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EDUCATIONAL ADMINISTRATORS AND COMPUTER USAGE:
LEADERSHIP STYLES AND COMPUTER ATTITUDES
IN SMALL SECONDARY SCHOOLS
IN NORTH AMERICA

A Dissertation
Presented in Partial Fulfillment
of the Requirements for the Degree
Doctor of Philosophy

by
Daniel Hong Wen Lim
April 1998

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ABSTRACT

EDUCATIONAL ADMINISTRATORS AND COMPUTER USAGE: LEADERSHIP STYLES AND COMPUTER ATTITUDES IN SMALL SECONDARY SCHOOLS IN NORTH AMERICA

by

Daniel Hong Wen Lim

Chair: David S. Penner
ABSTRACT OF GRADUATE STUDENT RESEARCH

Dissertation

Andrews University
School of Education

Title: EDUCATIONAL ADMINISTRATORS AND COMPUTER USAGE: LEADERSHIP STYLES AND COMPUTER ATTITUDES IN SMALL SECONDARY SCHOOLS IN NORTH AMERICA

Name of researcher: Daniel Hong Wen Lim
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Date completed: April 1998

Problem
The purpose of this study was to examine the relationships between the computer attitudes of educational administrators and teachers, the leadership styles of educational administrators, and computer usage in secondary schools.

Method
The design of this study used the questionnaire survey to collect data investigating relationships between educational administrators' attitudes toward computers, their leadership styles, and computer use in schools. The sample of the study was derived from educational administrators and teachers from 58 Seventh-day Adventist senior academies.
(i.e., high schools) found in the United States and Canada. Two instruments were selected for this study. The Computer Attitude Scale (CAS) by Loyd and Loyd was used for measuring attitudes toward computers of the educational administrators. The Leadership Behavior Analysis II-Other was administered to assess the leadership styles of the educational administrators as perceived by teachers.

Results

Educational administrators' primary leadership styles had significant correlations with computer anxiety, computer liking, and combined scales whereas leadership style effectiveness and leadership style flexibility had no significant correlations with educational administrators' attitudes toward computers. The t-test of the two dominant leadership styles S3 and S4 indicated a significant difference between S3 and S4 leadership styles for computer anxiety, computer liking, and combined scales. The age and ethnicity of educational administrators also had no significant impact on their attitudes toward computers. No significant relationships were found between attitudes toward computers of educational administrators and attitudes toward computers of teachers.

Conclusions

Leadership styles and attitudes toward computers of educational administrators did not have any impact on teachers' attitudes toward computers and computer usage for instructional purposes. Teachers' computer attitudes had a significant correlation with computer usage for instructional purposes.
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CHAPTER I

INTRODUCTION

Background to the Problem

Introduction

Although teachers use word processing programs to prepare teaching materials, they are often reluctant to use technology in classroom teaching (Emmans, 1998). Schools are increasingly pressured to include more computer technology in the classrooms because of the onslaught of computer technology on almost every part of society, especially the home. The flooding of personal computers and computer games in homes has prompted many parents to pressure schools to experiment with these new “toys” to teach students (Papert, 1993). A "high-tech" educated workforce is extremely crucial to the growth of this nation. “Nations that stop trying to ‘reform’ their education and training institutions and choose instead to totally replace them with a brand new, high-tech learning system will be the world’s economic powerhouses through the twenty-first century” (Perelman, 1992, p. 20).

Since computer technology has a great impact at the workplace, educators cannot ignore technology in schools (Adams & Hamm, 1987).

Technology, as a peripheral to education, is empowering an assortment of institutions to teach. Sometimes this can take place without students even knowing they are being taught. With or without the educators it has already changed the educational equation. (Adams & Hamm, 1987, p. 111)
As a matter of fact, the personal computer has become the "tool of the century" (Bugg, 1986, p. 3).

**Rationale for the Study**

Information technology is playing a revolutionary role in education. "You may not be interested in technology, but technology is interested in you" (Perelman, 1992, p. 25). Educational technology is not only here to stay but will change how teaching and learning will be conducted in the next century. Implemented rightly, it will save time and money by doing the mundane routines in school administration and instruction. Since technology will come anyway, schools should have a master plan for implementation. Mecklenburger (1990) warned that "if educators do not put newer information technologies to use in large-scale applications—if we insist that for us small-scale 'educational technology' is satisfactory—we will drive other agencies outside the school to develop large-scale educational uses of technology" (p. 107).

In addition, if educators do not understand the role of information technology in education and its use to improve teaching and learning, they would not feel comfortable with information technology. Untimely pressure from anywhere may prematurely cause resistance or unsuccessful implementation. "Pushing technological innovation in schools as an end in itself is unlikely to make education more productive and could very well lead to higher costs and inefficiency" (Perelman, 1988, p. 21). Therefore, it is crucial to lay the foundation by preparing both educational administrators and teachers in terms of attitudinal change and the acquiring of computer knowledge and skills.

