon Moore, co-founder of Intel, now the world's leading maker of electronic chips. Moore forecasted that computing power would double every 18 to 24 months. So it has done for decades, and Moore's law continues to apply. By 2006, according to Intel forecasts, chips will be 1,000 times as powerful and will cost one-tenth as much as they did in 1996.

These rapid technological transformations have had three major consequences. The first is a vast increase in the world's computing power. The Internet has the potential to multiply computing power immensely, simply by linking many computers. Next, the Internet has emerged as the first working model of the global information superhighway, which has become not only a means of communicating globally, but also a new source of information on a world scale. Third, the Internet has created a new industry dedicated to developing ways to use it and services to sell across it. In 1994, the number of commercial computers connected to the Internet overtook the number of

academic computers. Never before had so many entrepreneurs attempted, in so short a time, to develop uses for an innovation (Cairncross, 1997).

Diffusion of innovation represents the change aspect of communication theory (Rogers, 1995). This research approach is used to measure how an innovation is adopted among a population. The diffusion process has four main elements. That is, (a) an *innovation* is (b) *communicated* through certain (c) *channels* over (d) *time* among the members of a *social system.* Diffusion as a process leaves visible traces that affect the social system, either through people's embracing or rejecting an innovation. These traces can then be measured for any effect they have had on the social system. For example, the diffusion of the World Wide Web alone has left visible traces on society. An analysis of advertising bears witness to this fact as uniform resource locators (URLs) or Internet addresses now appear in most television print advertisements. Rogers's diffusion model provides a way to document and make clear those implications.

Rogers (1995) attributed the immense popularity of diffusion studies, in general, to the ways in which they provide an understanding of social change. Diffusion of innovation actually comprises four closely related theories that Rogers developed. They are (a) rate-of-adoption theory, (b) innovation decision-process theory, (c) individual innovativeness theory, and (d) perceived attributes theory. The most prominent of these is rate-of-adoption theory.

According to the rate-of-adoption theory, after an innovation is introduced, it is adopted by a somewhat eccentric or entrepreneurial group called innovators. However, this group, being slightly outside the norm, does not possess the credibility or influence necessary to drive adoption. Change agents or opinion leaders in the social system will

step in next, thereby legitimizing the innovation and opening the potential for adoption to all members of the system, much as in follow-the-leader. The next stage in the adoption of an innovation is characterized by widespread adoption until such point that the innovation has saturated the social system and growth tapers off.

Next is the innovation decision-process theory, which states that diffusion is a process that occurs over time. The innovation decision process has five distinct stages: knowledge, persuasion, decision, implementation, and confirmation. According to this theory, potential adopters of an innovation must learn about the innovation, be persuaded as to its merits, decide to adopt, implement the innovation, and confirm (reaffirm or reject) the decision to adopt the innovation (Regan & Athenia Associates, 1996).

The individual innovativeness theory (Rogers, 1995) states that individuals who are predisposed to being innovative will adopt an innovation earlier than those who are less predisposed. At one extreme of the distribution continuum are innovators; they are the risk takers and pioneers who adopt an innovation early in the diffusion process. At the other extreme are laggards, who resist adopting an innovation until late in the diffusion process, if ever.

Rogers's fourth theory, perceived attributes, states that potential adopters judge an innovation based on their perceptions regarding five attributes of the innovation: trialability, observability, relative advantage, complexity, and compatibility. The theory holds that an innovation will experience an increased rate of diffusion if potential adopters perceive that the innovation (a) can be tried on a limited basis before adoption, (b) offers observable results, (c) has an advantage relative to other innovations (or the

status quo), (d) is not overly complex, and (e) is compatible with existing practices and values (Surry & Farquhar, 1997).

## Technology Implementation and School Change

Research has indicated that the process involved in implementing computer technology within a school district is a combination of psychological, organizational, political, and cultural factors, not just technical or economic factors, although these are significant obstacles and often are at the forefront of discussions regarding school technology innovation (Dede, 1998). Most of the current technology still is used simply to do the old job better. The challenge remains to do something innovative because technology now has the capabilities to empower students in different ways, depending on their learning styles. If educators allow technology to be the engine driving change while disregarding the social factors involved in the educational change process, disappointment will abound (Betts, 1994).

In this context, two main content areas within the realm of organizational (school) change and communication theory were particularly relevant to this study. The first is the fundamental aspect of change, which includes the general nature of change and individual responses to change dimensions. The second is the human aspects of the change process, which include managing the people side of the change process (Siegal et al., 1996). In this study, the implementation of a new computer innovation in one rural school district was viewed through these two lenses.

To begin the technology-implementation process, dialogue among all stakeholders in education is necessary to refine the vision of learning environments for

the knowledge-based society of the 21st century. Chris Dede (1998), a technology professor and frequent contributor to the Association for Supervision and Curriculum Development, commented that "for politicians, the Internet in every classroom has become the 'chicken in every pot.'" He went on to state that educational policy should promote systemic reform for technology innovation. This involves moving from using special external resources to reconfiguring existing budgets to free-up money for innovation.

Unless systemic reform in education is conducted with one boundary of the system around the school and another boundary around the society, affordability and sustainability are doubtful. With distributed learning and reconfigured budgets, school districts can transform technological innovations into universal improvements in education in a way that is both affordable and sustainable. Technology is not a "silver bullet" that can solve all the problems of schools. Politicians assume that teachers and administrators who use the new technology are automatically more effective than those who do not use it. That definitely is not the case (Dede, 1998). Program implementation and innovation can be measured by assessing the new technology's evolving social meaning and deep integration into social life. Although these social meanings cannot be engineered, it must be understood that social effects are important aspects of social change. Thus, it is not enough to speculate about the gadgets solely in terms of the exciting functions they will perform (Nardi & O'Day, 1999).

Other factors that may affect technology implementation include bias and prejudice, which must be addressed throughout the implementation process. The use of computer technology is associated with various forms of gender, racial, class, and age

bias (Garson, 1997). Research has indicated that, in each of the four major institutional arenas (leisure industry, media, education, and the family), males receive greater support and encouragement to be computer users. However, when women do enroll in computer-programming courses, they perform, on average, as well as or better than men. Further, women are more likely to be concerned about the social effect of computers (Garson, 1997).

Wealthier school districts, which usually serve families of higher socioeconomic status, routinely provide greater computer access than poorer districts (Larsen & McGuire, 1998). Hence, school personnel must consider these factors when implementing new technology. Possession of power from any source enhances one's ability to adopt or reflect, hoard or diffuse, a new technology. Lack of power or a perceived lack of power limits choices but may increase the motivation to make changes. This factor could affect the rate of adoption of an innovation.

Planned change activities should be guided by information about the organizational features that can be changed, the intended outcomes of those changes, the causal mechanism by which the changes are achieved, and the contingencies on which successful change depends. All voices involved in the innovation process must have a part in making decisions about school change. The voices of the least powerful need to be brought into the discourse and assured of a respectful hearing. Members representing disparate constituencies must arrive at mutually beneficial understandings that do not trample the interests of minorities and less powerful constituencies. Organizational (school) change and justice are of paramount importance. A central dilemma is how

organizational (school) change can be rendered both fair and effective (Stephens & Cobb, 1999).

Organizations such as schools are a community, and each has an individually established identity based on a unique set of values. These organizations need to make sense of themselves, and this is done through arguing, expecting, committing, and manipulating events during times of ambiguity and uncertainty (Weick, 1995). According to Meijer (1995), the current state of anger about public schools stems from loss of control over the local communities. The issue is not whether technologies will be used, but which will be chosen and how well they will be used. The challenge now is to introduce critical sensibility into the evaluation and use of technology and, beyond that, to make a real impact on the kinds of technology that will be available in the future (Nardi & O'Day, 1999).

To take a holistic approach to the change process, the issues of loss of control, loss, fair change, and jealousy must be considered as significant human aspects of the change process involved in technology implementation. In this study, I used the lenses of school change and communication to explore and put into context the tensions that surfaced during the implementation of the SATURN! project in Winbald Area Schools, a rural public school district.

# CHAPTER 3

# METHODOLOGY

## Introduction

In the first two chapters, I described the nature of this research and discussed the theoretical underpinnings of the study. My purpose in this study was to examine and describe the effect of institutional support and resistance encountered during implementation of a computer-technology innovation (SATURN!) in a rural public school district. In this chapter, I describe the methodology used in studying this program implementation, which was case-based research. Also described in this chapter are the population and sample, data-collection tools, the data-analysis method, validity, and the limitations of the study.

## Methodological Approach

A qualitative approach was appropriate for this study because "protocols such as unstructured interviews and notes from observations tend to be less easily summarized in numerical [quantitative] form" (Rossi & Freeman, 1993, p. 254). Qualitative data are also useful in monitoring ongoing programs such as the SATURN! project. "Qualitative research designs are typically not intended to prove or test theory, and it is more likely that the theory will emerge once the data are collected (an inductive approach rather than a deductive approach)" (Rudenstam & Newton, 1992, p. 37). Although selected theories of change, such as force field analysis, provided a framework for describing the institutional support of and resistance to the SATURN! project, the logic of the design

was an inductive pattern developing from detailed stories or themes. The methodological design, then, was emergent rather than static. That is, the theory was developed during the study, rather than being determined before the study began (Creswell, 1994).

The specific qualitative approach used in this study was case-based research, in this instance a single-case analysis. This was an instrumental case study, which focused on a specific issue rather than on the case itself. The focus in this study was the issue of school change–in particular, support for and resistance to such change. The case studied was thus a vehicle to better understand the issue of school change. The type of analysis used in this research was within-case analysis, in which themes were identified within this single case (Creswell, 1994).

In a single-case study, the researcher explores a single phenomenon (the case) bounded by time and activity (the SATURN! program). The investigator then collects detailed information using a variety of procedures over a sustained period (Merriam, 1988; Yin, 1993, 1994). A "case" is identified as a "single unit, a bounded system" (Merriam, 1998, p. 65), in which a phenomenon occurs. In this case, the bounded context or system was the examination of the effect of institutional support and resistance encountered during the implementation of the SATURN! project. Whereas the setting may be broadly or narrowly conceptualized depending on the context of the study, in this particular single-case study the setting was narrowly conceptualized. The period under study extended from program implementation at Winbald in September 1998 through April 12, 2000, when the on-site interviews were concluded.

Researchers employ a case-study design to gain an in-depth understanding of a particular situation and its meaning to those involved. The researcher's interests lie in

the process rather than outcomes, in context rather than a specific variable, and in discovery rather than confirmation. Insights gleaned from case studies can directly influence policy, practice, and future research. Case studies differ from other types of qualitative research in that they are intensive descriptions and analyses of a single unit or bounded system, such as an individual, a program, an event, a group intervention, or a community. The use of a case-study design to describe and explain the phenomena involved in the implementation of the SATURN! project illustrates this differentiation.

Qualitative case studies in education are often framed with concepts, models, and theories from anthropology, history, sociology, psychology, and educational psychology. For example, because the present case study involves a description and analysis over time, it would be labeled a historical case study. Other concepts, models, and theories from sociology and educational psychology also are incorporated. Case studies, then, accommodate a variety of disciplinary perspectives (Merriam, 1998).

I determined that a single-case study would provide the most in-depth and accurate portrayal of how an individual school district engaged in the adoption of a new innovation. There were three rationales for using a single-case study. One rationale for using a single-case study is that a critical case, such as SATURN!, is represented. The second rationale is that the single case represents a unique case. This holds true for SATURN! because no similar project or program is known to exist in the United States at this time. The third rationale for using a single-case study is the revelatory case. The problems associated with new-program implementation are common in the field of education, and opportunities to investigate these problems through a project such as the implementation of SATURN! are rare. These three rationales were valid reasons for

conducting a single-case study on the SATURN! project. As this innovation was diffused throughout the school district, tensions were bound to arise in areas such as governance, communication, professional insecurity, and fear of loss or, perhaps more accurately, "turf protection" or social justice.

The single-case study is a powerful vehicle for giving voice to those most closely involved in the change process: the site coordinator, the community agency person, teachers, administrators, and SATURN! personnel at Southwestern University. Indeed, the voice provided in the single-case study can prove invaluable in helping researchers and ultimately school administrators gain a better understanding of organizational (school district) successes and failures. Studying what people do in a school setting helps in understanding how they interact with each other. In conducting such a study, the researcher must fundamentally respect the unplanned nature of their behavior, the informal network in the community and school, and the novel local contributions to standard school procedures. Through such research, an investigator can collect new information about improvements, but especially about the climate of collaboration and exploration that allows new contributions and innovations such as SATURN! to take hold and spread (Zucchermaglio et al., 1995).

Perhaps the greatest strength in using a case-based approach is that such research is well suited to topics that are not easily quantified, such as thoughts and other nuances of behavior that might escape researchers using other methodologies (Fraenkel & Wallen, 1996). The implementation of a computer-technology innovation in a rural school district makes for a unique study, one that is indeed influenced by "thoughts and other nuances of behavior" and ultimately best described using the single-case approach.

## The Population and Sample

In 1998, Winbald Area Schools, along with Southwestern University and eight other public school districts, was successful in securing a 21st Century Learning Center grant for technology. The purpose of this grant was to create, under the direction of Southwestern University, middle school computer klubhouses in each of the nine school districts. These districts represented 10 middle school sites that were divided equally between rural and urban communities. No suburban districts were chosen for this grant project. Because the grant was written in conjunction with Southwestern University, the university and the nine districts were, in effect, partners in this project, with the university assuming the leadership role. The purpose was to give at-risk middle school students a safe, staffed, and technologically rich location to attend after school during the week and on Saturdays. Another intended outcome was for the school districts and communities to use the students' technological expertise in addressing and solving community problems through technology.

Purposeful or nonprobabilistic sampling was used in this study. Purposeful sampling is based on the assumption that the investigator wants to discover, understand, and gain insight into a particular phenomenon and therefore must select a sample from whom he or she can learn the most (Merriam, 1998). The Winbald site was recommended for study, and I then chose it as the research setting because of the demographics of the district. The Winbald district was the second smallest and most rural and ethnically diverse of the 10 middle school sites. The teaching staff, administrators, and school board members in the Winbald district were similar to the student body in terms of ethnicity and socioeconomic status. The remaining nine sites

were either urban or rural, and all but one had much larger student bodies and more affluent populations than the Winbald district.

The study sample at the Winbald site comprised all of those who were involved in the SATURN! project. These people included the site coordinator, teachers, administrators, and selected school board members. Each individual who agreed to participate in the study signed a letter of consent (see Appendix B). Participants were assured that their anonymity would be protected and their identities would not be revealed during any phase of the research or in the dissertation. Pseudonyms are used throughout the dissertation when referring to both people and places (and the project itself), in a further attempt to maintain anonymity.

## Data-Collection Methods

Two sources of data were employed in this study: on-site interviews and document analysis. Each of these sources is described in the following paragraphs.

### On-Site Interviews

A primary source of data for the study was on-site, personal interviews with individuals closely involved with the SATURN! project. "The purpose of interviewing is to find out what is in and on someone else's mind. Qualitative interviewing begins with the assumption that the perspective of others is meaningful, knowable, and able to be made explicit" (Patton, 1990, p. 278). According to Patton, "the quality of the information obtained during an interview is largely dependent on the interviewer" (p. 279). Thus, it was important to devise substantive questions for the interviews. Patton cautioned that immersion in the interview process provides the interviewer with a

better chance of receiving additional information, and detachment helps keep the researcher's personal biases at a minimum.

I interviewed the Winbald district superintendent and the high school and middle school principals, all of whom offered unique viewpoints on and valuable insights into the SATURN! project and the dynamics of school change in general. I also interviewed middle school staff members who were involved in implementing the SATURN! initiative; these included the site coordinator, community agency representative, and three teachers, all of whom worked at or were housed in Winbald Middle School. Their stories provided the necessary introspective look into all phases of the SATURN! project as it became integrated into the mainstream of the curriculum and the middle school culture. I also sought out community and local business members to gain their unique perspectives on the role they played in the implementation of SATURN!

The information I sought from the interviewees concerned what they thought were the most helpful (supportive) and the most unhelpful (resistant) characteristics of the middle school klubhouse site. These and other questions were provided to the interviewees before the actual interviews so that they could think about their responses beforehand. With respondents' permission, to ensure accuracy I tape-recorded the interviews.

Document Analysis

The second source of data was document analysis. Some documents that I reviewed were e-mail messages that had been sent from SATURN! Central (Southwestern University) to Winbald Middle School and the weekly e-mailed

"Password Express," the official electronic SATURN! newsletter. I also reviewed minutes from all local meetings related to the project, conference and meeting minutes and notes, evaluative correspondence from the funding agency, the year-end report from SATURN! to the federal government, and e-mail from the funding agency's listserve pertaining to the implementation of new 21st Century Learning Center grant programs. Program records and documents served a dual purpose: They were a basic source of information about program background, decisions, activities, and processes, and they also gave me ideas about important questions to pursue in the interviews.

## Data-Analysis Techniques

Before data analysis began, I transcribed the interview tapes and coded them according to the respondents' position in the school district or at Southwestern University, their role in the SATURN! project, gender, and number of years employed by the school district or the university. I assigned each participant a pseudonym, which I used in reporting the findings, in order to maintain participants' anonymity.

Triangulation provides a way to corroborate the information that is collected throughout a study and thus to increase the validity of the findings (Yin, 1994). This technique involves "comparing and cross-checking the consistency of the information derived at different times and by different means" (Patton, 1990, p. 467). Specifically, I compared the interview data with observational data; compared what people said in public to what they said in private; checked what people said over time to make sure it was the same as their initial statements or thoughts; and compared people's perspectives from different points of view (Patton, 1990). The data from the two sources described in

the preceding section were compared to identify themes and patterns and hence to explain the study findings.

## Validity

Of concern in any research is the issue of validity (Yin, 1993, 1994). In this study, construct validity pertained to the measures used to gather the data, specifically the interview questions. A common strategy to ensure construct validity is to use several sources of evidence to ensure the consistency of the results. Internal validity refers to the "accuracy of the information and whether it matches reality" (Creswell, 1994, p. 159). Triangulation was employed to enhance internal validity. That is, the researcher should arrive at the same meaning using each source of data (Shadish, Cook, & Leviton, 1995).

## Limitations

One limitation of the study is the fact that I am a public school superintendent, and my school district is one of the nine districts actively involved in the SATURN! project. I am associated with SATURN! as an administrator and a community agency representative with a constituent SATURN! school district; in addition, I am a SATURN! executive board member. Therefore, bias may exist in my role as a researcher who is also a SATURN! board member and community agency representative. Another limitation is the transient nature of the graduate students who were part of the institutional support/resistance. Some graduate students who started with the SATURN! project did not continue with it, so it was not possible to survey all nine of them who began the project.

# CHAPTER 4

# SCHOOL CHANGE: A CASE STUDY OF SATURN! AT WINBALD AREA SCHOOLS

## Introduction

My primary purpose in this study was to examine and describe the institutional support and resistance encountered during the implementation of a computer-technology innovation in one rural public school district. The case study of the SATURN! project at Winbald Area Schools is presented in this chapter. Background information on the project is given first, followed by a description of the people at Winbald who were involved with the project. Implementation of SATURN! at Winbald is discussed, and the current status of the project at Winbald is addressed.

## The SATURN! Project

### The Project Grant

In June 1998, Winbald Area Schools and eight other school districts were awarded a 21st Century Learning Center grant under the auspices of Southwestern University. The purpose of this grant was to implement a middle school computer klubhouse in each of the nine districts. The goal was to give at-risk middle school students a safe, technologically rich place to go after school, and to use the expertise they gained there in addressing and solving community problems through technology. Project implementation consisted of operating a computer lab that was used for instruction during the school day and for after-school enrichment, for a minimum of two hours a day, three days a week (Zhao & Conway, 1998).

The philosophy guiding the SATURN! project was simple yet complex. The project goals were to design and implement a technology-rich learning environment for middle school students (simple), while at the same time making technology "disappear" or become an integral and supportive part of the learning process and not the focal point (complex). While many researchers have been busy inventing "proper" ways to improve technology, educators such as those at the Winbald SATURN! site had been seeking appropriate uses of technology and had been advising students of correct behavior with and around technology. The belief was that if technology was to have an impact on the educational process, educators needed to shift their attention from the mechanics of technology to the teaching and learning that could be done with it. Technology needed to be placed in the background so that the focus could be on effective teaching and learning. In essence, technology had to be made to disappear (Zhao & Conway, 1998).

At the Winbald Middle School klubhouse as well as the other klubhouses associated with the grant, middle school students were to be engaged in authentic and project-based learning activities. These activities were to take place in a safe, productive, and positive learning environment after school, over the weekend, and during summer vacation. Through the klubhouses, the school districts were to increase community support and involvement in the schools as families (parents and siblings), senior citizens, and other community members, particularly volunteers from Makinauk Tech Corps, worked with the klubhouses. Given the constraints of their environment, particularly the distances in rural communities and safety issues in urban locales, students were to be transported to and from the klubhouses.

The nine school districts and 10 middle schools (the largest urban site had two middle school klubhouses) represented the demographic and geographic diversity of the state. Of the 10 middle schools selected, four were from three of the largest urban school districts in the state, and the remaining six were from smaller rural districts. The student populations of these schools ranged in size from 75 to 300. All schools shared certain characteristics: large percentages of students at risk of failure, limited opportunities for middle school students to engage in productive after-school enrichment, increased incidence of violence and drug abuse, and declining community support.

By establishing a virtual network of middle school computer klubhouses as community learning centers, the SATURN! project was a powerful intervention strategy for solving the pressing problems of the nine school districts. The project was intended to achieve the following four goals:

1. Increase student engagement in learning through the use of computers and computer-related technology in safe, positive environments.

2. Provide meaningful, integrated, and authentic learning opportunities through service learning.

3. Foster the capacity for collaboration among students, schools, and communities among the project partners and their communities.

4. Develop an innovative model of statewide collaboration for building student and staff capacity through the sharing of resources (Zhao & Conway, 1998).

Through the resources of Southwestern University, the klubhouses were to access, research, use best practice, and provide on-site assistance to engage all students in authentic learning and to teach them to help others. The klubhouses were to provide safe

environments, breaking down the barriers of isolation that were imposed by poverty, distance, and age. The collaborative evaluation design included robust case studies and descriptions for replication.