Many view computers as mere "machines." They are "tools" to those who understand
how to use them. Lengel (1987) noted that "the computer is seen and used chiefly as a tool; an instrument that helps the faculty accomplish something. The computer is hardly ever considered an end in itself or an object to be studied" (p. 52). Indeed, computers are powerful tools in the hands of those who know how to use them to improve teaching and learning.

Sheingold (1991) concurred that "it is not the features of the technology alone, but rather the ways in which those features are used in human environments, that shape its impact" (p. 18).

Adams and Hamm (1987) predicted a revitalization of schools in the United States through the implementation of information technology as a powerful tool in teaching and learning. They emphasized that its successful implementation was vital to school reforms.

"The hyperlearning revolution demands a political reformation. And that requires completely new thinking about the nature of learning in a radically changed future that now sits on our doorstep" (Perelman, 1992, p. 24).

In the late 1980s, Perelman (1988) noticed that technology brought a change in "power relationship" between teachers and students, with students gaining more control over their learning process. Used rightly, computers can be used to effectively facilitate individualized instruction. They accommodate learners of different levels at different rates of learning. They assist teachers by helping students review or practice units already taught, especially in these times when there are more students per teacher because of budget constraints. "The great increase in automated expert systems has ended any need for a supposedly expert professor to stand at the front of a classroom and teach facts. Lectures are appreciated for their entertainment and inspirational value, not as an important method of delivering knowledge" (Perelman, 1988, p. 23). This definitely will free teachers to concentrate
on more important aspects of learning rather than just disseminating information. However, disseminating information should not be done mechanically. Only teachers can provide the contextual framework and human touch to teaching and learning. The famed Seymour Papert (1993), Lego Chair for Learning Research at MIT, observed the opposite direction about the impact of technology on medicine and education. "Medicine has changed by becoming more and more technical in its nature; in education, change will come by using technical means to shock off the technical nature of school learning" (Papert, 1993, p. 56).

Since information technology has such an important role in education, it is crucial to investigate the variables that would impact the use of information technology in schools. Although there are studies done in computer attitudes, leadership styles, and computer usage, I did not find any study that investigated the relationship of the three variables in the educational setting. Therefore, this study was necessary to find out if computer attitudes and leadership styles in education have any impact on the use of informational technology in schools.

Statement of the Problem

The purpose of this study was to examine the relationships between the computer attitudes of educational administrators and teachers, the leadership styles of educational administrators, and computer usage in secondary schools. Specifically, the study investigated the following research questions:

1. Is there a significant relationship between the attitudes toward computers of educational administrators and their primary leadership styles, leadership style effectiveness, and leadership style flexibility as perceived by their teachers?
2. Is there a significant relationship between the computer attitudes and the demographic background including age and gender of educational administrators?

3. Is there a significant relationship between teachers' attitudes toward computers and educational administrators' primary leadership styles, leadership style effectiveness, and leadership style flexibility as perceived by teachers.

4. Is there a significant relationship between educational administrators' attitudes toward computers and teachers' attitudes toward computers?

5. Is there a significant relationship between attitudes toward computers of educational administrators and teachers and computer usage in schools?

6. Is there a significant relationship between principals' encouragement of technological innovations and attitudes toward computers of teachers and educational administrators and computer usage in schools?

Conceptual Framework

History of Computers in Education

The use of computer-assisted instruction (CAI) in the 1960s marked the beginning of computers in education. Using mainframe computers, the Stanford CAI and the IBM 1500 CAI systems, in the 1960s, and PLATO and TICCIT systems, in the 1970s, experienced minimal success and failed to impress educators partially because they were not portable.

In the late 1970s, the emergence of personal computers changed the landscape of computers in education. Schools began procuring hundreds of computers in the early 1980s. Becker (1986) reported about one million personal computers were being used in elementary
and secondary schools in the United States. Within 4 years from 1986, the number of computers used in elementary schools increased to 2 million (Bork, 1990).

In a review of a historical survey of computers in education, Bork (1990) outlined three historical stages: beginning stage, next stage, and final stage. The beginning stages included the various emphases in hardware, teaching of computer languages, teaching of computer literacy, and limited teacher training. The next stages consisted of using advanced hardware, development of small programs for use in standard courses (drill, tutorials, simulations, etc.), authoring systems, teaching student computer tools, using networks, and development of management systems. The final stage is the development of curricula using computers, which includes future learning systems, new courses and curricula, teacher training, evaluation, and implementation.

The current trends in educational computing research involve the areas of computer attitudes, computer anxiety, computer education of teachers, and computer implementation and integration. Research of the four current issues has been conducted among educational administrators, teachers, students, and computer coordinators. Most of the research studies have been conducted in the United States and Western Europe. The common research questions among the current issues are identifying and measuring the effects of certain influential factors that impact computerization in schools, establishing the main problems encountered in computer usage in schools (Dupagne & Krendl, 1992; Wu & Morgan, 1989).

Integration Problems

Computer technology in the 80s did not impress educators because it was difficult to
integrate into classroom teaching (Falk & Carlson, 1992). Downes (1990) observed that although computer technology did impact Australian schools and incurred unprecedented financial investment, improvement in the classroom was negligible because the attention was given only to technology but not integration into the curriculum. Zappone (1991) concurred that computers had not been used as an integral part of teaching and learning. Despite the technology push in the educational arena, computers remain in the labs while teachers still sit behind the desk (Bauder, Planow, Sarner, & Carr, 1993). "Technology is not likely to have a qualitative impact on education unless it is deeply integrated into the purposes and activities of the classroom," predicted Karen Sheingold, a director in the Division of Applied Measurement Research at the Educational Testing Service, Princeton (1991, p. 20).

Downes (1990) pointed out that technology should not dictate teaching and learning but vice versa. The theories of teaching and learning should direct the implementation and use of technology so that "teachers who are in touch with their own theories and beliefs are less likely to end up using strategies and resources that may in fact be totally inconsistent with their intentions" (Downes, 1990, p. 432). Thus, it is very encouraging to see multimedia becoming the most serious attempt by the computer industry to bring the two "strange bedfellows" together. The computer industry needs a large consumer base to make it profitable whereas higher education needs the customization of information technology for classroom integration. Both the computer industry and the education enterprise should work hand in hand so that the resultant arrangement becomes more attractive and beneficial to both parties.
The Role of Educational Administrators

In general, teachers look to their educational administrators for leadership and initiation in implementing computer use in schools (Knupfer, 1989). "Until the faculty and staff members see that their chief administrator feels comfortable talking about and working with the new technologies, it is highly unlikely that they will feel any sense of urgency to learn new skills themselves" (Barker, 1990, p. 37).

Research in the 80s had showed that the computer attitudes of teachers affect computer usage and integration in the classroom (Dupagne & Krendl, 1992). Teachers with more positive computer attitudes are more likely to incorporate the use of computers in their curriculum design and classroom teaching. If that is true, hiring of teachers with positive computer attitudes will greatly enhance computer implementation and integration in education. Since the hiring process is conducted by educational administrators—principals, superintendents, deans, department chairs, and other higher educational administrators—the strategy of strengthening computer usage in schools should begin with the hiring of the educational administrators themselves. Therefore, the educational administrators should also have positive computer attitudes.

Teachers as users are bound by what computers can do. Ideally, the computer programmers should develop educational software according to the requirements and specifications of teachers. Educational administrators are needed to fill the gap by conducting needs analysis and then present the educational requirements to the software developers. Administrative support, which is often overlooked, is the key to computer implementation and training (Bauder et al., 1993). The school administration should also be knowledgeable about
technology by participating in the in-service training programs. The time and efforts administrators put in will convince teachers that administrators are committed to supporting the implementation. "Out of the process (administrators training side-by-side with teachers) the administrators gained a better understanding of the teachers' needs" (Eiser & Salpeter, 1992, p. 52).

Unfortunately, computer technology is hardly in the mainstream of educational institutions' attempt to restructure schools. Unlike the business sector, education still hangs onto the traditional mode of delivering instruction. Schools cannot await passively for computer technology to knock on their doors. They need to be aggressive and involved in visioning a new educational environment made possible by multimedia. Thomas Mueller, director of systems and computing at Washington State University, reported that the university's "administrators intend to 'mainstream' the capability rather than rely on piecemeal efforts by innovative professors" (Monaghan, 1993, p. A19).

Computer technology, like other resources and tools, will become "academic" and peripheral if it is not incorporated into teaching and learning. Schools should not buy the systems first and figure out later how to fit it into classroom teaching. "Because of their pervasive effects, it is essential that computer use in schools be guided by explicit and well thought-out plans, rather than impromptu or seat-of-the-pants decisions" (Kearsley, 1990, p. 85). Only through effective planning and implementation will administrators and teachers incorporate computers to impact student learning. "Developing a vision for how computers and related technologies should be acquired and used in the classroom is really an exercise in strategy planning," said Daniel Kinnaman, a national educational computer consultant and
technology coordinator for the Windham Public Schools in Connecticut (1992, p. 36).