Each klubhouse was to be linked to the resources of Southwestern University's K-12 technology division of the College of Education. Advanced graduate students, developing leading-edge technology applications in curriculum and professional development, would be assigned to each of the middle schools involved in the project. The graduate students were to work both in person and on-line to assist the school coordinator, students, and community members with planning and implementing their individual klubhouse goals within the parameters of the project goals. In addition, the state program coordinator and the project directors, along with content experts in reading, writing, mathematics, and computer-assisted instruction, supported the graduate students. Consultants also were available to provide direct assistance in other areas, such as helping students develop skills in service learning, teamwork, and collaboration (Zhao & Conway, 1998).

As in the 1939 movie The Wizard of Oz, when the picture changed from black and white to color, so were the technological fortunes of Winbald Area Schools transformed when the district received the news that they had been awarded a portion of the first SATURN! klubhouse grant. In this first round of funding, a three-year grant of more than $250,000 was bestowed on the middle school technology program; this translated into approximately $83,000 per year–an unheard of sum of money that was earmarked for the soon-to-be-developed SATURN! Computer klubhouse. The district now had more than enough funding and technical support to initiate one of the premier,

cutting-edge middle school technology classrooms (SATURN! klubhouse) in the nation. As they embarked on implementation of the SATURN! klubhouse, many factors and events surfaced that both assisted and inhibited this process. It is these factors and events that are explored in the rest of this chapter as the story of SATURN! at Winbald is examined.

Project Personnel

SATURN!'s project director and chief architect, Dr. Livingston Lee, was a youthful professor of Chinese descent who practically ran from academic task to task. He exuded energy, confidence, and a contagious zest for technology and life. For example, his administrative assistant, Nancy Murdock, once remarked, "If it doesn't have a switch, Dr. Lee just isn't interested." He had an innate sense of humor that transcended culture, and he was adept at public speaking. His cluttered, somewhat disorganized office had three computers running simultaneously, all connected to one printer. Dr. Lee monitored all three and would switch from one computer to another while carrying on a conversation with an office visitor.

Dr. Lee's youth has been marked by poverty and isolation, yet he flourished with supportive parents and a sound foundation in the basics of mathematics, language, and literature. After graduating from college in his native China, he immigrated to the United States to begin work on his doctorate in educational psychology, although he had an unquenchable interest in technology. Upon completing his doctoral studies, Dr. Lee was hired as an assistant professor at Southwestern University.

If Dr. Lee epitomized the brilliant, personable, yet somewhat disorganized professorial image of the modern university educator, then office assistant Nancy Murdock represented the alter ego of the professor's rapid-fire administrative style. Nancy, SATURN! office administrator, was without a doubt the most organized professional on the SATURN! project staff. Indeed, the position and program dictated that organization be the top priority. With the SATURN! project now involving 20 schools, 8 graduate students, an overall budget approaching $12 million, and compliance with all of the federal-government mandates, there had to be one central location and ultimately one person who knew and anticipated every aspect required in reporting and accounting for the SATURN! project.

Nancy graduated from a high school within 20 miles of Southwestern University and had lived in the area her entire life. As the SATURN! project expanded, Nancy's role and compensation correspondingly increased. Her duties grew from receptionist/ secretary to SATURN! project assistant with her own office. Nancy was a tireless worker and knew that the value of SATURN! went way beyond the halls of Southwestern University. She told me:

> My fortunes have done nothing but improve by sticking with Dr. Lee. I have had chances to transfer to other professors and departments, but I am staying here for the duration. Look at all he has done for the schools and for me. Plus the work is really interesting and exciting, although not real organized at times. (Personal interview, April 11, 2000)

After numerous successes with small technology grants, Dr. Lee and several other Department of Education faculty members painstakingly crafted the SATURN! project, hand picking the schools to be included in the 21st Century Learning Center grant application, which was submitted in March 1998. The nine school districts representing

the 10 middle schools chosen for inclusion in the grant application were selected for a variety of reasons, but primarily for their socioeconomic characteristics. The three urban districts consisted of four middle schools (one district had two middle schools in the project) and represented larger population centers in Makinauk. The urban districts' demographics, such as low MEAP scores and high poverty rate, met specific needs of the project. These urban districts also had a high minority representation.

The remaining six schools in the project were more rural in character. They had less of a minority presence but had a significant population with a low income level. These rural schools also shared another unique characteristic–isolation. Two of them also had a high representation of minority students. One district had a high population of Native American students, and the Winbald Area School District had a high population of African American students.

The above-mentioned demographic characteristics of the 10 middle schools exactly met the specifications set forth in the 21st Century Learning Center grant. Of course, many other school districts in the state also fit this demographic mold, but a personal association with Dr. Lee, a referral from the outreach program of Southwestern University's education department (Southwestern's off-campus continuing education program), or a referral by one of the project's member districts gave certain school districts preference in the selection process and led to their inclusion in the project.

Dr. Lee's professional fortunes changed quickly when the first SATURN! grant was awarded. He and the SATURN! project have made a huge impact on the university as SATURN! and Dr. Lee have been featured three times in the magazine published by Southwestern's College of Education. SATURN! and Dr. Lee have also been highlighted

in other academic publications, and a book about the project and the ramifications of technology in education is now in process. In addition to the academic acclaim that the SATURN! project has brought the university, the financial gain to the College of Education has been considerable as well. The two SATURN! grants combined were worth more than $12 million to the university and the 20 schools that were part of the project. In both rounds of funding (June 1998 and April 2000), the SATURN! grants were the second highest dollar amounts awarded in the United States.

In addition, Dr. Lee wrote and was awarded other grants that generated several million more dollars for the university. These funds assisted in driving the College of Education's technology program by providing jobs and technological equipment directly to the university. Grants also provided a steady flow of positive publicity, which necessitated an increase in staff to handle the communications to the general public, the university community, and political offices of local, state, and federal officials who were involved with one of the many facets of the SATURN! project.

When I gathered the data for this study (April 2000), Dr. Lee directed the SATURN! project from his office in the College of Education building. On the first floor of that building, there was a computer lab that was used for teacher education classes. Within months, this lab was rapidly turned into SATURN! headquarters as the latest technological equipment supplied by the federal grants began to fill the room. The room resembled a cross between a Silicon Valley high-tech think tank and a pinball parlor. Located in this room were the project coordinator, his assistant or co-director, and the six graduate students who had been hired in various capacities to oversee the 10 middle school sites. All of the graduate students were in various phases of completing their

dissertations. All of them came from the field of education and had had previous teaching or public school experience.

The SATURN! project's initial coordinator was Bill Blake. Bill was working on his Ph.D. at Southwestern and was hired by Dr. Lee as an administrator to coordinate the original SATURN! project comprising nine schools and 10 middle school sites. Bill had coached and taught in a middle school, and he had recently spent several years pursuing a graduate degree. He had changed the emphasis several times, but finally decided on technology as the focus of his research. Dr. Lee was his academic advisor. Bill served as project coordinator from SATURN!'s inception in September 1998 through early 2000, when he left the program to work full time on his doctorate. Bill was replaced as project coordinator by Gary Kaminski.

Gary Kaminski formally joined the SATURN! project in early 2000. Like Bill Blake, he had a keen interest in technology and had served as technology director at Center City School District, a large urban district, before joining the SATURN! project. One of Center City's middle schools was chosen for inclusion in the original SATURN! project.

In April 2000, the SATURN! staff included Larry Smith, Shelly Casa, Darryl Dumont, Ned Curtis, Tony De Franco, and Terry Swither. These graduate students were granted a stipend and tuition reimbursement for working on the SATURN! project; all of them were associated in some academic way with Dr. Lee. Their SATURN! tasks ranged from communications and brochure development to software and hardware technician. Teams of these graduate students would arrange and conduct site visits throughout the

SATURN! consortium and assist individual sites in equipment set-up, hardware and software installation, and klubhouse projects.

Organizational Structures

The various organizational structures of SATURN! (April 2000) are shown in Figures 4.1. through 4.5. These organizational charts reflect the design of the SATURN! project as it first appeared to the federal government (granting agency) (Figure 4.1), Southwestern University (Figure 4.2), the district superintendents (Figure 4.3), district finance departments (Figure 4.4), and the site coordinators (Figure 4.5). At first, this model accurately represented the communication flow among project participants. However, as the project developed, variations occurred in the channels of communication within the original design of the organizational chart. Instead of the traditional top-down design, other configurations of the original organizational chart demonstrated the various permutations of SATURN!'s power structure. These changes or alterations in the leadership/power structure of the SATURN! project placed new demands on the individual middle school sites, as well as on personnel from Southwestern University. These variances in the organizational structure, which would later influence the communication and school change process, are discussed in greater detail in the case-analysis section, as well as in Chapter 5.

## The People: Champions at Winbald

In almost every school district there is an individual, usually a teacher, who is constantly searching for a better way to reach and teach students, to push the envelope, so to speak. This person dares to dream and is determined to lead his or her school district

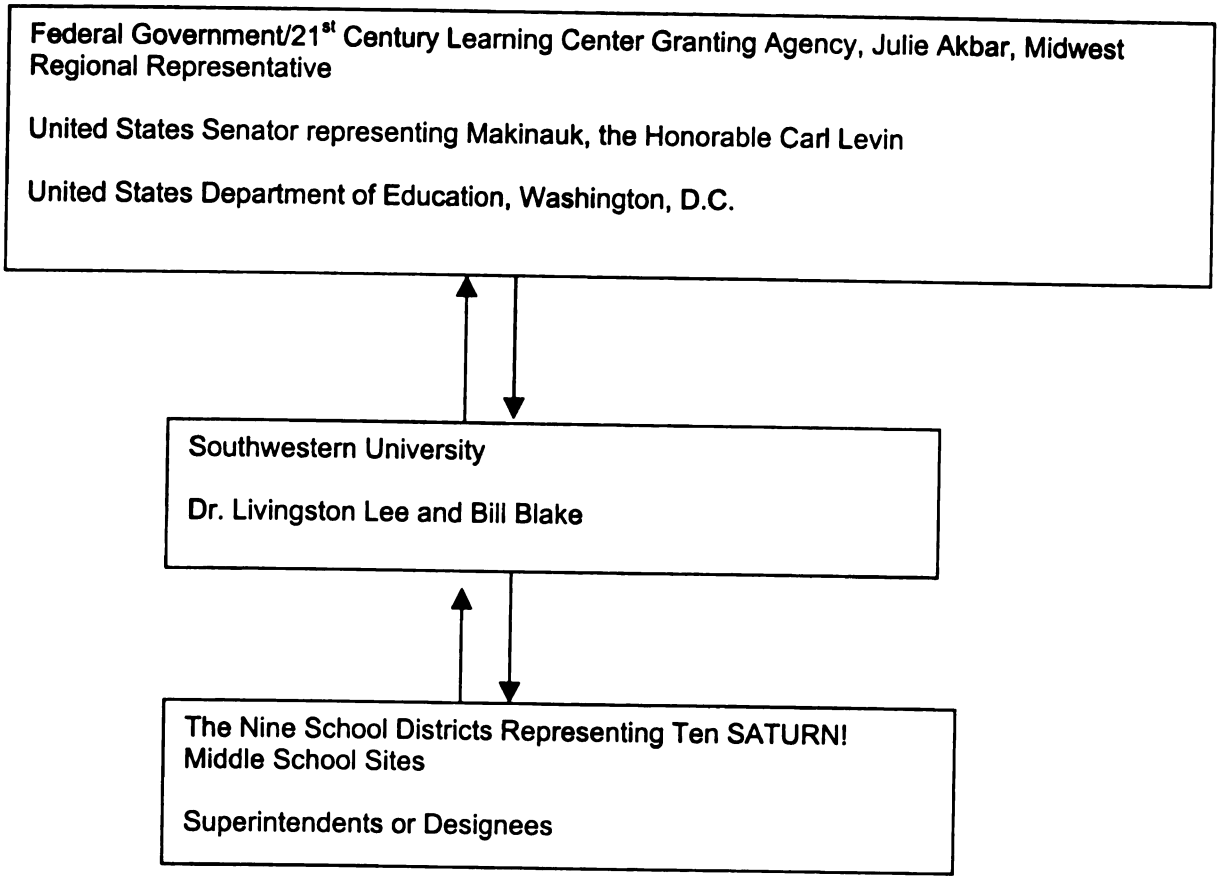


Figure 4.1: Formal organizational chart that was submitted with the original SATURN! grant.

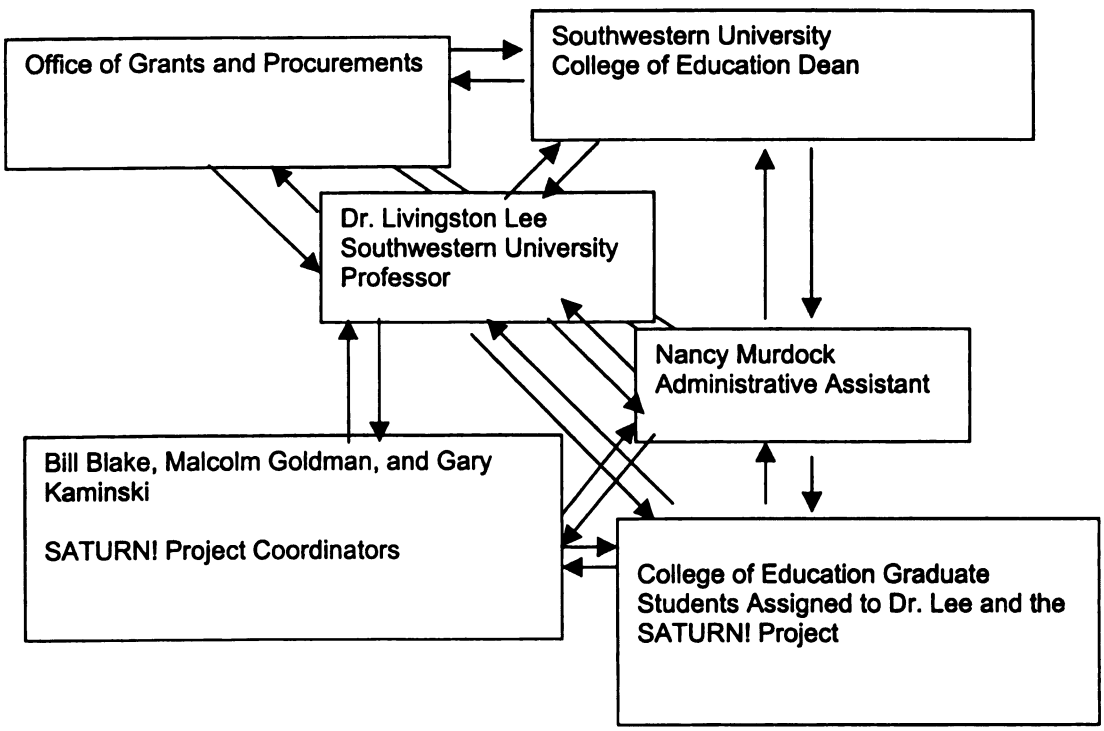


Figure 4.2: Southwestern University SATURN! organizational chart.

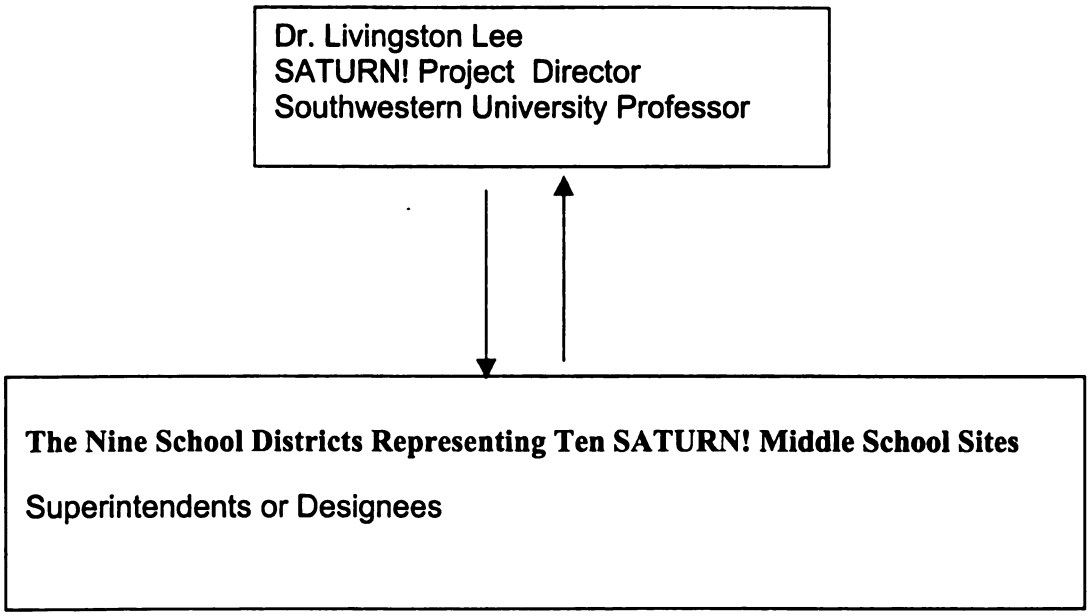


Figure 4.3: Organizational chart for Southwestern University and district superintendents.

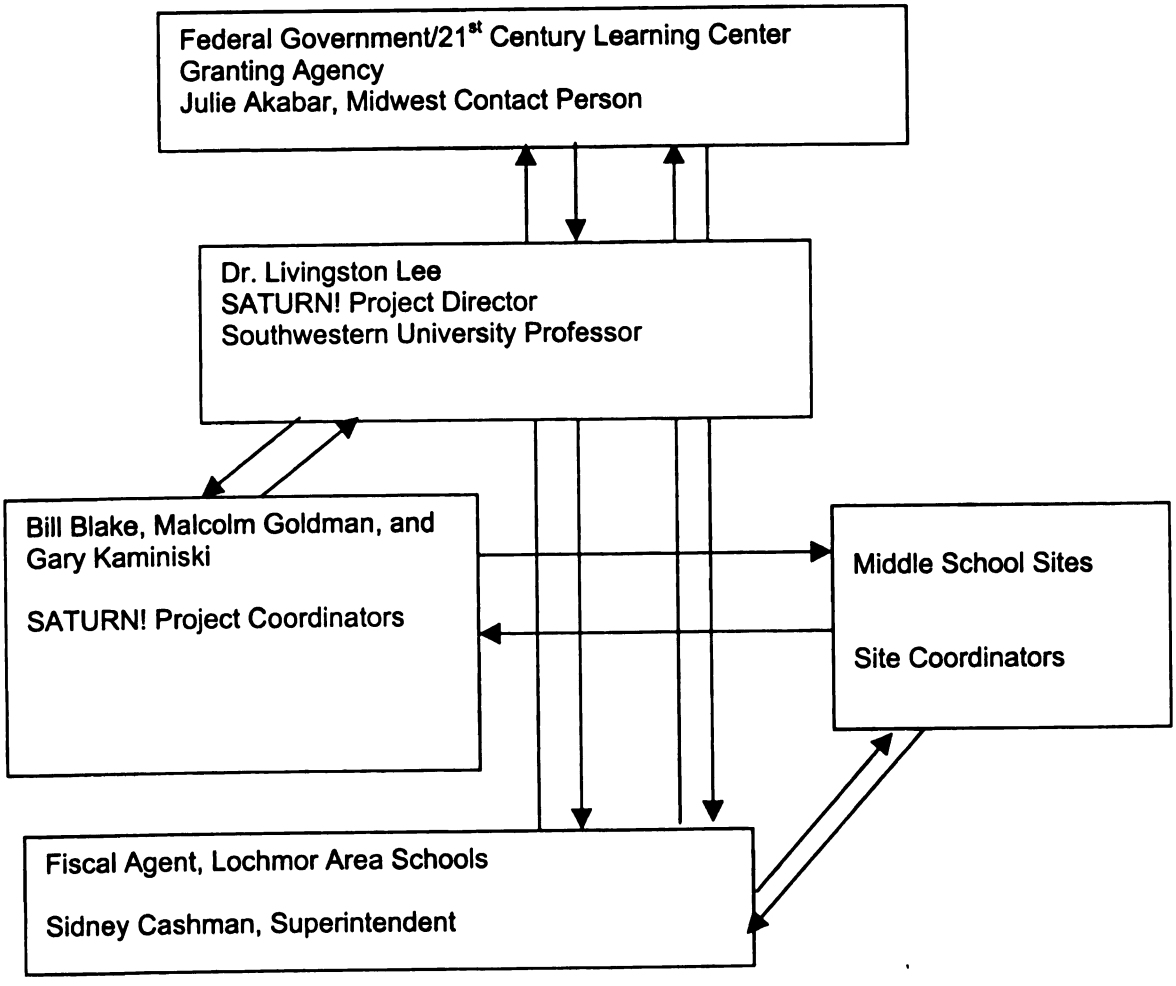


Figure 4.4: Financial organizational chart for SATURN!