As soon as goals and objectives are established and while planning proceeds further, initial teacher training should be launched to promote a conducive and computer literate environment so that teachers, who are the most crucial factor in the implementation, can participate intelligently in the implementation phase, and administrators, who are making the ultimate decisions, can intelligently support during the funding and implementation phases. "Without explicit goals and objectives, computer use is likely to develop in a haphazard manner based upon the interest of certain staff members or teachers" (Kearsley, 1990, p. 87).

Kinnaman (1992) maintained that "most school districts still treat technology support for the classroom as an add-on to the budget" (p. 36). The administration's commitment to educational technology is reflected in the amount that is allocated for it. The school budget reflects the vision and the goals of the school. If computer technology has been made one of the major goals but not given the proportionate budget, the entire process is merely "academic." The commitment of funding should be long-term so that computer technology like multimedia will not experience "under-budget" or budget cuts.

Status of Computer Usage in Schools

According to the United States Department of Education (1996), the number of students per computer in public schools declined from 125 students per computer to 9 students per computer between 1983 and 1995. Sixty-nine percent of elementary students and 58% of secondary students use computers at school whereas only 49% of teachers use computers at work (Chiero, 1997).
Internet access at public schools increased significantly. According to the United States Department of Education (1997), 65% of public schools had access to the Internet, 61% of public elementary schools had Internet access, and 77% of public secondary schools had Internet access. Fourteen percent of all public school instructional rooms had Internet access; 20% of public school teachers used some form of advanced telecommunications (Internet, ITV, LAN, etc.) for instruction.

**Significance of the Study**

The significance of this study is its contribution to the understanding of the factors that influence implementation and integration of computers in schools. This study focuses on the impact of educational administrators' attitudes toward computers and their leadership styles on computer usage in schools.

If computer attitudes and leadership behaviors of educational administrators do impact computer implementation and integration in schools, schools that desire successful computer implementation and integration in the classroom would want to hire educational administrators who have positive computer attitudes and leadership style(s) promoting a climate that encourages wide-scale computer use in schools.

Another contribution of this study is to help educational administrators realize their critical role in implementing and integrating computers in the classroom. Their computer attitudes and leadership styles, among other educational administrative functions, are crucial to the restructuring and reengineering of schools for the next century.
Assumptions

Two assumptions were in this study:

1. Computers and multimedia technology will play an increasingly significant role in schools as we approach the end of this century.

2. The responses from educational administrators and teachers are truthful and objective.

Definition of Terms

The following terms are defined as used in this study.

Leadership: A process of influencing the direction and operation of a group to achieve a goal in a particular context.

Leadership styles: A particular pattern of leadership behaviors perceived by the leaders and their followers as defined by Hersey and Blanchard. According to Hersey and Blanchard, the four leadership styles are S1-Directing (high directive/low relationship), S2-Coaching (high directive/high relationship), S3-Supporting (low directive/high relationship), S4-Delegating (low directive/low relationship).

Leadership style effectiveness: The choice of appropriate leadership styles defined by the Leadership Behavior Analysis II instrument.

Leadership style flexibility: The degree of consistency of selecting one particular leadership style as defined in the Leadership Behavior Analysis II instrument.

Computers in education: A process of computer implementation in schools and software integration in classroom.
Educational administrators: In the context of this dissertation, educational administrators will refer primarily to principals of academies or secondary schools.

Union: The regional administrative territory of the Seventh-day Adventist (SDA) educational system in North America.

Academy: The Seventh-day Adventist senior high school.

North American Division: The administrative body of the Seventh-day Adventist Church in North America.

Delimitations of the Study

This study was limited to North American Seventh-day Adventist academies (high schools). Since the number of educational administrators sampled is small (n = 95), the generalizability of the impact of educational administrators’ computer attitudes and leadership behaviors on computer usage in schools is limited.

The leadership styles used in this study are limited to only the four leadership styles developed by Hershey and Blanchard (1988). Beside the follower readiness factor, there could also be other factors influencing the combinations of task and relationship. In addition, there could also be aspects other than task and relationship that explain leadership behaviors.
CHAPTER II

REVIEW OF LITERATURE

Leaders have a strong influence on individuals and groups in any organization (Bennis, 1989). If educational administrators want to see a better use of computer technology in their schools, they themselves need to "lead" by modeling the use of computers in teaching and learning (Barker, 1990). Educational leaders cannot ignore their critical role in computer implementation in schools since computer literacy has become a crisis in American education (Collis & Martinez, 1989). Although students from low-income homes may not have the opportunities of learning about technology as students of affluent homes do, educational leaders can compensate the educational inequity through their influence in bringing technology to every student (Fain, 1989).

The scope of this chapter covers the literature in the fields of computer attitudes and leadership research. The section of literature in computer attitudes reviews the historical development of computer attitudes research, various emphases (or variables) in current computer attitudes research, the relationship between computers and leadership, some significant studies in computer attitudes related to educational administrators and teachers, and computer use in schools. The section of literature in the leadership research reviews the definition of leadership, the various leadership theories in general and situational leadership theory in particular, and the impact of leadership on computer attitudes.
Review of Literature in Computer Attitudes

Introduction

Computer attitudes have been linked to computer literacy, computer implementation, and integration in schools (Wu & Morgan, 1989). The key to impacting positive computer attitudes is probably in the area of effective computer training for educators—preservice and inservice (Handler, 1992). Identifying the factors that contribute to positive computer attitudes may help computer educators or trainers to be more effective in training school administrators and teachers on how to implement and integrate computers in schools.

Computer attitudes of school administrators and teachers are affected by many external and internal factors (Pancer, George, & Gebotys, 1992). Some external factors affecting computer attitudes are computer experience, computer instruction, and computer exposure at home or in school (Omar, 1992). Internal factors that may impact computer attitudes are personality, leadership style, technology anxiety, gender role, and age (Childers, 1991; Smith, 1987; Stone, 1990).

History of Computer Attitudes Research

Drawn from a number of studies, Canadian researchers Pancer, George, et al. (1992) maintained that research in attitudes toward the computer was important because "people's willingness to accept such technology, and their facility with it, may be profoundly affected by the attitudes they hold" (p. 212).

A review of literature on computer attitudes by Martin, Heller, and Mahmoud of George Washington University (1992) identified the computer attitudes studies conducted in
the early 70s as the earliest. Their review also pointed out that much of the subsequent computer attitudes research was focused on the gender issue. One of these early computer attitude studies was conducted by Lee (1970) who administered a 20-item scale to measure the computer attitudes of a sample of 3,000 subjects and found that the subjects expressed the beneficial and apprehensive aspects of computers.

Pancer et al. (1992) concluded that a number of scales measuring computer attitudes that emerged after 1981 reflected some improvement in computer attitudes, which was due probably to the subjects' better exposure and more familiarity with computers. The important study by Loyd and Gressard (1984a) generated a great amount of interest in the research of computer attitudes among educators and students. The Computer Attitude Scale (CAS) developed by Loyd and Gressard (1984a) became one of the most often used survey instruments measuring computer attitudes.

Omar (1992) of E. Claiborne Robins School of Business expressed the concern that negative computer attitudes might be prevalent among certain population groups, which could lead to excluding them from career paths that involved computer and computer-related technologies. As a result, many recent studies in computer attitudes have focused on factors like age, gender, computer knowledge, and experience.

The Age Factor

Significance. Brown, Brown, and Baack (1988) of Southwest Missouri State University compared the factor structure in the administration of Attitudes Toward Computer Usage Scale (ATCUS) to college-age students and senior citizens to determine if age and
computer exposure impacted attitudes toward the computer. They found that both age and computer exposure did impact the variation in the subjects' computer attitudes. Omar (1992) suggested that class levels, which consisted of different age groups, had a significant impact on U.S. college students' computer attitudes. In his dissertation research, Choi (1993) pointed out that among Korean commercial high-school teachers, older age groups had more positive computer attitudes than did the younger age groups.

In her dissertation research findings, Valasek (1990) stated that age was significantly related to the computer attitudes of older adults. The older adults were struggling during computer training and posttest. Surveying 24 adult education centers in Arkansas, Francis (1990) indicated that "age was a significant factor in all areas with younger adults (16 to 40 years) having a more positive attitude than older adults (41 to 65+ years)" (Abstract page). Other studies supported the significant relationship between age and computer attitudes (Dolgos, 1991; Eduljee, 1995; Kindel, 1995; Lim, 1996; Tonsetic, 1996).

Non-significance. Massoud (1989) studied 252 adult basic students and noted no significant differences between computer attitudes and age. McGregor (1993) investigated the computer attitudes of 300 older adults ranging from ages 50 to 79 and reported no significant differences in age except for one subscale. McGregor concluded that "adult educators can design programs, courseware, and services to older populations with the knowledge that computerphobia as described in the literature was not supported in this empirical study of 300 older adults" (Abstract page). Grogan (1991) reported that no significant relationship existed between age and computer attitudes among teachers and administrators in a school district in
Nebraska. Liu (1996) also found that age did not appear to make any difference on the Chinese students at the University of Tennessee.

Although substantial research had been conducted on both sides of the issue, the research of computer attitudes and age had yielded inconclusive results. The difference in subjects' perception toward age, or the difference between chronological and mental age, or possibly other unknown interacting variables, or all of the above may have affected the research outcomes.