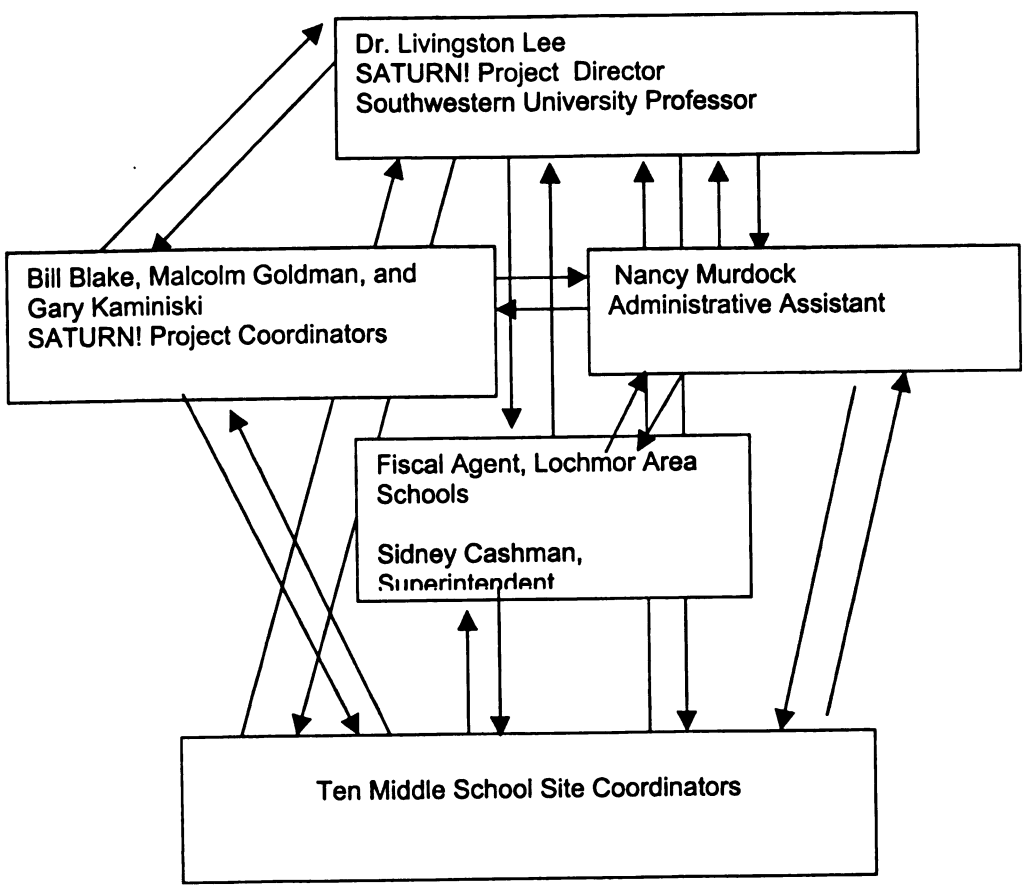


Figure 4.5: Informal organizational chart used by individual site coordinators.

to the forefront of the educational process called school. At the time of the study, Winbald Public Schools had such a dreamer, a sixth-grade teacher who may have been near the end of his career in terms of age, but still possessed the three most sacred and precious commodities of the teaching profession: curiosity, caring, and competence. Mike McCartney was his name, or Mr. Mac as he was known to the students.

There was one more facet to Mike McCartney, one more "C" that was involved in this complex equation, the "C" that started Winbald Area Schools and their technology-teacher/leader on an eclectic electric journey toward tomorrow; that "C" was computers! Mike loved technology and had been a pioneer with the Winbald Schools for years in integrating computer technology into his classroom, assisting in technology implementation in other teachers' classrooms, and delivering technology to the community. A bespectacled man with graying hair, a sly yet quiet wit, and a knowing smile, Mike was quick to promote his love of the computer as an instructional tool that could be entertaining as well as educational. Before Winbald Area Schools had such a dreamer, there was little funding for computers at Winbald. Local, state, and foundation funds amounted to only a few thousand dollars, with funding from the state constituting the biggest portion. With the advent of the SATURN! project, Winbald Schools received a federal grant of $250,000 for introducing new technology to middle school students in the community. They were also awarded an additional $250,000 (April 2000) to continue this project for the next three years. Thus, the district was awash in technology funding from the federal government! It had not always been that way at Winbald Middle School, where Mike had taught for 26 years.

Until the inception of the SATURN! project, Winbald was like so many other schools in the state that were strapped for cash. Technology was a hit-or-miss proposition, with funding coming from sources external to the district, such as grants (state or federal), title funding (federal), and local school-based fund-raising activities. The school district just did not have enough money to consistently upgrade school computer labs' hardware or software. There were too many other legitimate needs, such as salaries, textbooks, and facility repair. What computer equipment was purchased was outdated after several years and seldom was upgraded or replaced. This equipment was maintained as much as possible with limited funding, but much equipment did fall into disrepair throughout the years before SATURN! due to an inadequate repair budget.

Spending his entire career with Winbald Area Schools, Mike McCartney had labored altruistically in this technologically deprived environment. He was not unhappy, just slightly frustrated because he knew that opportunities existed somewhere for his beloved students and community–opportunities that cost money that his district ultimately did not have. According to site coordinator Mike McCartney, the concept of SATURN! perfectly fit the bill for Winbald Middle School students:

> Starting with the first meeting, here was a program that I thought would fit the kids. I mean, here was the first program that had come along in years that had some merit and some growth. It fit the current trends and it fit a niche in our school system because of the types of kids we have. There's not a computer on every desk at home and in every classroom, and having that opportunity I thought would make it work. We had something new and novel, and everybody wanted computers. Computers are always in the news, always in the paper, so we have something, we have a commodity. So I thought it would work. I liked the idea that we could entice the kids to stay with the technology, but they didn't necessarily have to learn it. It was kind of like something they would pick up along the way. And what we've done here is the first thing; it's an after-school program. Then it's a technology-training program. Some kids do both, some kids just stay. (Interview transcript, April 11, 2000)

## SATURN! at Winbald

Winbald school administrators decided to implement and administer the grant in accord with the grant's literal intention. That is, the SATURN! lab was to be used only for SATURN! klubhouse projects and functions; it would not be open to the school population at large, whether students or staff. The lab was open for a half hour each morning before school, opened again for a half hour at noon, and then opened again at 1:30 in the afternoon, when the site coordinator/teacher arrived to teach the sixth-grade computer class. The lab remained open until 5:00 p.m. and then closed for the day. It was not used in the evening for enrichment activities or community education classes. The lab was strictly for middle school SATURN! klubhouse use and was administered and operated solely by the site coordinator and community agency/technology person in accordance with the grant.

At the beginning of the project, differing perceptions among stakeholders in the SATURN! project led to tensions regarding the use of technology, including the intended purpose and outcomes. Using force field analysis, I constructed a diagram (Figure 4.6) to show those forces at work in the implementation of the SATURN! project that were supportive and those that proved to be restraints. These supports and restraints are described in the following pages.

At Winbald Middle School, superintendent John Hardy appointed teacher Mike McCartney site coordinator and charged him with running the program. To provide assistance with both communication and technology, the district chose Donnie Stefanski, a Winbald resident, as the community agency staff person. In large part, this volunteer position consisted of being an ambassador for the SATURN! project. Donnie arranged

**Desired state: Total implementation of the SATURN! project in the curriculum at Winbald Middle School**

**Restraining Forces (Resistance)**

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↓ ↓ ↓

*Fear of losing local control
* Funding spent on the middle school klubhouse and not the high school or districtwide
*Technology did not appear to the high school staff to be curriculum based
*Lack of support from high school staff and middle school custodians
*Unclear communication process across the middle school klubhouse sites
*Lack of instruction on how to use the new technology provided by the grant to the 10 SATURN! sites

**Current state (Winbald Middle School curriculum at the beginning of the SATURN! project, September 1998 through April 2000)**

↑ ↑ ↑

**Driving Forces (Support)**

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*Need for new technology and lack of resources in the Winbald School District
*Adequate and substantial funding from Southwestern University
*Unlimited support from the Winbald administration and board of education
*Support from middle school staff
*Ambitious project goals from Southwestern University and cutting-edge technology

Figure 4.6: Force field analysis (Lewin, 1951) of supporting and restraining forces at work in the implementation of the SATURN! project.

meetings with the Winbald Chamber of Commerce, church groups, sportsmen's clubs, the senior citizens club, and any other groups who would entertain this middle school innovation. Donnie also worked with the entire K-12 staff of the district to keep them informed about every phase of the SATURN! project's implementation. Donnie was the district's former director of maintenance and a respected member of the staff. He was also the district's athletic director (April 2000). His role as the agency and technology person for SATURN! was seen as a natural "fit," considering his long-time ties to the community, his close association with Mike, and his natural ability for engineering and coordinating projects.

Middle school teacher Cindy Hapsburg and principal Jerry Edwards were elated that Mike and Donnie were involved in the SATURN! project. Cindy said, "Mike and Donnie–those two guys gave unlimited amounts of time. They've taken things home, they've gotten whole families involved in helping out and planning. They are what made [SATURN!] work" (Interview transcript, April 11, 2000). Jerry concurred:

> Mike and Donnie are doing a good job. They [the Winbald staff] knew that Mike and Donnie put in a lot of time, so I don't think anyone wants to trade places with them. Boy, they spend an awful lot of time. They spend Saturdays, and they're doing all those kinds of things, so they both have got the right kind of personality for something like this. They're both easy-going guys; they just kind of walk around and work with the kids on a low-key level. So they fit the position real well. (Interview transcript, April 10, 2000)

The initial klubhouse enrollment numbers were overwhelming. To meet this unanticipated response, Mike decided to share half of his salary with Donnie, who became his co-director, although Mike was still in charge of the program. Originally, the Winbald district set up the site coordinator position as part time, with Mike remaining as a full-time teacher. However, with the klubhouse numbers burgeoning, the work load

soon became staggering. As a solution to this situation, the district decided to "split" the position and also gave Mike the autonomy to hire other part-time staff as necessary to meet the needs of an ever-increasing klubhouse enrollment. According to Mike, "What's helped to alleviate the problems is that we've taken our coordinator's salary that Donnie and I had split, and we took last summer's money and hired two people to help just because of numbers" (Interview transcript, April 10, 2000).

As the SATURN! project lifted off, the Winbald staff consisted of site coordinator/teacher Mike McCartney, co-director or agency person Donnie Stefanski, alternate program coordinator and middle school teacher Cindy Hapsburg, and local businessperson/volunteer Larry Evans. These four individuals served as the instructional and executive component of the Winbald SATURN! site, and they all worked directly and indirectly in the SATURN! after-school program. Mike, Donnie, Cindy, and Larry were the most knowledgeable about operating the hardware and software. They were the only ones who operated the SATURN! lab, so they had the most contact with the students and community.

School administrators were superintendent John Hardy, principals Jerry Edwards and Philis Dundee, and the school board. The administrators provided program support and mandated that the SATURN! computer lab be used entirely for the middle school, as the grant intended. Winbald High School staff were concerned about this exclusivity, but the administrators remained true to the intention of the grant, as well as consistent in their support for Mike and Donnie. In principal Jerry Edwards's words,

> The only hang-up we've had from a couple of teachers is [that] . . . the grant allows for the middle school only to be using this facility. You catch some flack now and then about the high school wanting to use it. Why shouldn't they use it

> now and then? Now there's a little controversy because this facility is going to be moved over to the elementary library. It's just small stuff, but a little chatter, probably more of it in the teachers' lounge. I'm not there, but I've heard a little bit about it. (Interview transcript, April 11, 2000)

Teachers Andrea Glen-Burnie and Alvin Ingraham, from the middle school and high school, respectively, were associated with the SATURN! project through their students' using the lab for various projects. Neither was directly affiliated with SATURN!, but a small school setting such as Winbald offers considerable opportunity for academic interaction. As a teacher and site coordinator, Mike encouraged other staff members to use the lab when possible, but he wanted to keep the lab for its intended purpose–a middle school computer klubhouse. He said:

> I know that we need the lab and it needs to be used a lot. It is used off and on during the day–during the week I should say, on special occasions. We have the Makinauk Occupational Information System (MOIS) put on all of them for occupational training. And one of our teachers brings her class down for that. Kids who need to work on different projects sometimes come down–especially the middle school kids–because the lab that was [the] middle school/high school-shared open lab was being used by the high school. The high school lab is under construction, so there is no access to a lab by the middle school students. So we have accommodated people but personally tried not to encourage it. If we keep it the way it is, it stays intact with how it was set up and supposed to be used, and we won't have to reset things.
>
> Now what they want is academic computers, so we're unique; I know we're unique in the SATURN! consortium. Most of them are middle school lab situations or media center situations. I imagine that's what's going to happen here next year. Current talk is it's [SATURN! lab] going to stay where it is and be opened up some more during the day. Those computers [SATURN! computers that were being replaced] are actually going to end up in what is now the open lab down by the middle school/high school media center. Gotta address the needs. (Interview transcript, April 11, 2000)

According to Mike McCartney, there was a definite need in Winbald Middle School for the SATURN! concept. He shared his version of the beginning of the Winbald SATURN! project:

> Starting with the first meeting, here was a program that I thought would fit the kids. I mean, here was the first program that came along in years that had some merit and some growth. It fit the current trends and it fit a niche in our school system because of the types of kids we have. There's not a computer on every desk at home and in every classroom, and having that opportunity I thought would make it work because we had something new and novel and everybody wanted computers. Computers are always in the news, always in the paper, so hey, we have something, we have a commodity. So I thought it would work. I liked the idea that we would entice the kids to stay with the technology, but they didn't necessarily have to learn it. It was kind of like something they would pick up along the way. (Interview transcript, April 11, 2000)

Middle school teacher Cindy Hapsburg was also an integral part of the initial stage of SATURN! She indicated there was a real need for the exposure to increased computer training that the SATURN! program in their middle school would provide:

> Computers and kids, they just go together naturally! It's not a roadblock for them. A lot of adults are [intimidated] by computers, but the kids don't have that fear of new things yet and they just love it! When I take a group of kids to the computer lab, they are not afraid to turn it on and start playing with it, and start doing things with it as long as I tell them they can't hurt it! They just love them [computers]. It's a challenge; they're hearing a lot about them, and seeing them. So they want to do all the same stuff that we do, and they just love it! It's very beneficial and helps the kids a lot. (Interview transcript, April 9, 2000)

The new computer equipment arrived at the Winbald Middle School site in September 1998. At Winbald as well as each of the other eight school districts, officials from Southwestern University and contracted equipment vendors arrived to help set up the technological equipment. This was truly a festive occasion! Also, each year for the next three years, an average of $83,000 would be available for equipping and operating each site. The grant represented a tremendous new economic treasure, and the rapidity with which it could be infused into the school districts was amazing, especially for districts like Winbald, with historically limited budgets.

As the labs were set up, a uniform financial mechanism was developed for payment. Each site was not just given the money, but rather a stringent process was in place to secure the grant funds. This process consisted in making purchases in accordance with the requirements of the grant. All purchases were subject to review by the federal government, Dr. Lee and Nancy Murdock at Southwestern University, and the business manager at Lochmor Area Schools, which was the fiscal agent. A member district could deviate slightly from the grant mandates to make other purchases, but such purchases first had to go through SATURN! Central and receive approval from Dr. Lee. Dr. Lee, business manager Peter Nickleson, and superintendent Sidney Cashman of Lochmor Area Schools developed a standardized purchase-reimbursement form, which had to be filled out after the particular items were purchased. The completed form was then sent to Dr. Lee and his staff for oversight and approval. When approved by Dr. Lee, the completed and approved purchase form was sent to Lochmor School District, the fiduciary agent for the 1998 SATURN! grant, for final review and payment.

The reason that a member district such as Lochmor Area Schools and not Southwestern University served as the fiscal agent was strictly financial, involving a significant difference in the percentage that was charged to the project. The public school district was paid 7% of the total project cost to carry out these financial duties. Had Southwestern University been the fiscal agent, their fee for the same service would have been 40%, or a difference of 33%. Thus, in this $4-million project, approximately $1.3 million would have gone to the university and not the project. By using a fiduciary agent other than the university, these funds stayed with the SATURN! project and were figured into the budgets of each member district and Dr. Lee's university budget.

This arrangement was also lucrative for the fiduciary agent. For example, by providing the financial services for this $4-million grant, the designated fiduciary agent received an additional 7% of the total grant monies for performing the accounting, check-writing, and auditing services. In this case, it was worth an additional $280,000 over three years to the Lochmor School District, bringing their total revenue from the SATURN! project to approximately $530,000. The Lochmor district went on to become the fiduciary agent for the next successful SATURN! project as well (June 2000). The grant award for the next round of funding was $8 million, and the Lochmor district realized approximately $560,000 additional for serving once again as the fiscal agent for what had grown to a 20-school consortium. Interestingly, only one other district in the initial stage of the SATURN! grant application process ever indicated an interest in becoming the fiscal agent, despite the obvious monetary rewards.

Each site began with a "base lab" required by the university, featuring a minimum of 13 computer stations, several kind of printers, all the necessary cabling, and selected software packages that were to be distributed throughout the 10 middle school SATURN! sites. A bid list was created, based on the grant specification that identical technology labs be implemented at all of the sites. The bids came in and, in accordance with the specifications from Dr. Lee and his staff, Southwestern University contracted with a company from Center City, Trimp Computers, to supply the necessary equipment (Bill Blake, first program director, SATURN! e-mail documents, 1998).

The owner of Trimp Computers was Salvatore Trimp. He was from a local, established family who had lived all their lives in Center City and were actively involved in Center City real estate. Salvatore had left the family real estate business several years

before the SATURN! project and started his own business as an OEM (original equipment manufacturer) supplier of computers and peripheral technology equipment to area public schools and Southwestern University. Business was good, and his company prospered as many area school districts purchased his company's equipment and services. Trimp actively pursued new business contacts and particularly the SATURN! project. Through his association with Dr. Lee, previous successful business ventures with Southwestern University, and a majority vote from Southwestern University and the fiscal agent, Lochmor Public Schools, Trimp secured the contract to supply most of the technological equipment to the 1998 SATURN! project. SATURN! administrative assistant Nancy Murdock had to work closely with Trimp because she was responsible for arranging his visits at the klubhouse sites. According to Nancy,

> Salvatore is all over the place. He talks a good game and usually delivers on time, but there have been some concerns over the quality of his brands. We have enough of them [computers] here, and there have been some problems, but he seems to make good on everything he sells. (Interview transcript, April 11, 2000)

On September 7, 1999, a communiqué was sent to all the SATURN! site coordinators and board members (school district superintendents), SATURN! project director Bill Blake, and his recently hired assistant, Malcolm Goldman, requesting the individual site coordinators' assessments of the performance of Trimp Computers. Malcolm Goldman, who had previous administrative experience in a K-12 setting, was added to the SATURN! project staff to assist Bill Blake. In a September 7, 2000, fax from SATURN! Central, Blake and Goldman wrote:

> We still wish to submit a list of concerns/suggestions to Trimp Computers with the group. Comment on the following and send to Bill Blake by September 15, 1999:

a. Delivery/set-up/installation of equipment;
b. Performance/reliability of hardware;
c. Quality of technical support;
d. Purchasing/billing/accounting experience.

Trimp Computers had recently secured a major contract with the Department of Education at the university and had previously (September 1998) supplied many of their computer needs. The SATURN! contract was significant. It represented approximately 150 computers, 25 printers, 10 digital cameras, 10 projectors, about $20,000 in software, and approximately $10,000 in maintenance fees for the first year. The following two years would not require the same investment in hardware, but software and specialty purchases such as white or smart boards (interactive computer screens on wheels, approximately 4 feet by 6 feet) and digital cameras and projectors would increase, so purchases would still amount to about $30,000 to $60,000 per year per site. Multiplied by 10 sites, the contract was worth approximately half a million dollars a year for three years for Trimp Computers (SATURN! middle school site agreement, 1998).

In addition to computer hardware and software, assistance was given to provide the capabilities to connect each of the SATURN! sites with Southwestern University. It was up to each individual site to prepare its own SATURN! klubhouse with functioning telephone lines and Internet capabilities. Support was then to be provided by both the local site coordinator and graduate-student technology experts from the university.

The sites were given much flexibility in both hiring staff and configuring their particular klubhouses. For example, the urban school districts chose to hire full- or part-time site coordinators who, for the most part, had not previously been connected with their districts. The thought behind hiring coordinators who were not currently employed

by the district was to keep the klubhouses separate from the realm of the district, thereby allowing them more autonomy. Of the four urban SATURN! sites, two hired full-time site coordinators. Their klubhouses were not used during the day, and there was little contact with the "day school" staff. The same was true of the urban agency people. In all of the urban districts, the agency person was not a member of the school staff but was closely tied to the community either as a business owner, a parent, or a community advocate (Zhao, 1999).

In the smaller and more rural districts, the site coordinator was almost always an employee of the school, generally a middle school teacher. This was the case for the Winbald site. Five of the six rural SATURN! sites had part-time site coordinators; only one was full time. The community agency person was also an employee of the school district. In addition to having close proximity to school staff, the individual sites were allowed to configure their staffing to meet the unique needs of their sites (Morrow, 2000; Zhao, 1999).

The Winbald Area Schools' SATURN! klubhouse officially opened in December 1998. The name klubhouse with a "k" was a registered trademark of Southwestern University (SATURN! Handbook, 2000). The klubhouse looked like many of the "typical" computer rooms that existed in middle schools in the state. The room was located at the end of a long hallway, in the sixth-grade portion of the middle school. The hall was arranged by grade, with the sixth-grade section being located directly across from the SATURN! lab. Site coordinator Mike McCartney described the configuration of the SATURN! klubhouse:

> The original plan when we first started out was that SATURN! was going to be a klubhouse and was going to be a place set aside just for the SATURN! students. It wasn't designed as an auxiliary lab, and I tried to hold the school to that. With some opposition two years ago when this program started, there was only one middle school lab. There was only one lab in the entire school district, the one that was at the middle school. The year before that, it was out in a separate building when the middle school wasn't part of the high school. Then the high school had a lab with about 20 machines that were stand-alone, 3.1 [older version of Microsoft Windows software program] machines that were for basic office-type things. The old typing class, they really wanted to schedule classes in here. [We] had several discussions with the high school administration about that. That's not what [SATURN!] is designed for, and that's not the concept, and they let it fly [supported limiting the lab to the SATURN! program].
>
> We only had one tiff, and that was we had a bunch of kids that needed e-mail addresses because they had to get on and chat with Southwestern University. They had to have e-mail addresses to do that. We sent six of them out of the lab after school, and the lab teacher had a fit. He told us we had our own lab, and of course he stated his case to the principal, neglecting to say that we had sent six kids out to a lab with 24 machines in it, of which only two were being used. But the way it was stated, it gave the impression to the principal that we did that every night. Once we sat down and said, "This is what happened; this is how it worked," everything was fine. It was really a nonevent, but it did point things out.
>
> I know that we need the lab, and it needs to be used a lot. It is used off and on during the day, but it's a personal thing of mine. To have an open lab and try to keep all the machines running is hard enough. We try to do it here with this, and the first thing we end up doing is, we end up putting some kind of protection program on it. This is because people come in and out and kids' programs are erased, and our programs have games on them. The middle school teacher takes a class in there to work on a project, and the first thing the kids do is hit the games. (Interview transcript, April 11, 2000)

The fact that the technology room was used only by the SATURN! klubhouse staff had not gone unnoticed by the rest of the middle and high school staff members. This exclusivity occasionally caused increased tension between the staff and the klubhouse site coordinator, Mike McCartney. During the interview on April 10, 2000, I asked middle school teacher Cindy Hapsburg if she thought the rest of the staff were jealous of the middle school for having all of the SATURN! equipment. Cindy said she thought that was definitely the case:

> There was a lot of resentment, and [the fact] that it was just middle school and the high school couldn't take it out of it, take it and control it, but they took our computer lab [laughter]. We had a computer lab, thanks to Mike, who . . . got us a computer lab when we were out at the elementary school. But when we had to move to town, the high school took it. So we lost our lab, and then here we've got the SATURN! lab now, and the high school teachers wanted to be able to use it. And we said, "You know, this is for the kids!" There's a LOT of resentment that that "thing" sits there all day long and they can't use it! But, you know, it's kind of like something special for the middle school kids. It's a hard enough time. We couldn't get into our computer lab [since] we'd lost it to the high school. And so, you know, it's something special for our kids. I know [the high school staff are] upset and they're jealous, but I don't feel sorry for them. The whole middle school staff supports it and says that's okay. (Interview transcript, April 9, 2000)

If Mike and Cindy represented the middle school position on the availability of the SATURN! lab for the elementary and high schools, the high school computer teacher offered a divergent viewpoint on the new SATURN! lab. High school teacher Alvin Ingraham said in the interview:

> I haven't had much dealing with it. The only thing I know the faculty is very upset with is that we can't use it [because it is restricted to middle school use]. None of the high school teachers and I can even go in and use it. None of the high school kids can use it. It is strictly for the middle school. And around here, with the enrollment and everything, we thought we could use it. Then we heard a rumor at one of the staff meetings that they were going to do one strictly for high school, but I guess that is out of the question now. And we were told that we could not use it, and that upset quite a few people because we do have the most modern ways and stuff for computers and we can't touch it. Being a computer teacher, I think we should at least give the kids the best possible education and computers that are available, which we have, and we can't do that. So I don't know what's going to happen in the future, whether we can use them or not. (Interview transcript, April 10, 2000)

On Saturdays, a klubhouse session met from 9 a.m. until noon. In addition, the klubhouse had proven to be such a popular gathering place that it was also open during the week, before school began and during the lunch hour. The room had been refurbished and featured newly painted white walls and new computer tables. The

biggest modification to date was the addition of an outside-access door, located in an unoccupied corner of the classroom. Many colorful, student-created posters graced the walls, with the place of prominence over the teacher's desk being reserved for the SATURN! logo banner.