**The Gender Factor**

While researching the social effects of computers, Wu and Morgan (1989) of University of Massachusetts observed that in the study of computer attitudes, gender may be the most frequently explored issue. They concluded from their research that gender differences in computer attitudes were attributed to "the lack of female role models for computing, to boys' greater access to computers at school, home, and computer camps and classes; and to a society-wide bias that stereotypes computing as a male domain" (p. 216). Pope-Davis and Vispoel (1993) of the University of Iowa reported inconsistent results in the study of gender difference in computer attitudes. They found some studies indicating male dominance, whereas others indicated no significant differences in gender. The study they conducted on a group of 194 undergraduate and graduate students indicated that there was no evidence of gender differences.

Although gender differences in the U.S. may diminish gradually, it is more pronounced in other countries due to their cultural perception of gender (Omar, 1992). Omar
(1992) explained that in Kuwait, in particular, and the Middle East, in general, women had less positive attitudes toward computers than did men due to the low status of women in those societies. Griest (1993) studied the computer attitudes and T-type temperaments of an experimental group of 120 undergraduate college students and 166 students in the control group and reported significant differences between gender groups.

The study of a sample of 300 older adults of which 53% were female by McGregor (1993) supported significant gender differences in feeling comfortable with computers and total attitude scores. "It was noted that the subjects in this sample reflected traditional gender roles and occupations, and that the females had less contact with computers" (McGregor, 1993, Abstract page). During a study of 462 high-school students who were classified as computer programmers, application users, and general users, Devlin (1992) observed that "while male programmers tended to have more positive attitudes than female programmers, there was a lack of sex differences in attitudes within the remaining groups" (Abstract page). Collis and Martinez (1989) stated that gender differences were significantly related to computer attitudes among 220 students in Grade 8 and Grade 12. "A persistent paradox was found: Females strongly endorsed the ability of women, in general, to be just as interested in and capable with computers as men, but they, as individuals, indicated a lack of self-confidence in their own personal ability" (Collis & Martinez, 1989, p. 5).

Although some studies supported the significant relationship between gender and computer attitudes (Childers, 1991; Grogan, 1991; Hwang, 1990; Lim, 1996; Shawareb, 1993; Tonsetic, 1996), other studies found gender not to be a significant factor on computer attitudes (Connell, 1991; Eduljee, 1995; Francis, 1990; Kindel, 1995; Knighton, 1990; Liu,
1996; Luckett, 1997; Sariya, 1992; Wood, 1996). The lack of conclusive findings in the research of computer attitudes and gender issue could be attributed to the difference between gender and gender roles (or gender perceptions). Until more conclusive findings emerge, gender roles remain a more plausible explanation for the variance in computer attitudes between the gender groups.

The Ethnic Factor

Luckett (1997) studied the computer attitudes of 230 African American and Caucasian undergraduate students and did not find significant differences between the two ethnic groups. Woodland (1996) also found no significant differences between ethnic groups in a study of the effect of computer visualization ability. Although more studies found no significant correlations between ethnicity and computer attitudes or usage (Connell, 1991; Middleton, 1995; Tonsetic, 1996), Ngin (1994) found ethnicity to be a significant predictor of computer use.

Computer Experience

Although Farrell, Cuseo-Ott, and Fenerty (1988) did not find any significant difference between the computer attitudes of computer users and nonusers, many studies showed that computer experience did make a significant impact. After studying the computer experience of secondary-school students in the United Kingdom, Kirkman (1993) commented that "home computer use has a much stronger effect on attitude formation than school use" (p. 60). He also suggested that more computer use at home improved female students' attitudes toward computers more than male students' computer attitudes. Reporting in the British Journal of
Education Technology. Harvey and Wilson (1989) agreed that home computer ownership was the main influential factor impacting computer attitudes. Other studies supported a significant relationship between home computer ownership and computer attitudes (Grogan, 1991; Levin & Gordon, 1989).

Wu and Morgan (1989) observed that "lack of exposure to computers may contribute to dislike or 'fear' of computers which may in turn ensure continued lack of exposure; such 'fear' is also likely to produce lack of use in the first place" (p. 226). They maintained that "computer experience is no guarantee of positive perceptions, and having favorable views need not necessarily lead to heavy use. Yet systematic and significant relationships were found, and their size may be less important than the underlying dynamics they suggest" (p. 227).

Jay and Willis (1992) concluded from their review of literature that among older adults computer experience was related to more positive computer attitudes. Although some studies supported the significant relationship between computer experience and computer attitudes (Eduljee, 1995; Francis, 1990; Grogan, 1991; Knighton; 1990; Lim, 1996; Liu, 1996; Roseboro, 1992), other studies did not support the impact of computer experience (Kuschel, 1994; Sariya, 1992). On the whole, more studies appear to substantiate computer experience as a significant factor impacting computer attitudes.