The Winbald SATURN! klubhouse formally started in grand fashion in October 1998 with a deluge of eager new middle school members. A lot more of the students wanted to be klubhouse members than Mike had anticipated–too many at first–but the hiring of additional staff solved that problem. As it turned out, the high interest level helped to establish the program almost immediately within the middle school as "the place to be." According to site coordinator Mike McCartney:

> Because of our growth, one of the major, major stumbling blocks we had was that our program was too successful! Numberwise, we started out with 60% of the sixth graders the first year, or some horrendously large number like that. And we just weren't expecting that. And it was just the two of us, Donnie and I, to manage the kids. What's also helped to alleviate the problems is that we've taken our coordinator's salary that Donnie and I had split, and we took last summer's money and hired two additional people to help just because of numbers. We are open on Saturday mornings from nine to noon, and kids come down here for that, so we're in at lunch and we're in at break. We're in, in the morning during breakfast time. But probably the biggest overall headache of the whole program was the fact that we have these numbers of kids. There's really not an alternative for them, for a place to be. (Interview transcript, April 11, 2000)

Mike went on to express how the klubhouse quickly became the place where all students could be accepted and successful. In fact, some of the students with behavior problems began to act appropriately in their regular classrooms so they would not have to go to in-school suspension (ISS) and thereby lose their SATURN! privileges. Mike related:

> It fills a bigger need, a wider spectrum. We still have our sports kids in there, but we have the other kids that aren't sporty in there too, and all levels, you know.

> You play sports and you are good at it. You don't halfway play sports. You can halfway sit at a computer and have fun. We cover everybody. We have the special education kids in here who fit in fine, as well as the gifted kids who have a wealth of ability. We have those with very specific abilities. We've got kids who know every Pokémon card that was ever produced but can hardly read. But they've organized all their Pokémon stuff and scanned them in with the (klubhouse) scanner, and they've got a whole list of them. I think that's important. Anything that keeps the kids in school; they have to have some reason to come to school. . . . It's important to the kids, and I think that says as much as anything.
>
> We had some kids who generally were getting in trouble every day. We have an in-school suspension program, ISS. You get sent there for being tardy; you get sent there for more than your irritable classroom disruption. The irritable stuff the teachers are supposed to take care of. And we have a policy here that the ISS suspension means you're not in the SATURN! program. You're in school, but you're not here. So if you're in ISS, then you can't come to the after-school program. We initiated this half way into the school year. We have kids who quit getting sent to ISS because they couldn't come to SATURN!, because they wanted to be here. They got to class on time. The teacher could say, "Look, if you don't quit [behaving inappropriately], I'm going to send you to ISS." Then they quit [the negative behavior]. Our ISS person wrote me a letter just last week, saying that SATURN! has helped reduce the number of kids in her ISS program. (Interview transcript, April 11, 2000)

In addition to the interest the klubhouse generated right after opening, there was also a sense that something new was happening with the way middle school children were approaching learning. Community agency person and athletic director Donnie Stefanski thought that the program was especially important, not only to gifted students, who were never behavior problems, but to all students, even those who regularly were a challenge for the teachers:

> SATURN! has been an almost unbelievably positive force in this district. My part, well, I've been with it since the beginning in the role of co-coordinator, or site coordinator, with Mike, and I've learned a ton myself. I haven't normally been in the classroom with kids. That's never been my position here at the school, so I'm having an opportunity to spend some time with these middle school kids. Like Mike and all the other teachers have said, when you see that light bulb come on, it's really a fulfilling feeling to have that happen! And we've done that with SATURN! and especially the kids we deal with. They go from the better students in this school to problem kids. And it's really that problem child

that, when you see something happen to them in a positive way, that really makes you feel good. (Interview transcript, April 10, 2000)

Middle school principal Philis Dundee also noticed the collaborative nature of the classroom work that was occurring with many of the students' technology assignments as a result of the SATURN! klubhouse projects:

> I did see, when I came in for presentations, a lot of students thanking other students for their help. Someone helped them find the SATURN! art, and so and so helped me figure out how to make the things like that work. One student in particular, who I know has problems with some of his other academic subjects and is not always comfortable asking for help, was getting help particularly from other students. And he seems really comfortable in this context with his knowledge in that he had had help, but he still felt good about the project and felt ownership for the project. I thought that was interesting, and I thought that it didn't really change, like I didn't see any students who are struggling in other academic areas who really excelled here. What I saw on that particular day was still students who have trouble being helped by other students, but it was done in a much more positive way, less judgmental. I don't know if that's because they worked together in the klubhouse environment as well, and so they see it more as friends helping them rather than somebody who is better at something helping them. (Interview transcript, April 10, 2000)

Site coordinator Mike McCartney also celebrated the collaborative aspect that the SATURN! project had brought to the teaching and learning environment:

> We [the SATURN! project and Southwestern University] had an awards program last year. We had a couple kids who went down to MACUL [Makinauk Association of Computer Understanding and Learning annual conference], and just being there and being part of SATURN! was worth it. I mean, it was good for me to be there, but it did more for me to watch the kids be able to be there than anything. That's what it's all about. [We've] got a program over here and a kid has a problem. Who can help him? Four or five kids can go and help him. I don't know what I'm doing? Most of the time I don't. I don't have to lie about it, they know it [the program]. I don't know how to do that, and they'll show you. That's what it's all about.
>
> I just wish we could get some more schools close together so we could swap [programs and ideas]. Like you're up north, Northend is up there [referring to Ferrisville Schools in the Upper Peninsula]. You have two or three or four schools right near by there that you can do little field trips to visit. Have these kids walk in and show their projects. "Look at what we did." "Wow, can we do

that?" "Yeah, it's not hard at all, let me show ya." (Interview transcript, April 11, 2000)

Superintendent John Hardy also thought the computer-based experiential and cooperative learning model was exactly what the district needed to reach the most at-risk of the Winbald students. He believed the SATURN! project was the beginning of a curricular change using technology that would revolutionize teaching and learning in the district. He said,

> You know what SATURN! has done? The fact is, it has taken kids who normally aren't successful in the classroom, and it's shown that they can be successful at something. We have kids who are failing now designing web pages and who are all of a sudden positive about school! It has really improved the whole middle school feeling about instruction. That's why we are looking at spreading the SATURN! model to other classrooms–because it proves that if you have a kid during the day who's failing social studies and then, after school, moves two doors down and is successful in designing websites and researching on the computer, that tells you something.
>
> That really presents a model for the rest of our teaching staff to see. This is how your classroom can be successful because SATURN! is successful. Look how SATURN! is successful with kids you say you can't touch. Now it's SATURN! that's touching those kids. I feel really strongly about this, [and] it's going to change our whole delivery system for the middle school. The problem, I think, in middle school is that many times they are run like mini-high schools. Kids are moving all of a sudden from fifth grade to a middle school. They are changing classes, and they are now experiencing a lecture type of class that they are not used to. Studies have shown that kids who come from poverty learn differently; they learn by doing. And SATURN! is the perfect model that demonstrates that. What that does, if we can transform SATURN! to a regular classroom setting, we are going to be a heck of a lot more successful than we are right now. Johnny is failing in the classroom, but he never misses SATURN! and he is succeeding. Something is not right with this picture.
>
> I think that the whole middle school delivery system for teaching and learning is a situation we have to look at. [We need] more demonstration or hands-on and more interaction than what our present model is. We are not a mini-high school, and we have to realize it. Middle schools shouldn't be mini-high schools. So I think SATURN! is going to create some new and innovative ways that we teach, and I am really excited about that. Seriously, this is what we have to do in all of our classrooms: make learning exciting, especially for kids who come from poverty, who don't have the background and support, who are now all of a sudden becoming successful. That's our goal. That's it exactly.

> That's exactly the point, the cooperative learning pieces especially. If we could move that into the regular classroom setting, we would be a heck of a lot more successful than we are now. (Interview transcript, April 11, 2000)

Even Alvin Ingraham, the lone dissident who was angry because his high school computer class could not use the SATURN! lab, acknowledged the improvements SATURN! had brought to the district in terms of new technological opportunities for Winbald students:

> It enabled the kids to have what this district probably wouldn't have if it hadn't been given to us in this grant and the money given to us. But now that it does, it makes the rest of us look stupid, including me. I mean, I am not up to date. Yes, I have a scanner and I have a zip drive and all this stuff, but that is good only if you know how to use it. Taking stuff and scanning it into the computer, that's no problem. But take a picture with a camera and it comes on a screen and you copy it–I have no idea how that's done. You know, SATURN! is good to a point. (Interview transcript, April 10, 2000)

The first project assigned to the SATURN! klubhouses was to create community-history pages for their local communities. Dr. Lee thought a common project would help the klubhouses and site coordinators develop a community-based project quickly and also develop camaraderie among the sites. In addition to the community-history project, Dr. Lee and the graduate students at SATURN! Central developed four domains and goals for students that revolved around service and technology and were labeled Focus on Learning:

> We want to revisit our four major domains and goals for students–Achievement, Community, Technology, Service (ACTS). In the domain of Achievement this fall, SATURN! klubhouses should be continually on the lookout for reactive uses of technology within and around students' class work. These creative uses will be recognized and rewarded. Additionally, we will be testing out a new feature this fall, called "Virtual Tutoring," whereby a few students will connect with Southwestern University teacher candidates to address specific academic needs.
>
> In the Community domain, we hope to see further progress in the community-history projects that were initiated last year. A starting point this fall will be for each site to present a brief pictorial or video profile of their own

> klubhouse on a website, enhanced with digital video, digital images, and even QuickTime VR [video software program] clips. Assistance on this project will be offered during our training session.
>
> In the Technology domain, we wish for the klubhouses to offer opportunities for every member to obtain skills in the areas of video production, web design, and 3-D animation. A cadre of local experts for each klubhouse were trained at our Summer Leadership Institute last month. These people will be expected to help others learn these skills. SATURN! Central will generate a list of competencies for SATURN! certification in these three areas.
>
> In the domain of Service, we wish for klubhouses to continue to offer services for teachers and other members of the school community in helping them to integrate technology into the school curriculum.
>
> These four major goals are not meant to be exclusive; i.e., they should not preclude the pursuit of other challenging learning activities, and local projects. However, most of the support from SATURN! Central this fall will revolve around these goals. (Bill Blake and Malcolm Goldman, SATURN! Project assistant directors, SATURN! Central fax to site coordinators and board members, September 7, 1999)

Whereas there was no problem in attracting large numbers of eager students to the program at the Winbald site in fall 1998, nagging problems began to develop as the year came to a close. Most were organizational issues, such as staff and custodial complaints about the klubhouse kids making noise and being in the school after hours. For example, middle school principal Philis Dundee noted:

> As an educator I know that learning is happening, but still they get a little loud, they spill over to the halls sometimes, and it's not as structured as we would like. You know, everyone would be comfortable, the kids are comfortable there, the people who work with them are comfortable, but sometimes the secretaries complain about the noise, [and] parents sometimes ask about what exactly is happening in there. But overall I think that they are doing a good job. (Interview transcripts, April 10, 2000)

Middle school teacher Andrea Glen-Burnie also voiced minor concerns about the perceived amount of time klubhouse members spent playing games: "They do a lot of games. I know it teaches them some logic and things, like they try to figure out the best

way to "attack" things, but sometimes you get disappointed that they are doing a lot of games" (Interview transcript, April 10, 2000).

Site coordinator Mike McCartney commented that all Winbald students who remained in the building after school were identified as SATURN! kids, whether they were in the school for klubhouse activities or for other purposes. As Mike indicated, the SATURN! project proved to be a magnet, attracting students to the program but also garnering criticism for every student who was in the building after school. He explained the dilemma:

> Kids, kid things, nothing malicious, nothing like that, just kid stuff, end-of-the-day kid stuff, but because of where the office was located, we were noticed. Donnie made the comment, "What are we doing different this year?" Last year [1999] we couldn't do anything wrong; this year, they are fussing all the time. Well, look where the office is. Move the office in the same hallway, principals in the same hallway. Last year they were down in the other end of the school. The teachers all leave here by 3:30. [Because the SATURN! program starts at 3:30 p.m.], the teachers only have to put up with it for a half hour before they are gone. When we had the whole wing to ourselves, who cared? (Interview transcript, April 11, 2000)

To ascertain the origin of the complaints regarding the SATURN! program, I asked Mike, "Were the majority of the objections to the SATURN! program from the custodian, teachers, or administrators?" Mike shared his perspective on what proved to be a hindrance to the program:

> Probably administrative things were the most severe. Only because, as an administrator, you notice things like kids in the hallway with nowhere to go, kids running down the hallway, kids hanging around outside the school, swinging on the fence, among other things. [Administrators] notice those things. Because we are such a popular program for the kids, any kid after school is a SATURN! kid. So anybody that's doing anything is a SATURN! kid. It doesn't matter if they are or aren't. They could have been in the academic center and not even been a part of our program. But they are still hanging around after school, and they are one of ours. So we get the credit for everybody. We had to explain to both the office and the custodians because the custodians were the guardians of the door. They

> locked the door; the kids would bang on the door to come in. The custodians would say, "We just let you out, you're not supposed to be back in, you left, you went home." We had to explain to them that, because of our numbers, we had kids who live in town, the "townies," who left right after school. They went home, they got a snack, they did things around their house, and an hour later they came back because by then the bus [for the kids who live out of town] had left. So we had these kids, some of them leaving, some of them coming back, all at about the same time, so [there was] all this movement of children that, quite honestly, our school was not used to. (Interview transcript, April 10, 2000)

Conflicting/Complicating Issues of Communication at Winbald

More problematic issues than student noise or computer game playing surfaced at all 10 klubhouse sites and eventually hindered the implementation of the SATURN! program at the Winbald site. The first major concern that site coordinators identified was a lack of communication, which they assumed had spread from the university (SATURN! Central) to the SATURN! sites. This tension eventually boiled over, as evidenced by remarks first made by a rural district's (not Winbald's) site coordinator in an e-mail message to SATURN! Central headquarters and all of the site coordinators. This coordinator, Zeke Stone, was angry that he and the other site coordinators did not have enough information or technological substance to suit their particular needs.

Unbeknownst to Zeke Stone, the SATURN!ALL listserve was actually several listserves that communicated not only with the site coordinators, but also with the superintendents of each middle school site and all the other people associated with the grant, including Southwestern University personnel and officials from the U.S. Department of Education in Washington, D.C. So when Zeke took "computer pen in hand" and sent the following e-mail to the site coordinators and SATURN! Central, it also reached many others to whom he had not intended to send it:

> As we look at the reason for getting the site coordinators together, I have to ask myself was it to have some face-to-face discussions on the various directions each of us were going. In many ways, it is a support group so that each of us does not feel like an island afloat in the ocean by ourselves. It was not a chance to see other klubhouses in operation–yet this could be a by-product. Our meetings were to begin in the a.m. and last until school adjourned–they were not to be centered around when kids were in the klubhouse or a social dinner. I felt that we wanted to get something accomplished. Therefore the meeting at Clarksville served to allow Bill and Mal to "be part of the klubhouse experience" and get two goals out of the way: Visit a klubhouse as well as meet with the site coordinators; but, in general it was a waste of time for a three-hour drive. Only five site coordinators were present. Does that tell you something? Yes, there was a good hour of discussion and good points were raised, but for three hours of driving something was missing! To my way of thinking, Southwestern University almost guaranteed the new grant and now where are we? Now after the fact, Southwestern University is talking about marketing the SATURN! idea. Why? Because they lost! Where in the hell were they when it counted? Where is the budget for doing this? And of course just about every grant's deadline is closed, so we are like so many football teams: "Wait until next year!" Site evaluations coming up in June [1999]. Big deal! Unhappy about the planning. (SATURN! e-mail document, May 27, 1999)

Zeke's e-mail message proved to be the "shot heard 'round the world," or at least around the state. It gave voice to the pent-up frustrations felt not only by the site coordinators, but also by some of the administrative assistants at SATURN! Central. Program director Bill Blake first responded:

> After speaking with Zeke Stone this morning, I thought I would call attention to a few things for the good of the SATURN!ALL group. Some people who have joined our mailing lists recently may not even be aware that we have created several mailing lists for the SATURN! project. A complete description of each one, including the scope of the audience for each list, is contained on our website. Please review this information–look for the link to "mailing lists." Zeke S. tells me that he actually meant to send his message yesterday to the SATURN! site coordinators and to the SATURN! Central staff ONLY, not to the much wider SATURN!ALL audience. We should all be aware of our audience when sending e-mail messages. (SATURN! Central e-mail document, May 28, 1999)

What ensued after the initial e-mail was a flurry of electronic responses from site coordinators, superintendents, the SATURN! project director, the SATURN!

administrative assistant, and the program head from Southwestern University. The e-mail from Zeke Stone was the catalyst that engendered much discussion about the lack of communication among SATURN! sites and with Southwestern University (SATURN! Central). The first to comment was Louise Kleega, the site coordinator from Clarksville:

> As we look at the reason for getting the site coordinators together, I have to ask myself, was it to have some face-to-face discussions on the various directions each of us were going? In many ways, it is a support group so that [we] do not feel like islands afloat in the ocean by ourselves.
>
> We have all complained at one time or another about the lack of communication between the klubhouses. I do feel that communication coming out of SATURN! Central needs to be a little better or more frequent. We are all hearing different things from different people, and it's difficult to know what is right and what isn't. Frustration arises when communication is poor. Let us know what is going on. If deadlines change, e-mail us. If agendas change, let us know. (SATURN! e-mail document, May 28, 1999)

Winbald site coordinator Mike McCartney voiced the same sentiment in a personal interview. He also said that, in addition to a need for improved communication, Southwestern University needed to supply more program support during the early stages of SATURN!:

> Southwestern University is rolling out procedures and programs that aren't ready. They've rolled out a few things after they tell all the kids about it and it never shows up, or it shows up months later. They came up here and did a Spin Panorama [SATURN! klubhouse software program] workshop with the kids. I don't think the program [software] got here until two months later; then the interest was gone, the knowledge base was gone, the web site design thing that they were doing. That never did get off the ground. As the coordinator, I'm frustrated that I don't have the technology base to help these kids. (Interview transcript, April 9, 2000)

Yet even though the site coordinators complained that the administrators at SATURN! Central were not communicating enough with the sites, the site coordinators themselves were often lax in communicating with the university and SATURN! Central. For example, SATURN! Central administrative assistant Nancy Murdock vented her

frustration about the lack of communication and cooperation in one of several communiqués to the site coordinators as she sought to arrange a site coordinator meeting with only moderate success:

> I am still trying to put together [travel/lodging/facilities] but am running into several problems, not the least of which is I still haven't heard from all the site coordinators whether or not they will be there! This makes it difficult to plan anything. A message regarding lodging will follow yet today, but I need to know who is giving you the "agenda" for a meeting when it hasn't even been decided yet. That puzzles me. (SATURN! documents, May 28, 1999)

Routine SATURN! group projects, such as the annual summer camps that were held to bring students from all the sites together at one location, were difficult for Nancy to administer. Often the site coordinators failed to meet deadlines, which then created additional work for SATURN! Central staff, such as having to repeat requests for information. As Nancy Murdock noted in an e-mail to the site coordinators:

> Folks, the due date/time has now passed for receipt of consent forms–it was Wednesday, July 28, 1999, at 5:00 p.m. The following campers [sites] have not returned their forms as of Thursday, July 29, 1999, at 2:30 p.m.: Winbald, two campers; Kaline, one camper; Stonebrook, two campers; OND, two campers; and Center City, two campers. All of these forms MUST be completed by the parents, SIGNED and returned to SATURN! Central or the "camper" will have to be returned home. They can NOT stay at SATURN! Camp without the proper forms filled out and signed. We tried to call EACH parent in an attempt to get the forms, and at this point we are still waiting. The status of each packet of forms is listed after the camper's name. If you have any questions about whether or not a student can attend, please check with me first! (SATURN! document, July 29, 1999)

The project director, Dr. Livingston Lee, as well as the board of directors, also expressed concern about communication between the superintendents and the site coordinators. He wrote:

> **Communication issue:** There is a general concern about the response time from sites to requests for necessary information from SATURN! Central. It was decided that SATURN! Central will contact the Board member upon lack of

> response from the Site Coordinator within the due date or time. (SATURN! document, July 29, 1999)

SATURN! Central project coordinator Bill Blake also had some concerns about communication. In an e-mail to site coordinators before the summer 1999 SATURN! camp, Bill reminded them of the importance of getting information to the SATURN! summer campers and their parents:

> There will be one more message after this one from Nancy Murdock regarding students' waivers and permission forms. Please pay close attention to this message as it is urgent. We are still missing several permission forms. . . . PLEASE print and DISTRIBUTE this summer camp URL to EVERYONE who may have any interest in monitoring the weekly proceedings–who you see when you receive your students. We will be posting videos, images, and setting up a web cam so that parents, families may "check in" on their SATURN!ers during the week. The ONLY way they would ever know about this is if the COORDINATOR shares the URL with them. Thank you for your assistance on this. . . . Ed Sampson reminds me that he still needs a list of core members from site coordinators with their assessment of their usage of the klubhouses. Rate each one as either high, medium, or low SATURN! participants, in terms of the volume of their use (those who have already responded may ignore this request). (SATURN! document, July 28, 1999)

Among the most aggravating concerns were recurring directives from Southwestern University with little follow-up. What resulted was some confusion and frustration on the part of Zeke, the site coordinator. This same frustration was felt at other sites, and the problem finally was addressed at meetings called by the project director and the site coordinators. The result was a change in leaders at the university level and a realignment of goals. The new leaders recently had worked in public education and better understood the practical side of program implementation and evaluation. They set new and more manageable goals for the sites so that the evaluation component could better reflect the status of the individual programs and be carried out more effectively.

## Current Status of SATURN! at Winbald

The Winbald Middle School SATURN! klubhouse has been successful in meeting the goals and objectives of the project. This site has been termed one of the most productive and innovative in the consortium (Kaminski & Lee, 200). Success was not immediate, as some hindrances to implementation were encountered along the way. These hindrances were dealt with by the site coordinator, district administrators, and Dr. Lee and his staff members.

As part of this research project, I asked selected members of the Winbald Area Schools and community to construct "road maps" or drawings depicting their perceptions of the implementation process. Presented in Figures 4.7 and 4.8 are the road maps constructed by local business owner Larry Evans and community agency person Donnie Stefanski, respectively. Both were involved with the SATURN! project from its inception to the time of this study (April 2000). These participants' road maps show differences in their perspectives as they highlighted what they thought were program supports and hindrances.

Larry Evans, a business owner in the community, constructed the road map depicted in Figure 4.7. His perspective was that the project began as a straight line yet quickly encountered several sources of resistance, such as problems with software, hardware, program organization, and a lack of direction and focus. The next source of resistance was the introduction of technology initiatives that were attempted at the Winbald site but quickly fizzled out. SATURN! Central devised other ideas for implementation at the klubhouse, but these initiatives were also difficult to grasp, and the klubhouse staff's response was, "Oh, well, maybe next time." Further down the road, the

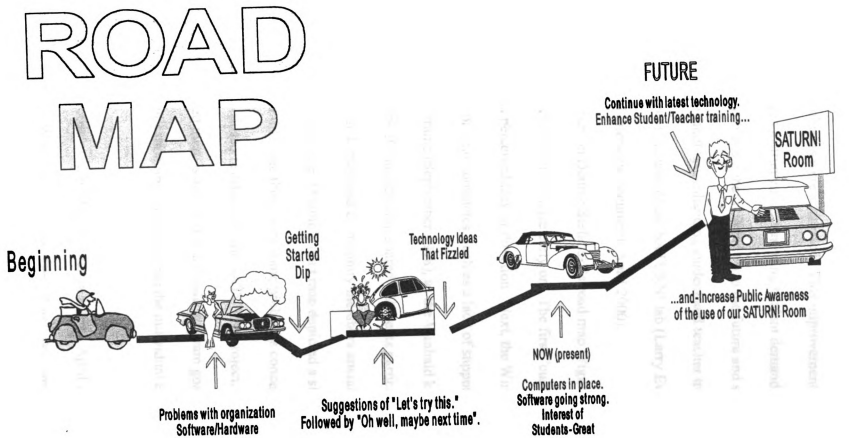


Figure 4.7: Winbald klubhouse road map constructed by Larry Evans, a local business owner.

map began to show sources of support as all of the technological equipment became fully operational and software problems were addressed. This improvement in the lab's technological capabilities was instrumental in creating student demand for the klubhouse. Larry ended his road map with a line that pointed up to the future and showed SATURN! continuing with the latest technology, enhancing student and teacher training, and increasing public awareness of the uses of the SATURN! lab (Larry Evans, SATURN! survey/road map/individual interview document, April 2000).

Community agency person Donnie Stefanski's road map (Figure 4.8) began with the SATURN! project experiencing resistance early on. The first "curve" in the road represented confusion and a perceived lack of direction. Next, the Winbald klubhouse began to build bridges over program obstacles, such as a lack of support for software and hardware. During this time frame (September 1998), as the Winbald klubhouse grappled with technological difficulties, its membership soared. Students participated during the school day and after school, and interested community members attended in the evening. As the membership began to increase, Donnie's road map depicted a slight leveling off or slowing of the program. At that time there were some problems concerning miscommunication, which caused resistance to the SATURN! project. But SATURN! Central successfully resolved these issues, and as a result, program goals were more realistically set and communication improved between the individual klubhouses and SATURN! Central.

The Winbald klubhouse membership doubled in size by April 2000. As a result of the improved status of the Winbald klubhouse, Gary Kaminski, current Southwestern

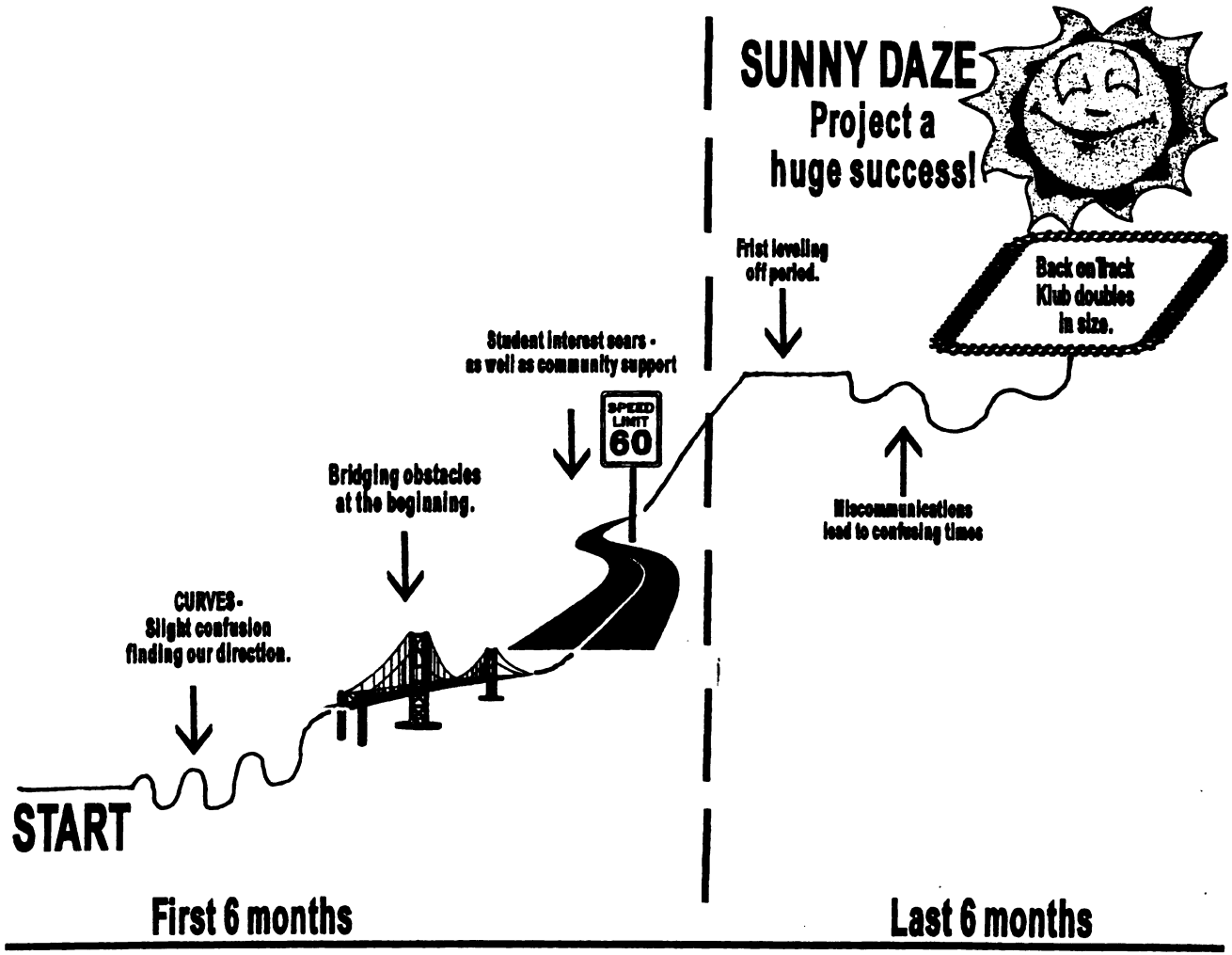


Figure 4.8: Winbald klubhouse road map constructed by Donnie Stefanski, community agency person.

University SATURN! project coordinator, had nothing but praise for the Winbald program:

> The Winbald Middle School site is one of the definitive programs in the consortium. The problem is very well-run, has clearly defined goals, has increased its capacity four-fold since its inception, maintained and added to all the technological components, and addressed and expanded on all the directives from Southwestern University. Perhaps most significantly, the Winbald SATURN! project is now a vital link in the district's "regular" middle school curriculum. That should tell you something about the job they have done there! (Interview transcript, August 15, 2000)

John Hardy, superintendent of the district, gave this assessment of the success of the SATURN! project:

> You know what SATURN! has done? The fact is, it has taken kids who normally aren't successful in the classroom, and it's shown that they can be successful at something. We have kids who are failing now designing web pages and who are all of a sudden positive about school! It has really improved the whole middle school feeling about instruction. That's why we are looking at spreading the SATURN! model to other classrooms–because it proves that if you have a kid during the day who's failing social studies and then, after school, moves two doors down and is successful in designing web sites and researching on the computer, that tells you something.
>
> That really presents a model for the rest of our teaching staff to see. This is how your classroom can be successful because SATURN! is successful. Look how SATURN! is successful with kids you say you can't touch. Now it's SATURN! that's touching those kids. I feel really strongly about this, [and] it's going to change our whole delivery system for the middle school.

# CHAPTER 5

# CONCLUSIONS AND IMPLICATIONS

## Introduction

My main purpose in this study was to examine and describe the institutional support and resistance encountered during the implementation of a computer-technology innovation (SATURN!) in a midwestern rural public school district (Winbald Area Schools). A secondary purpose was to put forward an emergent theory regarding a computer-technology innovation process in a rural school setting by employing theories and concepts of school change and communication. In this study, I identified factors that assisted and those that impeded the process of innovation and the degree to which the SATURN! project at Winbald Area Schools was or was not successful. Several theoretical lenses helped me make sense of what was going on. In particular, to understand the relationship between the organizational culture and school leadership, I drew on the tenets presented by Schein (1992) and Bolman and Deal (1997). Situating this dynamic relationship in a deeper understanding of educational change brought me to the work of Fullan (1991), Rogers's diffusion-of-innovation theory (1995), and Lewin's force field analysis (1951).

## Conclusions

### Introduction

The conclusions gleaned from the data supported much of what is already known about school change, yet they also provided new insights into the change process within

the context of this study. Case-based analysis served as an effective vehicle for describing the implementation of SATURN! However, before full implementation could occur, Winbald Area Schools had to circumvent numerous roadblocks on the highway to innovation. Roadblocks such as problems with software, hardware, program organization, and communication all proved to be impediments to implementation. These roadblocks on the innovation highway were set up when the culture of the school was challenged by the introduction of SATURN! Additional tensions were created through exclusivity as only a selected few were allowed to become part of SATURN!

The process of successfully implementing this innovation required fostering among all stakeholders an understanding of how change occurs and how to manage it. The trick, then, was to encourage collaboration while at the same time knowing how to manage conflict. In the case of SATURN!, this process was complicated by additional layers of administration and culture through the inclusion of Southwestern University and nine other school districts. A model had to be developed to manage the change process, including conflict, communication, and the management of partnerships. Any change or alteration in the school culture at the local level needed to surmount those obstacles as well as others across the gamut of the project.

As these roadblocks were encountered, the SATURN! program site coordinator and Southwestern University professor began to build bridges over the program obstacles. This was accomplished by increasing communication among and across the individual sites and with the university. Discussed in the following pages of this Conclusions section are two themes that shaped the implementation of the SATURN!

project. These are "The Meaning of Change to People: "What's in It for Me?" and "Managing Change: Conflict in Collaboration."

A single-case study such as this represents just one source for data collection, yet it generates vast amounts of data. Statistically speaking, this study of Winbald represented an *N* of 1. I studied only one school district, Winbald Area Schools, and a small slice of the institution at that, a middle school computer innovation called SATURN! This section is essentially the "story about the story," or the presentation of conclusions drawn from the study. Although this case was fascinating to research and write about, the problem at this juncture was what stories I would choose to tell, in order to portray this story accurately yet richly. How would I decide which of the varying segments of collected data to include or exclude? How would I choose the themes that would best represent the nuances of the case, while providing answers to the research question? How would I rein-in this case? I acknowledge that, although this story of SATURN! is indeed my story, there were many other ways to present this single-case study. It is also important to mention that I was the superintendent of one of the original nine schools that were chosen to participate in the SATURN! project from 1998 through 2001 (not Winbald Area Schools).

In the beginning, the "actors" or the members of the Winbald Area Schools and community who were participating in SATURN! had their own reasons or incentives for participating in this program. Everyone's incentive was different. Some incentives were conducive to smooth program implementation, whereas others were not. Hence, complications and tensions arose, which I viewed under the theme of *What's in It for Me?* I further explored these tensions under the theme of *Conflict in Collaboration,* in

which I examined issues of communication, differing rates of adoption, and exclusivity among participants. These two themes and the process of telling a story about a story guided me in writing this chapter.

The research question posed in this study was: How has one rural school district implemented a computer-technology innovation (i.e., SATURN!), and what does an analysis of this innovation reveal about the process of school change? A review of the significant findings from this study disclosed that the Winbald Area School District did successfully implement the SATURN! Middle School Computer Klubhouse project. This project met the federal requirements set forth in the original grant application and also met the criteria established by Southwestern University. Information regarding the achievement of the project's goals and objectives was documented in the SATURN! report that was submitted annually to the federal government. The population that took part in this project consisted of students, staff, and community members. The level of participation was high, and support for SATURN! and technology at Winbald Middle School was enthusiastic. According to Southwestern University, this site was one of the most productive and innovative in the nine-school consortium. In addition, the SATURN! project affected grade 7 to 12 course offerings and curriculum, and SATURN! was to be included in the district's annual budget when project funding expired.

## The Meaning of Change to People or "What's in It for Me?"

Why should Winbald staff members participate in SATURN!, other than the fact that it was an administrative directive? In other words, what's in it for me? According to Bolman and Deal (1997), individuals have good reason to resist change. Changes in

routine practices and procedures undercut people's abilities to perform with confidence and success. People initially react to new experiences in the context of some familiar, reliable construction of reality in which they must be able to attach personal meaning to the experiences regardless of how meaningful those experiences might be to others (Fullan, 1991). Thus, the change process involved in implementing SATURN! was personal and involved issues of jealousy, ambiguity, and a need for clear and respectful communication. Understanding and managing these issues was essential in addressing the human side of the change process. This personal dimension of change was evident at all levels, including the classroom, within and across the middle school, across building levels (middle and high school), between the school and the community, and between Winbald Area Schools and Southwestern University.

At Winbald, eight key individuals were directly involved in supporting or adopting this new innovation called SATURN! The individuals were (a) the district superintendent, Jack Hardy; (b) the middle school principal, Philis Dundee; (c) the high school principal, Jerry Edwards; (d) a high school computer teacher, Alvin Ingraham; (e) a middle school computer teacher, Cindy Hapsburg; (f) the SATURN! site coordinator, Mike McCartney; (g) the middle school custodian, Harry Silas; and (h) a community member, Larry Evans. According to Rogers (1995), at the onset of an innovation, individuals want to know the innovation's consequences, that is, what its advantages and disadvantages will be in their personal situations.

What this meant to the SATURN! project was that, as soon as the site coordinator (who was their fellow middle school teacher) had worked out his own personal meaning of the innovation and it was positive, his adoption then influenced the middle school

teachers' adoption of the innovation. According to Schein (1992), successful leaders must have a high degree of objectivity about themselves and their own organizations to effectively manage the varying personal meanings that are bound to arise.

Sarason (1993) noted that, in the process of creating a new setting, those creating the new environment consciously seek to prevent some perceived defect or inadequacy of existing similar settings. The new environment is viewed by its creators as superior in some ways to the other setting (Sarason, 1993). Dr. Lee, the project director, and the superintendent, principals, and site coordinator of Winbald Schools all visualized the project as a new teaching and learning environment, superior to the current method of instruction. Support from the middle school staff and administrators represented one of the driving forces of support that occurred as the SATURN! project began to move toward the desired state of total implementation in the Winbald curriculum.

According to Schein (1992), when individuals begin to make sense of a new innovation, a feeling of predictablity and meaning develops. At first, clarification was provided through the vision of the leadership of the organization (Dr. Lee and Superintendent Jack Hardy) and by other staff members associated with the project. Superintendent Hardy recognized SATURN! as something new and effective for students, especially low achievers. He also appreciated the financial resources generated by the federal grant and the positive attention the project brought to the district.

Two types of tensions were created by the superintendent's meaning of SATURN! Both tensions resulted from the superintendent's unwavering support for SATURN! Yet one tension was positive and the other was negative. The positive tension was that the superintendent's unwavering support for SATURN! ensured

adequate funding for the future of the project. The negative tension was that the superintendent supported the SATURN! project exactly as it had been proposed; that is, it was to be a middle school after-school program with no high school involvement.

The project's exclusion of the high school computer teachers and students created resentment between the high school and middle school teachers, and also between the high school teachers and the high school principal and district superintendent. Because the high school principal thought the vocational benefits of SATURN! were perfect for the district's underachieving students, he wanted the high school teachers to use technology more as a teaching tool. In effect, the high school principal wanted the high school staff to implement the delivery of a technology-based curriculum without benefit of access to the SATURN! lab.

The middle school principal valued the way the students assisted each other in the lab and observed that SATURN! was actually breaking down student cliques. Although she thought the students played too many computer games, she was happy that her school had been chosen for the grant. Tension was created at the middle school level because the SATURN! project was beginning to run autonomously, without administrative direction from the Winbald middle school principal. The middle school SATURN! site coordinator appeared to be creating a middle school technology-based curriculum with more input from Southwestern University than from Winbald. As a result, the middle school principal felt left out of the loop.

When the resources provided by SATURN!, such as expert knowledge, equipment, physical space, and substantial funding, were introduced, they appeared to benefit only a few teachers and selected students. The high school teachers felt shut out

and demanded their own lab, blaming their exclusion from the SATURN! lab on the administration's literal interpretation of the intention of the grant. As a result, they became jealous of the middle school staff's access to and ownership of the new SATURN!-based technology. This failure to communicate information created feelings of exclusion, which led to ambiguity and ambivalence. The resulting alienation of the high school teachers was one of the restraining forces of resistance. According to Lewin (1951), resistance occurs throughout the implementation process and remains a force acting to keep the project at its current state, rather than advancing to the desired state of implementation. It was important for the leaders at the building, district, and university levels to communicate clearly the project's purpose and potential benefits for all.

In contrast to the high school teachers, the middle school staff visualized SATURN! as their own computer lab for a portion of their students; they viewed it as the sole property of the middle school. Interestingly, the middle school teachers began to use the SATURN! lab as a technological "carrot on a stick" for administering discipline in their classrooms, telling the students, "If you don't behave, you can't go to SATURN!"

The site coordinator was the person in the middle, and his own meaning of SATURN! most closely resembled the model set forth in the grant. He visualized SATURN! as a vehicle through which to try out and evaluate technology and to implement a middle school technology curriculum. Two tensions surfaced. One involved the high school staff's exclusion from the SATURN! lab, which impeded the program's implementation. Another tension was the middle school principal's concern that the SATURN! lab was being used as an independent entity and not in conjunction with the middle school curriculum.

The middle school custodian saw the program as a hindrance because when SATURN! was implemented there were noisy students in the hallways after school, whereas previously the halls had been silent. He persistently complained about this. The site coordinator eventually remedied the problem by having a door installed that led directly to the SATURN! lab from outdoors. The students no longer had to use the hallways to reach the klubhouse. In this instance, the custodian's resistance to SATURN! at first resembled that of the high school teaching staff. But when the site coordinator addressed the custodian's complaint concerning the restraining force of lack of local control, that restraining force became a supporting one. This occurrence was in accord with force field analysis, which holds that an innovation such as SATURN! can become stronger by removing a restraining force without necessarily adding supporting forces (Lewin, 1951).

The community member who worked part time in the klubhouse saw the program as a useful tool with which to teach technology. He also embraced the value of publicity highlighting the school and community working together cooperatively. As a member of the chamber of commerce, he worked diligently in getting the students into the community to assist business and church groups with technology. The tension created as he developed his personal meaning was positive because he strongly believed that the required SATURN! student involvement in community service was beneficial for the students and the community.

Dr. Lee conceptualized his personal meaning of SATURN! through many lenses. He saw the program as an innovative way to use technology as a teaching tool. He also visualized SATURN! as a model consisting of middle school students being involved in a

statewide collaboration to build student and staff capacity through the sharing of resources. This project provided Dr. Lee with a public forum for advancing his research, and he had received various types of positive feedback, including news releases praising SATURN! SATURN! was more than adequately funded from federal sources, which benefited Southwestern University and the individual sites.

In this section, I discussed the personal aspects involved in the process of change. The change process in the SATURN! project was characterized by an alteration of personal values and the demand that people work out their own meaning for the new innovation. People do not come by their values lightly, and they do not check those values at the schoolhouse door, nor do they easily relinquish their values (Zucchermaglio et al., 1995). According to Fullan (1991), the emotional side of change is often either ignored or miscast. Whether or not people develop meaning in relation to all aspects of change is the fundamental problem. Individuals need to be able to predict the effect of an innovation on their own practices in order to ensure that they enfold an innovation into their work in a meaningful way. What an individual and an organization receive from an innovation must add value; otherwise, it will be lost. "What's in it for me?" was the starting point from which the change process began at Winbald.