Instructional Intervention

Pope-Davis and Vispoel (1993) pointed out that little research had been done on instructional intervention designed to change negative computer attitudes. They observed that existing research in computer attitudes and instructional intervention yielded conflicting results.
They alluded that instructional intervention might result in more negative computer attitudes. However, their study of 194 undergraduate and graduate students suggested that computer attitudes could be improved through systematic instruction for both male and female subjects.

Jay and Willis (1992) reported a study that consisted of 101 older adults ages 57 to 87 who went through a 2-week computer training program (using desktop publishing software). They concluded that computer attitudes of "older adults are modifiable and that direct computer experience is an effective means of change" (p. 250). They maintained that the intervention's design should be customized to the intents of the measures. They reported that the attitudinal change of their subjects was maintained for at least 2 weeks after the training. Omar (1992) indicated that the learning outcomes of computer-related courses taken by students in the U.S. were significantly related to positive computer attitudes.

Sariya (1992) administered the Computer Attitude Scale to 120 college students randomly selected from Eastern University, Cholburi, Thailand, during the summer session of 1990. The students were assigned to an experimental group and a control group, and each group had 28 science and 32 non-science majors. The experimental group received computer instruction for 10 consecutive weeks whereas the control group did not. However, the instructional intervention did not bring about any significant differences between the experimental and control groups. Both groups improved in their computer attitudes over the course of 10 weeks. Valasek (1990) contended that training did not have any significant impact on the experimental group. In fact, although the experimental group did improve its computer attitudes gradually, the control group improved more significantly.

Gunter (1994) studied the impact of computer instruction over a 16-week semester
among Education and Business students' attitudes toward computers. There was a significant change in attitudes toward computers among both groups. The study concluded that a computer literacy course made a difference in students' attitudes toward computers and acceptance of computer technology.

**Leadership Behaviors and Personality**

In a study of 404 managers from 67 different organizations, Stone (1990) concluded that leadership styles were positively related to computer attitudes. The S1 leadership style, which is high direction and low support, was found to have the most negative computer attitudes. "The results support the contention that leadership behaviors are viable and important components of positive attitudes" (Stone, 1990, Abstract page). In another study of 208 K-12 educational administrators from seven states, Childers (1991) concurred that leadership style was a significant predictor and correlate of computer anxiety and computer attitudes.

Smith (1987) observed that the "thinking" personality tends to be more comfortable working with computers than the "feeling" personality. The apparent gender differences could be attributed to the male's preference for decision making (Manning, 1984). In a study of an experimental group of 120 undergraduate college students and 166 students in the control group, Griest (1993) concluded that computer attitude was significantly related to T-type temperaments. "Big-T's," the "adventurous" subjects, demonstrated more positive computer attitudes and less computer anxiety than the less "adventurous" subjects.
Significant Studies Among School Administrators and Teachers

Teachers. Smith (1987) pointed out that although teachers in general were receptive toward computers, they were not excited about using them personally. In her first of two studies of 173 teachers and 318 students, there were great differences in computer attitudes between teachers and students. For example, 62% of the students considered themselves regular computers users whereas 17% of the teachers thought so. In a dissertation study of freshman English students, Shawareb (1993) found a positive correlation between teacher attitude and student attitude.

A study on Korean teachers concluded that teachers had positive attitudes toward the use of computers for instruction (Choi, 1993). Halderman (1993) surveyed 53 administrators and 100 teachers in 53 small schools and reported that small-school teachers were interested in computers and could improve their computer attitudes and increase computer use. Teer (1992) studied 69 elementary teachers of Grades Kindergarten through 5 and found them having positive attitudes toward using computers in the classroom. "Teachers believe computers are valuable teaching tools and can be used to improve reading and writing skills. The responding teachers are very interested in learning to use the computer and would like to receive additional computer training" (Teer, 1992, Abstract page).

However, Wiley (1993) surveyed 231 teachers and noted that although their computer attitudes were relatively positive, they had little computer knowledge and were not interested in the use of computers in schools. "In general, teachers may view educational computing as an 'add on' to the existing curriculum" (Wiley, 1993, Abstract page). Dolgos (1991) studied 366
public-school secondary teachers and concluded that their computer attitudes were affected by age, computer training, discipline taught, and amount of staff development.

Woodrow (1990) of the University of British Columbia used a comprehensive questionnaire consisted of the Computer Attitude Scale and Locus of Control Scale (using the Achievement Scale of the MMCS) to test two hypotheses on a sample of 106 undergraduate and postgraduate pre-service teachers and identified a significant relationship between the locus of control and computer attitudes. Roszkowski et al. (1988) administered two measurement instruments—Computer Aptitude, Literacy, and Interest Profile (CALIP), and Computer Attitude Scale (CAS)—to 42 experienced teachers (21 females) at the start and at the end of their retraining course of 11 months to teach computer science. "Both the CALIP and CAS appear to have value for selecting candidates in computer science retraining programs. The potential of the CAS is surprising, given the typically poor reliability and validity of many, if not most, measures of attitudes" (Roszkowski et al., 1988, p. 1034).