Managing Change: Conflict in Collaboration

According to Owens (1998), conflict in collaboration is the activity of striving for one's own preferred outcome, which, if attained, precludes others' attainment of their own preferred outcomes, thereby producing hostility. Contemporary literature on school change ordinarily stresses such perceived virtues as empowerment, participation, and

collaboration, with little mention of competition and conflict. Yet the potential for conflict can be a force for health and growth as well as destruction. If a group were totally harmonious, it would be void of process and structure. Thus, because conflict is pervasive in all human experience, it is an important aspect of behavior in educational organizations (Owens, 1998). Often the goals of an organization are at odds with the individual members' goals or the meanings they must work out when taking part in a new innovation. Such was the case with SATURN! as the participants had different perspectives on their roles in the collaborative process.

The SATURN! project began with much publicity and substantial funding. The focus of the funding and resources was specific, and the grant was initiated by top-down administration at the district level. School district personnel were supportive of both the infusion of technology funding and the partnership with Southwestern University, yet they gave little thought to how this collaborative process would work. Different communities were involved in driving this innovation, all of them having different needs. There were conflicting meanings as to the benefits and value-added elements. This created conflict in the collaborative process, both within the district, between the university and Winbald, and across program sites.

The contributing causes of conflict in the collaborative process were faulty communication channels, unclear organizational goals, and jealousy arising from differing perceptions and unresolved personal issues regarding the use of the SATURN! lab. These conflicts occurred between individuals, between groups, and between Winbald and the university culture. At the onset of the project, concern was regularly voiced about a general lack of communication and goals. Dr. Lee and his staff arranged

meetings with both the site coordinators and superintendents to allow them to voice their opinions regarding policy and procedure. Through his charismatic leadership and deft organizational skills, Dr. Lee was able to diffuse tense meetings, provide clarification and simplified project goals, and increase the communication process throughout the entire project.

The district superintendent was the furthest removed from the communication and collaborative processes at Winbald. In addition to his duties as superintendent, he also served on the SATURN! board at Southwestern University. His goal was to see the SATURN! model of instruction become more ingrained in the daily instructional process at Winbald and used mandates and designated funding toward that end. The high school and middle school principals were more directly involved in this process because they had to function as intermediaries with their own staff, each other's staff, the site coordinator, and the superintendent. The middle school teachers needed the highest level of collaboration because SATURN! was in their building. They collaborated with each other, the students, the site coordinator, and the principals. The high school teachers were expected to be supportive, yet they were not allowed to participate in the program. The site coordinator needed to collaborate with Southwestern University, the middle school teachers, the principals and superintendent, and the middle school custodian.

As the project evolved, varying participants perceived certain communication channels as being more accessible than others. Interestingly, different organizational structures began to form around these channels as perceived needs were addressed in slightly different ways. The diverse communication channels and how they were used to navigate through the organizational structures of SATURN! were depicted in Figures 4.1

through 4.5 in Chapter 4. Conclusions drawn about the various organizational structures of SATURN! are discussed in the following paragraphs.

The first organizational chart (Figure 4.1) demonstrated a formal structure that proved effective in management during the initial stages of the project. This format worked well in writing the grant, delegating duties, and assigning projects to the Southwestern University staff and site coordinators. Although this original structure was to remain intact throughout the duration of the project for reporting purposes, other less formal organizational structures were molded around communication channels. The organizational structure that existed at the university level was shown in Figure 4.2. Dr. Lee and his assistant, Nancy Murdock, were positioned at the center of these communication channels or universe, whereas the rest of the university personnel and the project coordinators operated more peripherally.

Figure 4.3 portrayed the organizational structure as it appeared to the superintendents of the 10 middle school sites, who comprised the governing board of SATURN! This organizational chart was uncluttered in comparison to the other four charts and showed few participants coupled with direct lines of communication. This chart was reflective of the governing/policy meetings run by Dr. Lee and the board members/superintendents. For the superintendents, this concise organizational structure reflected their needs and support of the project. Figure 4.4 represented the configuration that existed for the financial portion of the project. At the base of this diagram is the fiscal agent for the project, Dr. Sidney Cashman, superintendent of Lochmor Area Schools. Dr. Cashman controlled payments to the school districts; as fiscal agent, he made all financial decisions with approval from Dr. Lee.

Although every aspect of this project was important to the site coordinators, none was more important than the informational organizational structure shown in Figure 4.5, indicating whom the individual site coordinators ultimately turned to when they needed to get things done. As shown in this diagram, the communication channels were evenly established among all members of the project, except for an absence of need for communication between the SATURN! project coordinators and the fiscal agent.

These five organizational charts were created to address the critical need for more effective communication processes in the SATURN! project. These varying structures also reduced issues of ambiguity and jealousy among stakeholders. Fullan (1991) stated that school systems are necessarily guided by multiple and sometimes competing goals. Likewise, the SATURN! project was guided by multiple and competing goals, and the creation of these various organizational structures addressed the need for more voices to be heard.

During the collaboration process, as goals and expectations began to change and drift further from the traditional curriculum, site coordinators and program personnel became unsure about their duties, how to relate to others, and who had the authority to decide what. Bolman and Deal (1997) stated that clarity, predictability, and rationality often give way to confusion, loss of control, and a sense that cutthroat politics rather than clear-cut policies now rule. To minimize such conflict, those guiding change efforts must anticipate structural issues and work to realign roles and relationships (Bolman & Deal, 1997). In the SATURN! project, ambiguity was dealt with by setting more realistic goals and obtaining increased technological and administrative support from Southwestern University. Also, efforts were made to mediate conflict in collaboration by

managing issues of fairness, governance, funding, communication, culture, and organization. These efforts also proved helpful in increasing people's understanding of the project's purpose and intended outcomes.

The conflict in collaboration that occurred among project partners required the management of issues of communication, exclusivity, jealousy, and ambiguity. Partnerships across different communities present unique challenges as "worlds collide," for example, when the public school district culture comes under the influence of the university culture. According to Bolman and Deal (1997), when individuals are told to do something they do not understand or believe in, they feel puzzled, anxious, and insecure. Lacking the skills and confidence to implement the new ways, they resist or even sabotage them, awaiting a return to the good old days. To avoid such a situation, participants must work out their meaning for the innovation and their place in the culture of the new organization. Collaboration must be owned by the participants if the innovation is to be effective, supported, and ultimately sustained.

## Theory Building

### Introduction

The study of SATURN! provided a unique perspective on school change as this rural public school district grappled with a major school change initiative. According to Yin (1994), an exploratory case study presents an opportunity to make a significant contribution to knowledge or practice, as well as to debate the value of further investigating various hypotheses or propositions. Merriam (1998) stated that theorizing is a step toward developing a theory that explains some aspect of educational practice

and allows a researcher to draw inferences about future activity. This theorizing concludes with an analysis that involves drawing inferences, developing models, or generating theory. The trick is to link the conceptual elements (two theories) in some meaningful way (Merriam, 1998). In the case of SATURN!, two theories were combined to illustrate the change process more thoroughly–the diffusion-of innovation theory (Rogers, 1995) and force field analysis (Lewin, 1951). The combination of these theories provided the guiding force behind the conceptual framework, titled Winds of Change.

This conceptual framework or model, shown in Figure 5.1, portrays my perception of how a school administrator should view school change. In this model, the tenets of Rogers's diffusion-of-innovation theory involved a new innovation such as SATURN! being Communicated across Channels over Time. This model provides a framework for Time, the Rate of Adoption, and Take-Off or moment of Innovation. Lewin's (1951) force field analysis was added because, although Rogers's model indicates when an innovation was adopted, it does not illuminate the forces that support and resist the innovation. Diffusion-of-innovation theory alone does not explain why an adoption occurred, only when it occurred. Force field analysis includes the additional factors of resistance and support, as well as the variables of Loss, Change, Organizational Theory, and Information Technology. At various times in the innovation process, all of these factors impeded or supported the innovation of SATURN!, hence affecting the rate of adoption.

I hope that the findings of this single-case study will help school administrators, both as individuals and as team leaders, as they implement future change initiatives. Administrators then will find it beneficial to think more deeply about the process of

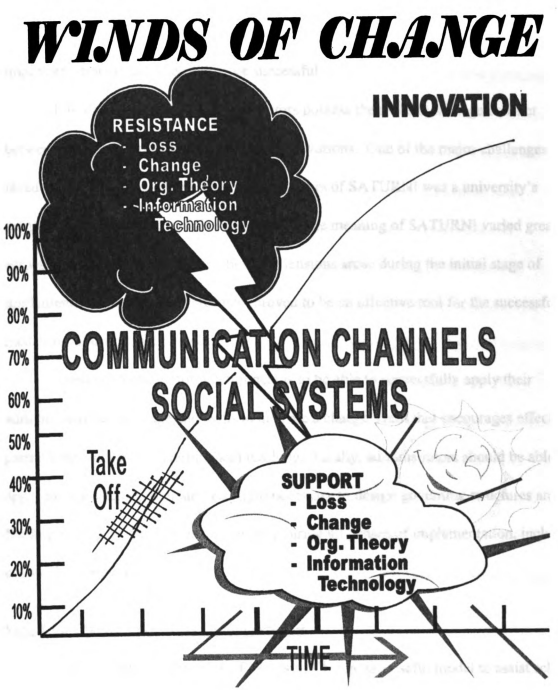


Figure 5.1: Winds of Change: How a school administrator should view school change.

change and how it affects leadership styles. First, administrators must have the knowledge and skills to effectively frame processes of communication. As the results of this study indicated, communication issues proved problematic in the early stages of the project's implementation. When these issues were effectively managed, the implementation process became more successful.

It is also important that administrators possess the skills to manage conflict between and among people, groups, and organizations. One of the major challenges that faced the project director and other administrators of SATURN! was a university's management of multiple middle school sites. The meaning of SATURN! varied greatly across each segment of the population. As tensions arose during the initial stage of implementation, conflict management proved to be an effective tool for the successful mediation of problematic issues.

Another challenge for practitioners is to be able to successfully apply their administrative knowledge and skills to mediate a change event that encourages effective partnerships focused on learning and teaching. Finally, administrators should be able to apply the knowledge, skill, and foresight necessary to design governing structures and funding strategies that enhance the project during all phases of implementation, including eventual sustainability.

Model for Change: For School Administrators

The conceptual framework of Winds of Change is a useful model to assist school administrators in confronting and managing issues of school change. Lessons learned from the SATURN! project are highlighted using this framework. The theories of

diffusion of innovation (Rogers, 1995) and force field analysis (Lewin, 1951), along with supporting theories of organizational culture (Schein, 1992), school leadership (Bolman & Deal, 1997), and educational change (Fullan, 1991) aid in understanding and managing the process of change within this conceptual model.

What lessons have we learned from the SATURN! project and how a school administrator should implement the process of change? First, what have we learned about the importance of the communication process. A learning culture such as the SATURN! project needs to be built on the assumption that communication and information are central to organizational well-being; therefore, a multi-channel communication system deeds to be developed that allows everyone to connect to everyone else. One of the important roles for SATURN! leaders was to specify for any given task what the minimum communication system needed to be and what kind of information was critical to effective problem solving and learning (Schein, 1992).

According to diffusion specialist Everett Rogers (1995), the diffusion process represents a special type of communication in which the messages are about a new idea, such as SATURN! The newness of the idea in the message content gives diffusion its special character. This newness also means that some degree of uncertainty is involved in diffusion (Rogers, 1995). At the beginning of the SATURN! project, tensions were created because there was no common set of assumptions and processes for communication. Issues concerning communication were prevalent during the implementation of the SATURN! project, not only at the Winbald site, but throughout all of the consortium sites and SATURN! Central (Southwestern University). Frustration

increased when the communication was poor between sites and between the sites and the university; conversely, frustration decreased when communication improved.

What have we learned about the role of managing conflict in collaboration? The theme that emerged from the collaborative process throughout the SATURN! project was that the potential for conflict exists whenever incompatible activities occur, such as the creation of an after-school computer klubhouse. According to Fullan (1991), when initiating an innovation such as SATURN!, it is prudent to assume that conflict and disagreement are not only inevitable but also fundamental to successful change. Smooth implementation is often a sign that not much is really changing.

Conflict management proved to be an invaluable tool in dealing with the various negative components of collaboration during the SATURN! project. These components were jealous or envious high school teachers, a middle school custodian who was inconvenienced, and personnel at Winbald and Southwestern University who had issues involving miscommunication. Managing these elements proved critical in making the initiative a success.

What have we learned about the role of partnerships? In the initial stages of the SATURN! project, finding a satisfactory arrangement of roles and relationships was an ongoing struggle in the partnership between the SATURN! school districts and Southwestern University. As the SATURN! project became ingrained in the culture of the individual school districts, it also had taken on a cultural role within Southwestern University. The SATURN! culture presented Dr. Lee, his staff, and the individual site coordinators with various challenges as the organizational culture began to assume a life of its own. According to Bolman and Deal (1997), most managers confront enduring

structural dilemmas as tough tradeoffs with no easy answers rather than responding to well-defined problems with a clear-cut solution.

Variations in leadership styles also became problematic for the SATURN! project. The project began with what seemed to be excessive autonomy. The site coordinators were given virtual carte blanche to administer their programs as they saw fit, with little direction from SATURN! Central. According to Bolman and Deal (1997), when individuals or groups have too much autonomy, people come to feel isolated and unsupported. Feelings of isolation did indeed exist in the early stages of SATURN! but were overcome later with improved communication channels that allowed for better interaction among the sites as well as between the sites and SATURN! Central. We have learned, then, from examining the role of partnerships in school change that tensions will arise involving issues of communication, organizational goals, competing leadership styles, and culture.

What have we learned about funding and governance? The funding designated for the SATURN! project was specific and exclusive. Although the project was substantially funded, the funding aspect created its own unique tensions and also brought about unforeseen funding demands that surfaced later in the project.

We have also learned that a grant-funded project may exclude more students than it includes, much like a categorical incentive. Further, selective funding may give rise to issues of jealousy, which impede the rate of technology innovation, and a grant-funded initiative may cost a school district far more than anticipated. It is impossible to discuss funding in the case study of SATURN! without linking funding to leadership. According to Sarason (1991), the management of resources is insolubly linked to governance and

leadership. In the case of SATURN!, the superintendent and the board of education of Winbald Schools wanted SATURN! to continue after the federal funding expired, and plans were in motion to make this happen. In this way, then, funding and leadership were closely linked. Finally, if the superintendent and board of education back an initiative, it will be funded and thereby bring about some form of change.

Finally, what have we learned about the role of leadership for change? The role of leadership in the SATURN! project proved essential in supporting the change initiative. As the originator of SATURN!, Dr. Lee was responsible for providing at-risk middle school students a safe, technology-rich location to attend after school, and for using their expertise in addressing and solving community problems through technology. Beyond this edict from the grant proposal, the design of the project was open to the interpretation of the leadership of Southwestern University and the individual sites. There was no other model and few rules to follow.

At the outset, various tensions of hindrance and support did surface, including issues of communication, collaboration, governance, and funding. According to Schein (1992), during the process of change, leaders often have to absorb and contain the anxiety that is unleashed when things do not work as they should. Superintendent Hardy provided unwavering financial support of SATURN!, and site coordinator Mike McCartney provided leadership through communication and collaboration with the middle school staff and Southwestern University. Dr. Lee provided a model of stability during the start-up phase of the project.

What has been learned about the change process, and what are the ramifications for leaders? First, implementing a multi-partner change initiative across sites requires a

thoughtful and shared understanding of what the role of partnerships entails in "partnerships in change." A critical structural challenge for the SATURN! leadership was to hold their fledgling organization together without holding it back. When structures are too loose, people go their own ways or get lost, with little sense of what others are doing. Conversely, structures that are too tight stifle flexibility and cause people to spend much of their time trying to get around the system (Bolman & Deal, 1997).

Another facet of leadership is to break complex changes into components and implement them in a divisible or incremental manner (Fullan, 1991). This was the guiding philosophy of Dr. Lee's leadership style as the 10 SATURN! sites were given the autonomy to operate their klubhouses independently of each other, as long as the goals of the project were attained. Bolman and Deal (1997) indicated that this style of leadership represents the paradoxical capacity to stimulate change and pursue high-risk new ventures while maintaining commitment to core ideology and values.

It is also important to understand how differing organizational purposes and intentions affect the meaning of an innovation and, in effect, how the innovation is communicated (hence the importance of the communication process). According to Schein (1992), a fully connected network can work only if high trust exists among all of the participants, and that trust is partly a function of leaders' assumptions that people can be trusted and have constructive intentions.

Successful leadership requires skills to manage conflict in collaboration, particularly across multi-partner sites. Administrative support proved essential in establishing and supporting an environment in which implementation could occur.

District administrators and Dr. Lee supported the SATURN! project during the early stages of growth, when most projects experience the highest rate of failure. According to Schein (1992), the traumas exhibited during the early stages of growth of innovations appear to be so constant and so powerful that unless a strong leader assumes the role of anxiety and risk absorber, the group cannot progress through its early stages of growth and thus will fail.

We has also learned that management of conflict may be viewed as management of the organization's culture. Schein (1992) considered leadership to consist of the creation and management of culture. Culture creation, culture evolution, and culture management are what ultimately define leadership (Schein, 1992). Dr. Lee's actions in establishing a personal relationship with all of the project participants were indicative of his leadership style. We have further learned that conflict need not be negative if it is managed effectively. During the implementation of SATURN!, the tensions that arose proved to be a useful vehicle for Dr. Lee to communicate his vision for the project, communicate with all members of the consortium, and redirect his staff in meeting the needs of the constituent districts. As Fullan (1991) asserted, conflict is an inevitable yet valuable part of the implementation process.

We have also learned that addressing jealousy and ambiguity through shared meaning-making and clear, effective, inclusive communication is what makes innovations work. What's in it for me? exemplifies an individual working out his or her own meaning for an innovation. According to Habermas (1984/87), it is important for the leader to focus thinking about organizational change from the broader, general patterns of change that affect the organization as a whole, down to the difficult

psychological adjustment individual members of the organization must make during the actual implementation process. Fullan (1991) stated that significant change involves a certain amount of ambiguity, ambivalence, and uncertainty for the individual regarding the meaning of the change. Thus, effective implementation represents a process of clarification.

Further, we have learned that governance and resources are not separate variables. They are closely related and, in this case, very much determined how SATURN! was presented and innovated. Sarason (1991) contended that, far from being an independent variable, a program innovation such as SATURN! is enmeshed in the relationship between governance and the definition of resources. This interdependence of leadership and funding was illustrated by the Winbald superintendent's pledging the support of the board of education. This ensured the sustainability of SATURN!, allowing it to become ingrained within the curriculum of the district through adequate funding and administrative support.

Leadership for change requires that a successful leader understand the role of partnerships. The leader must also understand the role of differing organizational purposes and the innovation process. Issues of conflict during collaboration as well as jealousy and ambiguity must also be understood and dealt with. Further, the roles of funding and governance are closely linked. In the case of SATURN!, Dr. Lee's effective leadership was evidenced by his ability to visualize SATURN! and to integrate needs, roles, power, and symbols to provide direction. The role of leadership also is one of power, portrayed by Superintendent Hardy's autocratic leadership in providing unwavering support and funding for SATURN!

## Implications for Further Research

Several themes emerged from this case study that will provide future researchers with a rich data base for further investigation. The first theme concerns the complex relationships that develop across different institutions as they establish partnerships and how those partnerships influence innovations and change processes. For example, is exploitation an issue when universities form partnerships with K-12 school districts for a specific and limited funding initiative? What happens when the funding commitment expires? What does the organizational structure typically look like in a funding initiative involving a university and a public school?

The next theme concerns the possibility of creating new organizational structures that value empowerment, participation, and collaboration and how these values might drive innovation and change. For example, would the rate of adoption be more rapid and thorough in an organization that was guided by such principles? Would the organizational structure of a public school district support this type of leadership for change?

The third theme concerns the development of usable, applied communication skills for change agents that assist them in addressing the human side of change, as well as the politics and economics of the change event. For example, in public school districts, will the change agents continue to be administrators? If not, what are the implications for leaders of public schools in delegating and supporting the empowerment of other staff members? Also, what type of training is available to provide the rich background that a successful change agent needs to understand the politics of the change process?

The last theme concerns the need to better understand whether and how information-technology innovations influence second-order change, actual learning. For example, Clinton High School in Michigan has established a virtual high school and is marketing this for-credit service to other school districts. How has this new technology-based delivery system affected the learning process and culture in the participating school districts? Another example worthy of further study is a university/public school research undertaking, called the Jasper Project, that is being developed by a cognition and technology group at Vanderbilt University. The group is studying the effect of infusion of technology in a public school district on teaching practice. What has the Vanderbilt study added to the research in the area of second-order changes and learning? During the Jasper Project partnership, did similar factors of support and resistance surface as they did at Winbald? Why or why not?

## A Scholar-Practitioner's Reflections

I have been employed as a school administrator for 24 years, the past six of them as a superintendent. From this study, I have learned three things about the change process that I can use in my practice as the superintendent of a class B school district (2,000 students in grades K-12). The first is that change creates adversity, yet when individuals think they are being treated fairly during the change process, they are more likely to accept the changes presented to them. The second is that, when a change initiative is undertaken, conflict and disagreement are not only inevitable but also fundamental to successful change. The third is that a grant-funded initiative may exclude more students than it includes, much like a categorically funded project.

Further, as a new researcher in the field of education, I have learned that it is important to develop writing skills, interviewing skills, and a critical thought process, as well as being able to conduct accurate evaluations of programs. In the end, my doctoral journey and especially the dissertation process have helped me become a better and more thorough observer, listener, and program evaluator. The writing process in particular has enabled me to gather information from a variety of sources, then synthesize and report it accurately and descriptively. This skill is invaluable for a school superintendent, who must communicate effectively on a regular basis with staff, students, and community members.

# APPENDICES

# APPENDIX A

## CONTEXT OF THE SCHOOL DISTRICT AND THE COMMUNITY

# CONTEXT OF THE SCHOOL DISTRICT AND THE COMMUNITY

## Introduction

The unique history and demographic characteristics of the Winbald Area School District, which includes the villages of Winbald, Eden, and Lake Township, are presented in this appendix. Of these three villages, the village of Eden recently has been of particular interest to educators and historians because Eden is the former black resort retreat that was heralded as the Black Eden as recently as 35 years ago. It fell on difficult times during the late 1950s, when integration and the civil rights movement forever changed the demographics of the nation, this community, and its school district. Another unique feature of the Winbald area is the world-class trout-fishing river known as the Big Star. The Big Star River winds throughout the Winbald Area School District and provides anglers from all over the world an opportunity to ply their fishing skills to snag the elusive brown trout and steelhead trout in a world-acclaimed fishery.

Next, characteristics of the Winbald Area School District are described in detail. Then I present an overview of Winbald Middle School, the site of the SATURN! klubhouse that was the focus of this study. Interviews with Winbald personnel associated with the project provided information that was useful in understanding the development and implementation of the SATURN! project at Winbald. The pre-SATURN! technology capabilities of the district also are discussed.

## History and Geography of the Study Setting

To appreciate fully the nuances and logistics of Winbald Area School District, it is important to recognize the three geographic areas that comprise the district: the

villages of Winbald, Eden, and Lake Township, all of which are located in Eden County. (See Figure A1 for a map of the area.) The unique features of each village are discussed in the following pages.

Winbald is the county seat and is situated in the middle of one of the state's top outdoor recreation areas. The community is located on the Winbald River, approximately three miles north of where it joins the Big Star River, one of the state's finest canoeing and trout-fishing rivers. There are more than a dozen lakes within just five miles of the city limits, including Round Lake, Johnson Lake, and Government Lake. Winbald is known for the creation of specialty fishing lures and for shops featuring sports outrigging equipment, hand-crafted gifts, and lumber-era (late 1800s) antiques. Winbald is the center of activity for the many resorts and cottages in the area. It holds a Troutarama (trout-fishing festival) each summer and hosts the Blessing of the Bikes (motorcycle jamboree/religious celebration) in May.

Winbald originated in the 1870s during the state's grand lumber and timber era, when wood from the area's abundant white pine was a highly prized commodity. In 1872, the first store was built by Jeremiah Marshall, who asked a committee of residents to give the village an official name. The committee decided on Winbald City, after Henry P. Winbald, the state's governor; City was later dropped from its name. Winbald was given a station or depot on the Big Star Railroad in 1873 and became the county seat a year later. It was incorporated as a village in 1887 and remains a village today. All villages in the state have characteristics unique to this particular form of government. The designation of *village* or *city* is the result of history, tradition, legislation, and local

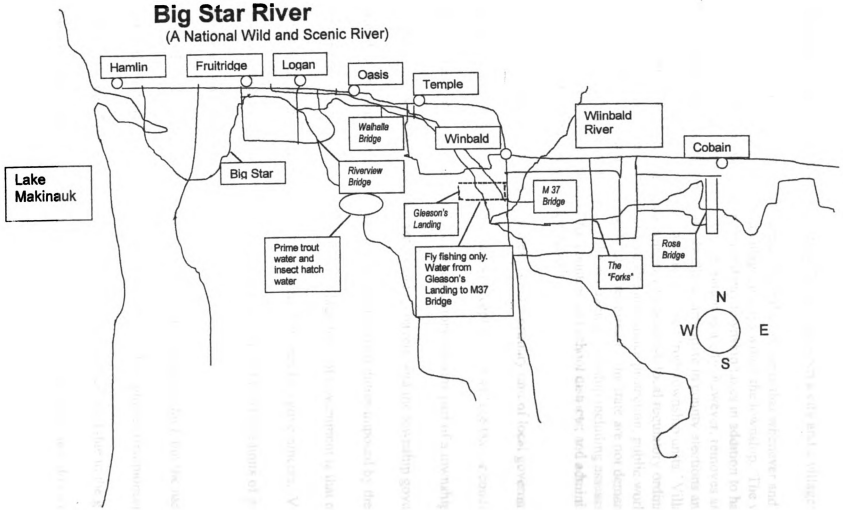


Figure A1: Map of the Winbald area.

initiative, as opposed to being based on population. A publication by the Makinauk Municipal League (1994) explains the difference between a city and a village:

> The basic difference between a city and a village is that whenever and wherever an area is incorporated as a village, it stays within the township. The villagers participate in township affairs and pay township taxes in addition to having their own village government. Incorporation as a city, however, removes an area from township government. City dwellers participate in county elections and pay county taxes as do villages but are removed from township units. Villages in [Makinauk] are organized primarily to establish local regulatory ordinances and to provide local services such as fire and police protection, public works and utilities. Certain of the local duties required by the state are not demanded of the village but are performed by the embracing township including assessing property; collecting taxes for counties and school districts; and administering county, state and national elections.

A village such as Winbald, then, is not a primary unit of local government because it does not assess or collect taxes (except its own village tax) or conduct a state election (except its own election). Village territory remains part of a township area, village citizens are also township voters and taxpayers, and the township government provides for residents of the village the legally required duties imposed by the state. Perhaps the most interesting aspect of the village form of government is that only in villages are the governmental activities divided between two governments. Village residents such as those in Winbald live under and support two local units of government, the village and the township.

Eden County was originally named for a Potawatomi chief, but the name was changed to Eden in 1843. The vast white pine forests brought the first pioneers to the area. Between 1870 and 1890, the forests were quickly lumbered due to the great demand for the highly prized state white pine. Selected logs were sent down the Pine, Little Bend, and Big Star rivers to the neighboring towns of Hardy and Andersenville; the

rest were cut in one of Eden County's 25 sawmills. The lumbering era did not last long because the lumber barons and lumberjacks cleared the land of the most marketable white pine and moved on to stake new claims in Canada and the western part of the United States. With the demise of lumbering, the remaining population of Winbald and the surrounding area looked toward agriculture and tourism for a livelihood. Because of the sandy nature of the soil in this area, only a small portion of land was ever cultivated. Even today, very little commercial farming is done.

Timber and tourism are still the predominant economic activities in Winbald and the surrounding area. Pulpwood from third-generation red and jack pine is harvested annually, as are selected stands of hardwood trees such as oak and maple. This timber is processed locally or shipped to one of the many sawmills in the state. Also, tourism is rapidly gaining in importance as many of the state's residents make the one- to three-hour drive to the Winbald area from major metropolitan areas.

Land in the Winbald area is still affordable and is readily available. This affordability makes the location attractive to middle- and lower-middle-class retirees from the state's metropolitan regions. The heavily forested, easily accessible state (public) land offers spectacular opportunities for hunting, fishing, snowmobiling, cross-country skiing, hiking, and camping. Among all of the recreational opportunities in the area, fishing is the most notable and is almost unlimited due to the vast tracts of state land and the three major trout streams/rivers that traverse the county. The two most favored stream trout, which are highly sought by anglers throughout the Midwest, are the European (German) brown trout and the steelhead trout. It is these fish that have indeed put Winbald on the map as one of the top recreational fishing locations in the world.

Interestingly, neither the German brown trout nor the steelhead trout is native to the Winbald area. These trout, which are now so important to the local economy, were introduced to the state in the late 1800s as a possible solution to the decimation of the native brook trout. The destruction of the brook trout's stream habitat was the result of lumber barons' inattention to conservation practices as they harvested the white pine. The logged-over landscape proved fatal to the local brook trout species. As a result, interested local anglers and business people searched for an alternative fish to the brook trout that would thrive in the recently deforested environment. In 1880, the future of generations of anglers was shaped by the introduction of two new trout species into the state.

The brown trout, or German brown *(Salmo trutta)*, is a European relative of the Atlantic salmon and was planted in the Big Star River in Lake Township in 1884; this was the first brown trout stocking in the United States. These resourceful fish managed well in the sandy, logged-over watershed areas of Makinauk, which were no longer suitable for brook and other trout. In addition, the German brown trout could grow faster and live longer than other kinds of trout. By the early 1920s, the river had become a magnet for Midwest anglers in pursuit of the trout. The Big Star Railroad established access to the river, and soon many prestigious fishing clubs were established, similar to the fishing clubs located in the Catskills Mountains in New York state [Online] (Available: http://flyanglersonline.com/features/_greatrivers/pm/1/17/01).

The steelhead trout is another success story from the turn of the century. In 1883, a small planting of 25,000 McCloud River, California, strain fingerlings (steelhead trout fry) were introduced in the Winbald area's Little South Branch River. This would signal

the start of a world-class steelhead fishery in the Winbald area. Steelhead plantings continued in the Winbald area between 1880 and 1893, including the Klamath and other West Coast trout/salmonoid strains, which fused genetically with each other. In 1914, runs of steelhead were so thick on the Big Star River that laws were being considered to allow for spearing or netting. Good spawning gravel and holding water were found in the entire Big Star watershed, including the many tributaries feeding into the river. The plantings of the steelhead trout resulted in a world-class fishery that is still dynamic today.

By 1914, the county was regarded as having some of the finest trout streams in northern Makinauk, and that tradition continues today. The Big Star River has been designated a national scenic waterway and is enjoyed by anglers and canoeists alike.

Perhaps one of the most unique communities in the United States is the resort community of Eden. Eden is a small village near Winbald and is also part of the school district. This resort community was created to serve African Americans, who were barred from the segregated white resort communities that existed during the Depression and World War II. The community was known by the name of Black Eden during the peak of its popularity in the early part of the 20th century and has also been called "the luxury resort that discrimination built" (Nolan, 2000).

Eden County was created in 1840, and although the county is not on Lake Makinauk, it does contain 156 small lakes. The geographic center of the Hardytown National Forest, it has three famous trout streams, plentiful deer, grouse, and wild turkey. In the early years of the 20th century, a group of developers bought 2,700 acres of land in Spring Township around Paradise Lake. The land was 70 miles north of the state's

second largest urban area and 30 miles east of Lake Makinauk. Prominent investors began to advertise the lots in black newspapers and recruited black salespeople by offering them a lot for every one they sold.

Small lots, 25 feet x 100 feet, were sold for $35; purchasers put $6 down and paid $1 a week. A typical ad touted high and dry building sites, beautiful lakes of pure spring water, perfect hard sandy beaches, beautiful timber, a profusion of wildflowers and berries, and myriad game fish and game (deer, partridge, rabbits) of all kinds. Excursions were organized for prospective black buyers from urban areas, for groups as large as a hundred, but usually smaller, who would arrive by bus or train. When the visitors returned home, the salesmen would visit the city where the excursion had originated and organized the buyers into the Eden Lot Owners' Association.

Segregation policies at most resorts kept middle-class blacks from vacationing comfortably. The concept of a black resort was welcome to those who had encountered discrimination in their travels. Larry and Lea Jones came from Chicago in 1915, along with Dr. Richard Douglas Johnson, a prominent black heart surgeon, and other "pioneers." These early landowners bought 10 miles of telephone wire and set up their own telephone company with 13 subscribers. Dr. Johnson's prominence attracted more investors, and owning Paradise property became a status symbol.

Another Eden advocate, N. E. T. LaCombe, was the first black American to earn a Ph.D. from Harvard. LaCombe was a strong proponent of a black intelligentsia, whose leadership would elevate the position of all black people. In 1921, LaCombe described Eden in the NAACP magazine:

> For sheer physical beauty, for sheen of water and golden air, for nobleness of tree and flower shrub, for shining river and song of bird and the low moving whisper of sun, moon, and star, it is the beautifulest stretch I have seen for 20 years; and then add to that fellowship–sweet strong women and keen-witted men from Canada and Texas, California and New York, Ohio, Missouri and Illinois–all sons and great-grandchildren of Ethiopia, all with the wide leisure of rest and play, can you imagine a more marvelous thing than Eden.

LaCombe bought lots there, although he did never built a home. He also commended the developers, stating that "Eden is worth every penny."

These renowned early residents and vacationers gave Eden a caché that attracted many less famous, middle-class blacks to the Makinauk "Eden." Blacks who could afford resort vacations were unwelcome at most white resorts, and with the imprimatur of the black elite and the area's natural beauty, Eden had much to offer, as an early promoter promised: "When you stand in Eden, breathe the fresh air, and note the freedom from prejudice, ostracism, and hatred, you can feel yourself truly an American citizen."

The white developers turned over the resort to the Eden Lot Owners' Association in 1921. The Paradise Lake Clubhouse was built on the island in the 105-acre Paradise Lake. Floors were set on lots along the lake for canvas tents, which later were replaced by bungalows. Eventually, substantial homes were built for those who could afford them, many of whom were early real estate investors.

The resort grew from the 1920s through the 1950s. The 1940s saw black plant workers earning good wages in the war effort. A 1957 article mentioned 1,000 summer homes and rental cottages; 50 motels and lodges; 2 hotels; dozens of shops, grocery stores, restaurants, nightclubs and taverns, beauty shops, and service stations; a roller-

skating rink; a riding stable; and 2 swimming and bathing beaches. At least 13 churches flourished.

From the 1930s to the 1960s, top entertainers from across the country performed at Eden's clubs: the Flamingo Club, the Paradise Club, and the Purple Palace. The El Morocco was an after-hours spot, the place to go when the other clubs closed, open until 8 a.m. Stars who were just starting out and those who were at the peak of their careers performed at Eden. Their names are legendary: Sarah Vaughan, Cab Calloway, Louis Armstrong, Della Reese, Dinah Washington, B. B. King, the Four Tops, Aretha Franklin, Sammy Davis Jr., and Bill Cosby. Moms Mabley, T-Bone Walker, Fats Waller, and Billy Eckstein performed at Eden as well. Three of the Four Tops met their wives there. In its heyday, Eden drew as many as 22,000 people on a summer day.

In the 1960s, great strides were made toward integration. The 1964 Civil Rights Act forbade discrimination in housing, and white resorts opened their doors to blacks. Integration spelled the end of an era for Eden. Across the nation, other resorts became integrated and blacks left behind Eden and other segregated resorts and clubs for the more prestigious (and formerly exclusively white) resort areas like Las Vegas, Florida, Cape Cod, and the Catskills Mountains. And along with the people went the entertainers who had made Eden so special and unique in American history (Nolan, 2000).

As the civil rights movement brought a rapid end to the popularity of the Eden resort area, long-time Eden resident Robert Hughley summed up the resort's demise: "When that civil rights come on, you could go in anyplace you want to. Now that knocked Eden down. It was the knife in the back of Eden" (Kotolwitz, 1984).

## Demographics of the Winbald Area

At the time this study was conducted (April 2000), Eden County's economy was heavily dependent on tourism and recreation, and there was little else in the way of employment opportunities. For a person from Eden County to find employment (and thus health care benefits), he or she often had to commute to a nearby county or city. Unfortunately, many of the working-age residents could not afford reliable transportation. In 1997, the population of the county was approximately 10,153, an increase of 18.3% since 1990. Similarly, the population had increased 11.3% between 1980 and 1990. The population density was 15.12 people per square mile. So, there was growth in Eden County, but it appeared to be at the older end of the age spectrum and included mostly retirees who were not native to the area but had built homes and become permanent residents. To illustrate this point, in 1994 there were 114 births and 142 deaths, yet the county still experienced growth, indicating that the population increase occurred because of an influx of new residents who were retirees. Twenty-six percent of the population were under the age of 18, and approximately 50% were over age 65 (U.S. Census Bureau, 1995).

In 1995, the ethnic composition of the county was 85% white, 14% black, 1% Native American, .7% Hispanic, and .1% Asian. The crime rate in Eden was approximately 8.91%, only slightly lower than that of a nearby metropolitan city (U.S. Census Bureau, 1995). Perhaps the most telling statistic regarding Eden County and the surrounding area is that the number of individuals living below the poverty level was the same in 1994 as it was in 1989 (26.4%), even though the median household income did increase between 1990 and 1994–from $14,562 to $16,667 (U.S. Census Bureau, 1995).

Other statistics of interest pertain to educational attainment. According to 1990 census data for Eden County, persons over the age of 25 who were high school graduates comprised 61.3% of the population, whereas only 6.6% of the population were college graduates. Public school enrollment totaled 936 students in the 1991-92 school year, decreased to 876 in 1994-95, and rose to 935 in 1999-2000. The unemployment rate in 1990 was 12.3%, and by 1996 it had improved only slightly, decreasing to 11.2%. This unemployment figure was still very high, considering the booming economy that most other locations in the state experienced between 1990 and 2000.

In conclusion, Eden County is a growing retirement locale with a high poverty level and a low level of educational attainment among many of the local and lifelong residents. It is within this environment that Winbald Area Schools must attempt to deliver a quality education to its students.

## Winbald Area Schools

Winbald Area Schools is a small, class-D school district. This size of district is common in northern rural Makinauk. In contrast, in the more populated regions of southern Makinauk, the school districts tend to be more suburban, have larger student populations, and cover fewer square miles. In Makinauk, the class of a school district is determined by high school population:

> A class-D-sized school district equates to a school district with an enrollment of 242 or lower for grades 9-12. This classification of school size is dictated by the [Makinauk] High School Athletic Association and changes yearly. The MHSAA calculates this average by taking the total number of high school students and the total number of high schools in the state, then dividing them up into four fairly equal groups. (Makinauk State High School Athletic Association, 2001)

The Winbald district had experienced a decline in enrollment over the past several years, but the enrollment overall had remained fairly consistent. At the time of the study, approximately 900 students were enrolled in kindergarten through twelfth grade. Another 35 students were enrolled in the district's alternative education program, which was self-paced and was designed for middle- and high-school-age students who had not succeeded in the traditional program. Much of the alternative education curriculum was computer based, and the majority of the instructional techniques and materials had been adopted from the Winbald SATURN! klubhouse.

Two administrators, both of them principals, were in charge of the middle school and high school. The remaining nonteaching staff included a general secretary, a special education secretary, an attendance clerk, a counselor, a receptionist, a student advocate, and four custodians. In addition, an athletic director and her secretary interacted daily with the middle and high school students and staff. An organizational chart depicting the administrative structure of Winbald Middle/High School is presented in Figure A2. Although the structure is basically hierarchical, there are some interesting features; for instance, the secretaries and principals appear to have the most access to all groups of educators and support personnel. The board of education and the superintendent appear to be the most isolated, according to this organizational chart.

Forty percent of the district's student population are minorities. Further, students in the district consistently score in the lowest one-third on the state-mandated Makinauk Educational Assessment Program (MEAP) and High School Test (HST) assessments. The statistics included in Table A1 were found on the Makinauk Department of Education's web site, which is easily accessible by staff, administrators, and parents.

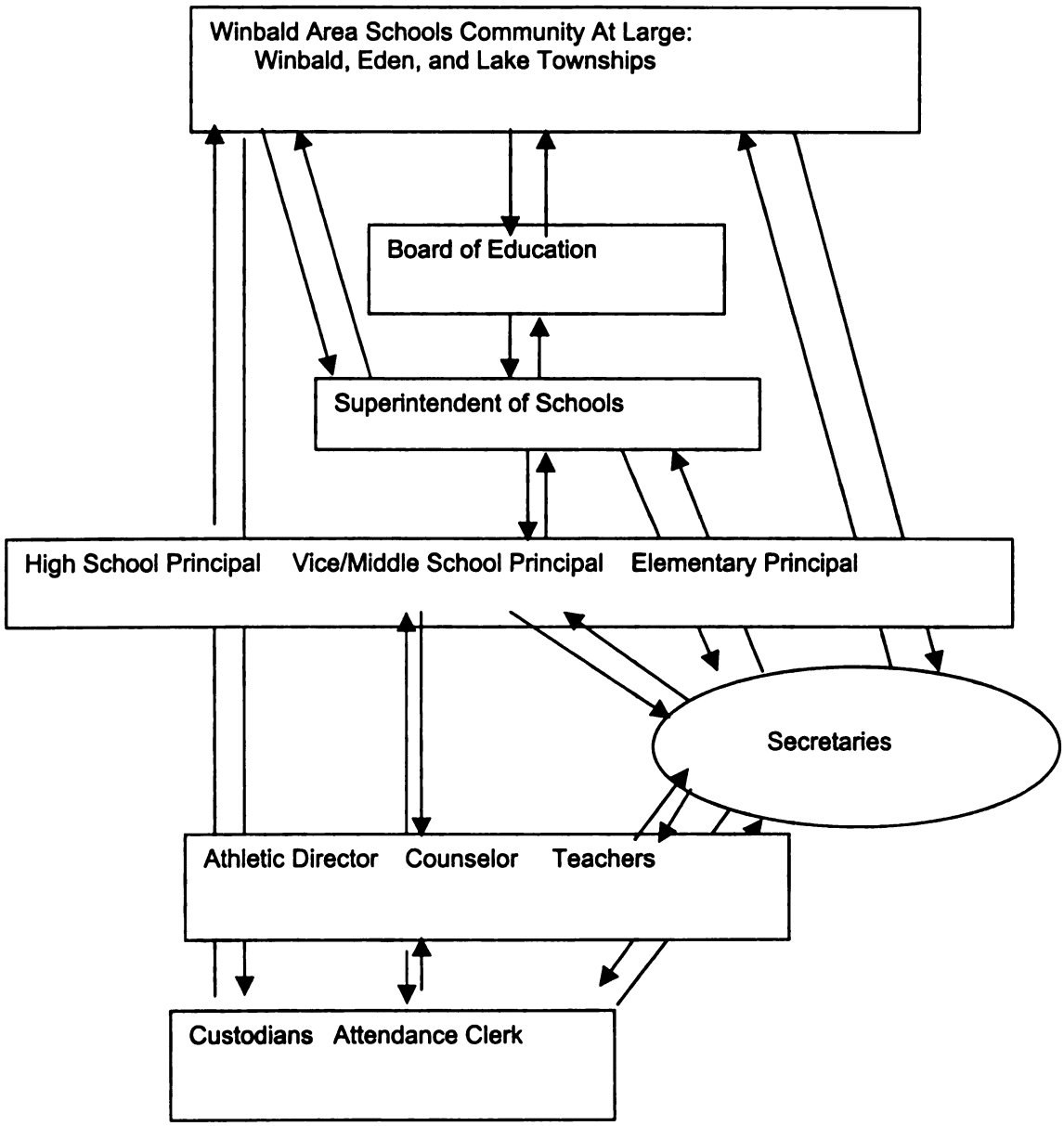


Figure A2: Administrative structure of Winbald High School and Middle School.

Table A1: Enrollment, financial, dropout/completion, and MEAP/HST statistics for Winbald Area Schools, 1996-97, 1997-78, and 1998-99.

| Description | 1996-97 | 1997-98 | 1998-99 |
|---|---|---|---|
| **K-12 Enrollment** | 792 | 792 | 756 |
| **Pupil/Teacher Ratio** | 18.3 | 23.2 | 18.0 |
| **Financial Data** | | | |
| Foundation allowance per pupil | 5,621 | 5,775 | 5,775 |
| Current operating expenditures per pupil | $7,453 | $7,177 | n/a |
| Total revenue per pupil | $7,861 | $7,996 | n/a |
| Average teacher salary | $34,830 | $41,620 | n/a |
| **Dropout/Completion Rates** | | | |
| Dropout rate (1 year) | 11.2% | 4.2% | n/a |
| Completion/graduation rate (4 years) | 63.2% | 86.3% | n/a |
| **MEAP and HST Results** | | | |
| **MEAP–Grades 4 & 7 (Percent Satisfactory)** | | | |
| Math–4th grade | 50.0% | 52.8% | 70.2% |
| Math–7th grade | 22.0% | 26.1% | 32.1% |
| Reading–4th grade | 36.4% | 41.5% | 61.7% |
| Reading–7th grade | 16.0% | 20.0% | 37.7% |
| **MEAP–Grades 5 & 8 (Percent Proficient)** | | | |
| Science–5th grade | 9.8% | 21.3% | 21.7% |
| Science–8th grade | 9.5% | 2.5% | 8.8% |
| Writing–5th grade | 62.7% | 46.8% | 33.3% |
| Writing–8th grade | 76.2% | 41.0% | 67.6% |
| **11th Grade HST (Percent Met or Exceeded State Standards)** | | | |
| Math–11th grade | n/c* | 23.5% | n/a |
| Reading–11th grade | n/c* | 22.2% | n/a |
| Science–11th grade | n/c* | 23.5% | n/a |
| Writing–11th grade | n/c* | 21.4% | n/a |

As indicated earlier, the students enrolled in Winbald Area Schools are from the lower socioeconomic strata of society. As a result, many of the ills besetting a community that is impoverished both economically and academically are present in the Winbald district, including apathy, low test scores, discipline problems, and a high dropout rate. Still, despite these obstacles to learning, principal Jerry Edwards believed

that vocational and technology programs such as SATURN! could make a difference in an at-risk school district such as Winbald. He stated,

> I don't care who you bring in here as leadership and what you do, we're just not going to tear MEAP [Makinauk Educational Assessment Program] scores up. We are not going to be up there with the top group. It's the clientele we work with. But you can see how our kids with hands-on programs and vocational programs can excel. Sometimes we get so caught up that we measure everybody by college-bound. Or how many kids do well on the ACT or the SAT and how well they do on MEAP scores because that's what the governor wants. But you know what? I have a different theory, working in an at-risk district like this, and I've worked at one before as a teacher. If we can produce a kid who can go out and be a mechanic or build a house okay, and is doing something positive, contributing, raising a family and doing the right thing, there's certainly nothing wrong with that. And that ties in with this SATURN! klubhouse in a sense, because you can go around and see the talents of many of our students. In these types of hands-on programs that they're doing, they can see the development and it encourages them. And I'll go look at the same kid in the classroom, and this kid is barely passing. So what does that tell you?
>
> The reason that this program has been so good for this district is that there just aren't any things for kids to do here [in Winbald]. People are starting to come to our school. So for us to have this [SATURN!] for our kids, an after-school program like this, on a consistent basis, and have two people to run the program and have their hearts into running a good program, there's a line outside the door every night for kids to be in this room. In this community, there just isn't anything else for them to do. This program has been a godsend for our school. It really has. And what great publicity, because sometimes Winbald just hasn't had the greatest publicity. But this SATURN! klubhouse has brought us more positive publicity in the last two years since I've been here than probably any other program that we have going districtwide. (Interview transcript, April 11, 2000)

There was a growing spirit in Winbald among staff and students that translated into a quest for being on the cutting edge of technology and being a part of something new. People were making a conscious effort to refuse to make do with conditions of the past and promote the positive aspects of the school district.

Teacher Cindy Hapsburg related how the SATURN! project had infused her and her students with a renewed enthusiasm for teaching and learning:

> Even for me it's changing how we're thinking about teaching because it used to be I had to train the kids [to use] the computer. I would take them over for English class or for social studies, whatever, to research. I would have to train them all. Now they're already trained. They've got them trained before they come–you know, before we start going into the computer lab. So that saves me tons of time, saves all the teachers tons of time. Plus the kids are doing some things that enable them to bring stuff back to the classroom. They can do a PowerPoint presentation [in the] classroom but put it together in SATURN! It's given them a really great background and they can teach the other kids, so it's a time saver. It helps give them other options. For me, we're talking about doing a web museum. I would never in a million years have thought to do a web museum for Eden. But now the kids are making web pages and they're getting exposed to HTML, which is something I didn't even know about. I used to be able to program computers and I never even talked about HTML, and they're doing it. I was just sitting here talking to the kids last hour and saying, "You know, you're using Dream Weaver [software program]; are you doing your own HTML?" And the kid looks at me and says, "Yeah, I have to do some of it." I mean, what are the odds that an 11-year-old kid would learn HTML? (Interview transcript, April 11, 2000)

Before the early 1980s, the district had experienced relatively little racial strife and possessed a strong athletic tradition. However, several polarizing incidents occurred in the 1980s between black athletes and white coaches. As a result of this conflict, for many years the district had not been able to field teams that were competitive in their athletic conference. According to high school principal Jerry Edwards:

> It isn't that Winbald Schools doesn't have the athletes necessary to compete; just the opposite is true. One of the reasons I came to Winbald was that I'm a sports guy, and this school looked like it could really compete. Look at the athletes here in the hallways! I found out quickly, though, that most of the black athletes just didn't go out for sports. (Interview transcript, April 10, 2000)

Jerry explained that the divisive incidents had involved an overly aggressive, racist white coach and equally aggressive and bigoted black players and their families. This combination led to a volatile situation, with the team, coaching staff, families, and school district personnel spending more time contending with each other than they did playing basketball and other team sports. As a result, the situation had taken on almost legendary

or mythical status and appeared to be become ingrained in the black community. As a result, many of the most talented black athletes at Winbald did not go out for sports.

Principal Edwards surmised that this lack of competitiveness or unwillingness to compete due to racial tensions was another reason for the low morale and high attrition of some students. Before the early 1980s, Winbald sports and athletic competition had been a source of great pride in the community. The trophies and statues displayed in the school's trophy case were a testament to that former pride and prowess. That was no longer the case. Principal Edwards went on to say that, as far as he knew, neither the school district nor the community had ever taken steps to address this situation. Yet he strongly believed that, for the district to move forward, it was imperative that these issues be brought to the forefront of the school and the community for resolution (Interview transcript, April 11, 2000).

## Winbald Middle School

In this study, I concentrated on Winbald Middle School, the site of the SATURN! klubhouse. The middle school, located in the village of Winbald, was attached to the high school. The cafeteria and library formed the middle section of the school and separated the two student populations. The new elementary school was to be located on the same campus but would be separate from the middle/high school.

The middle/high school building was sound yet simple in design, and was constructed of concrete blocks. It needed minor repairs in various areas, as do so many school buildings of the 1950s, which were constructed with limited resources to meet the needs of a growing post-World War II population. In addition to the minor repairs, major

renovations also were scheduled for the middle/high school. A successful bond issue, the first one to pass after many failed attempts, will fund these improvements–the first major renovation to any building in the district in more than 30 years!

According to principal Jerry Edwards, John Hardy, the Winbald superintendent, was the major impetus behind the building project in the community. Jerry thought the new elementary school building, the renovated middle/high school, and the SATURN! project would get the community to believe in itself. Jerry described the impact that the Winbald superintendent had had on the schools' building project, SATURN!, and the concept of community education in bringing more educational opportunities to the citizens of the district:

> He's [Superintendent Hardy] a community education guy; he's an alternative education guy. That's part of the reason they hired him here. Because he's community based, and he's good, he's a politician. I'll tell you, he's very, very good out there, and he got the bond passed by seven votes; it hadn't been done since 1951, 1952. Okay, he got this beautiful building, and you've been around enough to know these people had no idea that this could become the reality for them. So what they needed was somebody to show them how. And he went in, and he showed them how you could pass this millage for a bond and you could get this, and you can get this, and they look around and they go "Wow!" They'd never been exposed to this. They think Pleasantville [an affluent suburb and school district 50 miles away] is another world, to have a building like that or some other beautiful building. They understand that now we're climbing the ladder!
>
> It'll be nice when this [parking lot] gets paved and you get those portables [classrooms] out of here, you get the new parking lot coming in here. People are not going to believe what's here. And, hopefully, that will raise the expectation level of the whole community. That's part of the reason they wanted John, because he's community education. He said, "I'll bring your dropout rate down, I'll keep these kids, I'll get an alternative program built up." You know, we've got a lot of work to do with that yet, but we have one in place. That's a net before they fall out in the street; we catch 'em. (Interview transcript, April 11, 2000)

Superintendent Hardy passionately believed that the Winbald district needed to move forward, not only with the building project to upgrade facilities, but also in other

areas such as curriculum. The SATURN! project was a perfect vehicle to promote the district's support of technology education. John explained:

> Everyone knows the SATURN! kids. That's why the Chamber of Commerce came to the school asking them to design a web site–because they heard about the SATURN! kids and their work. The local newspaper will call and ask, "Can the kids cover this for us?" And so it's becoming that they are getting a reputation in this town as the SATURN! kids. (Interview transcript, April 10, 2000)

At the time of the study, in April 2000, the high school and middle school principals were both relatively new to the Winbald district and the field of administration. The high school principal, Jerry Edwards, was 35 years old and had been an administrator for five years, three of them at Winbald. He was satisfied with his position and was not looking for other employment opportunities. The middle school principal, Philis Dundee, was 32 years old and had been an administrator for three years, two of them at Winbald. A black woman, she had graduated from Winbald High School. She was working toward her Ph.D. in educational administration and was looking for other employment opportunities.

Both principals had innovative ideas, such as exploring block scheduling and teaching with technology. Philis spoke about the importance of integrating technology into the curriculum and the value of SATURN! as a method of curriculum delivery:

> I think, with the population we serve, that it's excellent for them to have that exposure to computers. A lot of them don't have computers at home. I know from my own experience that the skills that they are learning, like how to use Power Point and how to make web pages, are going to be valuable skills for them if they choose to go on in their education. And I think that if everybody can get that in just a 55-minute computer class, they will have a chance. So it has helped us see that they can benefit from exposure to this technology at an early age, and that will include what we try to offer. I would also say that I know it impacts the teachers as well. (Interview transcript, April 11, 2000)

Jerry Edwards also had definite ideas regarding the use of SATURN! as an instructional-delivery tool in a challenging educational environment:

> I see our kids excelling with this SATURN! klubhouse, and the superintendent and I are saying this is maybe the direction we need to go a little more, start to emphasize and get more programs like this. Maybe we need to look at getting more vocational programs. I'm not saying you eliminate language arts, math, or science. But let's look at incorporating them more into an applied way. I don't exactly know how to do that right now, but our kids are learning here in the SATURN! klubhouse. I've seen the things that they can do here, and I see the same kids in the classroom getting D's and E's. Something doesn't work. So the interest level is here and [also] the motivation. You know, if you're interested and you're engrossed in learning, the need for discipline goes down. When you're not, discipline goes up. (Interview transcript, April 11, 2000)

Although both principals appeared to be tired during the interviews, they became very animated when talking about the SATURN! project. They exuded a positive attitude and genuine concern for the children of the Winbald Area School District.

The middle school (grades 6 to 8) had 10 teachers, 5 support staff members (secretaries and teacher aides), and approximately 200 students. Three of the teachers had been with the district for more than 20 years. The other seven teachers were relative newcomers to the district, having taught there for two to eight years. The support staff had more tenure in the district; their average length of service was approximately 12 years. Teachers and support staff lived in the Winbald district as well as outside the district. Neither the board nor community members had stated a preference for hiring only local staff (Winbald High School graduates).

Winbald students were bused by a commercial transportation company, with which the district had a contract. So instead of the traditional yellow school buses carrying Winbald students to and from school, they rode in light-blue buses that sported the local transportation company's logo. These buses also delivered the SATURN!

klubhouse students to their homes following the after-school klubhouse session. One of the district's school board members owned and operated this transportation company. He and all of the other board members were very supportive of the SATURN! project. According to Superintendent Hardy, the project had brought the district and the Winbald Board of Education an influx of much-needed positive publicity. He stated, "Everyone knows the SATURN! kids. . . . They are getting a reputation in this town as the SATURN! kids. Maybe more kids are involved with SATURN! than in sports, which is a real positive thing for our community and district" (Interview transcript, April 11, 2000).

Principal Jerry Edwards echoed the positive sentiment of board support for the SATURN! project. But he also indicated it might represent board support for Superintendent Hardy as much as for SATURN! He stated,

> That's part of the thing he wants to do . . . try and get the SATURN! idea going in community education. This community needs it and would thrive on it. [Through] the construction of the new school and the things we hope to offer, he hopes to really expand and get the old community education concept from the '70s going again. This would be a big part of it. So there's a lot of good things going on. But it takes time. (Interview transcript, April 11, 2000)

## Pre SATURN! Technology Capacity

Before the advent of the SATURN! project, the Winbald School District had limited information technology capabilities. Just one middle school computer lab, which was created in early 1992, served both middle and high school students throughout the entire district. Before the middle school was joined with the high school, the computer lab had been housed in a separate building. The classes that were taught in this lab included word processing and introduction to BASIC (Beginner's All-Purpose Symbolic

Instruction Code) programming. By today's standards, the computers were archaic (IBM-PC 286 technology versus Pentium II/Windows 2000), yet they remained an integral part of the district's technology program until the SATURN! klubhouse project was implemented.

In 1994, the high school installed a lab that had 20 computers with Windows 3.1 capabilities; these were stand-alones (not networked as they were in the SATURN! lab). This lab was used for business or office-machines-oriented classes, and a word-processing class using Microsoft Word was offered. Although the new Pentium I computers were greatly advanced over the 286-chip models, they were still used to teach business classes in much the same way that beginning typing and accounting had been taught in the 1950s and 1960s. The computers were upgraded every year; however, when the SATURN! lab was established at the middle school, it became apparent that the high school computer lab was woefully underpowered. This disparity in computer labs caused major tensions between the high school and middle school staffs.

# APPENDIX B

## INTRODUCTORY LETTERS, CONSENT FORMS, AND APPROVAL LETTERS FROM THE UNIVERSITY COMMITTEE ON RESEARCH INVOLVING HUMAN SUBJECTS

**Letter to Introduction to Potential Interview Participants**

December 10, 1999

Dear (Participant's Name),

This letter is written to invite you to participate in an interview that will take place during the months of December and January at your school district. The purpose of this interview is to consider various aspects of the implementation of the SATURN! project throughout last year (1998-99). The session will be informal, and the questions will be focused in the area of program implementation.

This individual interview will serve as one data source for my dissertation study through Southwestern University. Your participation will be very valuable because your perspectives as a SATURN! project participant are important in understanding how rewarding, yet sometimes frustrating, implementing a new program such as SATURN! can be.

The information gathered through this interview will, of course, be confidential, and you will be assigned a pseudonym to further ensure confidentiality. The comments you make may show up as a written record, but not in such a way that you will be specifically identified. There will be no positive or negative consequences due to your participation or nonparticipation as far as the project is concerned. However, you may find it valuable to consider discussing interesting and relevant factors of the SATURN! project with other project personnel, from both the school districts and Southwestern University.

Attached is a confirmation form that indicates your interest in participating in the interview. Please complete this confirmation form and return it to me by January 5, 2000. Thank you for your consideration.

Sincerely,

Jan C. Amsterburg
13428 East Ziegler Road
DeTour Village, MI 49725
Jana@eup.k12.mi.us
906.297.2000

**Consent Form–Individual Interview**

I agree to participate in the study of the role of institutional (school district and Southwestern University) support and resistance involved in the implementation of the SATURN! project.

I have read the letter from Jan Amsterburg dated December 10, 1999, which briefly describes the purposes and procedures of the research. The letter includes his name, address, and methods of communication in case I have any questions or concerns regarding the study.

I understand that my participation in this study requires me to participate in a face-to-face interview that may last approximately 45 minutes. I am aware of and understand that all interview data will be held in the strictest confidence and that my identity will not be disclosed in any form during the preparation or completion of this study. I understand that my participation in this study is completely voluntary and that I may ask for the tape recorder to be turned off at any time, that I may choose not to respond to any question, and that I may withdraw from the study at any time with no repercussions.

_____ _____

Signature Date

## Letter to Interviewees

I'm Jan Amsterburg, Superintendent of DeTour Area Schools, community agency person with SATURN!, and also a doctoral student at Southwestern University. I am currently studying the SATURN! project in your school district. Your district was chosen for this study due to its rural location, demographics, and success as a SATURN! site. Since the inception of the SATURN! project, I have been very interested in the dynamics that have occurred as this program has been introduced or "diffused" into each of the participating school districts. There have been examples of support and resistance from personnel in the local districts as well as Southwestern University during the first year of this project. The purpose of my study is to identify these areas of support and resistance to the SATURN! project in your district. My dissertation is centered on what has helped and hindered the process of bringing SATURN! to the Winbald School District.

Before I conduct the individual interview, I would like to ask you to draw a "road map" for me of how you visualize the implementation of the SATURN! program in your district. Please begin this map with a straight roadway to signify the program beginning, and then proceed by highlighting last year. Feel free to include all the conditions you feel SATURN! went through, such as curves, roadblocks, passing zones, rest areas, toll booths, or anything else you might visualize in relation to the support or resistance involving your role in the SATURN! project. Please draw this "road map" on one page of paper, and then we will talk about your journey extensively when I visit. The interview will consist of in-depth discussion of your "road map." Thank you so much for your time. If you have any questions, please feel free to contact me.

Sincerely,

Jan C. Amsterburg
13428 East Ziegler Road
P.O. Box 267
DeTour Village, MI 49725

**Letter of Consent--Document Analysis**

I agree to participate in the study of the role of institutional (school district and Southwestern University) support and resistance involved in the implementation of the SATURN! Project.

I have read the letter from Jan Amsterburg dated December 10, 1999, which briefly describes the purposes and procedures of the research. The letter includes his name, address, and methods of communication in case I have any questions or concerns regarding the study.

I understand that my participation in this study requires me to participate by providing SATURN! documents (e-mail) related to this project. I am aware and understand that all of the documents provided will be held in the strictest confidence and that my identity will not be disclosed in any form during the preparation or completion of this study. I understand that my participation in this study is completely voluntary and that I may withdraw from the study at any time with no repercussions.

_____ _____

Signature Date

MICHIGAN STATE
UNIVERSITY

April 20, 2001

TO: Maenette K. BENHAM
430 Erickson Hall

RE: **IRB # 99-808** CATEGORY: EXPEDITED 2-G
**RENEWAL APPROVAL DATE: April 19, 2001**

TITLE: ORGANIZATIONAL CHANGE: A STUDY OF THE IMPLEMENTATION OF "KLICK!" IN A RURAL MICHIGAN PUBLIC SCHOOL DISTRICT

The University Committee on Research Involving Human Subjects' (UCRIHS) review of this project is complete and I am pleased to advise that the rights and welfare of the human subjects appear to be adequately protected and methods to obtain informed consent are appropriate. Therefore, the UCRIHS APPROVED THIS PROJECT'S RENEWAL.

**This letter also approves the revised consent form.**

**RENEWALS:** UCRIHS approval is valid for one calendar year, beginning with the approval date shown above. Projects continuing beyond one year must be renewed with the green renewal form. A maximum of four such expedited renewal are possible. Investigators wishing to continue a project beyond that time need to submit it again for complete review.
**REVISIONS:** UCRIHS must review any changes in procedures involving human subjects, prior to initiation of the change. If this is done at the time of renewal, please use the green renewal form. To revise an approved protocol at any other time during the year, send your written request to the UCRIHS Chair, requesting revised approval and referencing the project's IRB# and title. Include in your request a description of the change and any revised instruments, consent forms or advertisements that are applicable.
**PROBLEMS/CHANGES:** Should either of the following arise during the course of the work, notify UCRIHS promptly: 1) problems (unexpected side effects, complaints, etc.) involving human subjects or 2) changes in the research environment or new information indicating greater risk to the human subjects than existed when the protocol was previously reviewed and approved.

If we can be of further assistance, please contact us at 517 355-2180 or via email: UCRIHS@pilot.msu.edu.

Sincerely,

Ashir Kumar, M.D.
Interim Chair, UCRIHS

OFFICE OF
**RESEARCH AND GRADUATE STUDIES**
**University Committee on Research Involving Human Subjects**
Michigan State University
46 Administration Building
East Lansing, Michigan
48824-1046
517/355-2180
FAX: 517/353-2976
www.msu.edu/user/ucrihs
E-Mail: ucrihs@msu.edu

AK: bd

cc: Jan Amsterburg
13428 East Ziegler Rd.
DeTour Village, Mi 49725

MICHIGAN STATE
UNIVERSITY

February 3, 2000

TO: Maenette K. BENHAM
425 Erickson Hall

RE: **IRB# 99-808** CATEGORY:2-G
**APPROVAL DATE: February 3, 2000**

TITLE: ORGANIZATIONAL CHANGE: A STUDY OF THE IMPLEMENTATION OF "KLICK!" IN A RURAL MICHIGAN PUBLIC SCHOOL DISTRICT

The University Committee on Research Involving Human Subjects' (UCRIHS) review of this project is complete and I am pleased to advise that the rights and welfare of the human subjects appear to be adequately protected and methods to obtain informed consent are appropriate. Therefore, the **UCRIHS approved this project.**

**RENEWALS:** UCRIHS approval is valid for one calendar year, beginning with the approval date shown above. Projects continuing beyond one year must be renewed with the green renewal form. A maximum of four such expedited renewals possible. Investigators wishing to continue a project beyond that time need to submit it again for a complete review.
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If we can be of further assistance, please contact us at 517 355-2180 or via email: UCRIHS@pilot.msu.edu. Please note that all UCRIHS forms are located on the web: http://www.msu.edu/unit/vprgs/UCRIHS/

Sincerely,

David E. Wright

David E. Wright, Ph.D.

DEW: bd

cc: Jan Amsterburg
13428 East Ziegler Rd.
DeTour Village, Mi 49725

OFFICE OF
**RESEARCH AND GRADUATE STUDIES**
**niversity Committee on Research Involving Human Subjects**
Michigan State University
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