Kindel (1995) studied a sample of 500 teachers randomly selected from 10,000 Kentucky public school secondary teachers. The instruments used were Computer Use Survey and the Computer Attitude Scale. Gender and educational level were not found to be significantly related to the teachers' attitudes toward computers. But age and primary subject of teaching responsibility were found to be significantly related to teachers' attitudes toward computers.

*Educational administrators.* Childers (1991) studied selected variables that predict computer anxiety and negative computer attitudes of 208 K-12 school administrators. Sex role
and leadership style were found to be significant predictors of computer anxiety and computer attitudes. Stone (1990) indicated that leadership styles were positively related to computer attitudes among 404 managers from 67 different organizations. Zhang (1993) studied the computer attitudes of school administrators from 288 secondary schools in Georgia and explained that their positive computer attitudes toward using computers in school administration were not influenced by computer literacy or educational level but by their administrative experience.

Lin (1993) studied the computer attitudes of principals of public and private, senior high schools in Taiwan and found that there were no significant differences in instructional computer usage and computer attitudes between public and private schools. Although the study showed no correlation between traditional computer usage and the computer attitudes of principals, there was a significant correlation between their computer attitudes and advanced computer usage. Knighton (1990) compared the computer attitudes of South Carolina elementary-school principals (n = 448) and concluded that demographic and school variables had no significant impact on their attitudes except for computer experience and computer ownership among the principals. Williams (1991) studied the effect of one-to-one or small-group training on the improvement of computer attitudes in 48 administrators from eight New York State school districts on Long Island and reported there was no significant difference in the effectiveness in either approach.

**Computer Use**

Wu and Morgan (1989) noted that "liking" computers and regular use (of computers)
should be mutually reinforcing" (p. 226). Gottleber (1992) investigated the association between the computer attitudes of the undergraduate students at the University of North Texas and their ethical uses of computers and stated that students with more positive attitudes toward computers differed significantly from students with less positive attitudes toward computers in their knowledge of the ethical uses of computers. Women were found to have significantly greater knowledge of computer ethics than did men. Wood (1996) studied 188 counselors and found that computer use and training had strong correlations with attitudes toward computers.

Williamson (1993) compared students in a computer-integrated setting with students in the traditional setting and suggested that students in a computer-integrated setting had more positive attitudes and more computer usage than students in the traditional setting. Williams (1991) studied the effect of one-to-one or small-group training on the improvement of computer attitudes in 48 administrators from eight New York State school districts on Long Island and recommended that both training approaches would increase computer use among the respondents. Dolgos (1991) studied 366 public-school secondary teachers in Lehigh County and found that both grades and disciplines but not teacher training were correlated with computer use.

The review in this section has shown that attitudes toward computers are influenced by internal and external factors. Since it is difficult to control such internal factors as one's gender, age, or personality, making adjustments to such external factors as the technological climate in schools or the leadership styles of the administration may have a significant impact on computer use in schools. The study of relationships between computer attitudes, leadership styles, and computer use in schools may shed light on where the adjustments can be made to
enhance a greater integration of computer technology in the classroom. The presence of the most advanced hardware and software cannot do it alone. This study intends to show what "human" adjustments (e.g., improving computer attitudes and computer training) should be made to maximize the utilization of existing and future technology (Cherry, 1989).

**Review of Leadership Research**

**Introduction**

Defining leadership seems to be as challenging a task as being a good leader. There are so many facets and dimensions to leadership (Owens, 1991). Different leadership definitions reflect different philosophies about how leaders view themselves as well as their followers. Bennis and Nanus (1985) noted that "like love, leadership continued to be something everyone knew existed but nobody could define" (p. 5).

Joseph C. Rost (1993), who inaugurated the leadership doctoral program at the University of San Diego, did a comprehensive research of the history of words related to leadership. Since he did not find the lexical research helpful in the understanding of the concept of leadership, he did a comprehensive review of the numerous definitions of leadership found in leadership literature published between the 1900s and the 1980s. After reviewing 221 definitions of leadership from 587 different works on leadership, Rost made some conclusions about leadership definition from different periods.

Rost noted the definitions of leadership during the first three decades of the century reflect "control and centralization of power." In the 1930s, the trend of leadership definitions changed from maintaining control and centralization to focusing on the ability of leaders to
influence followers. The group approach leadership was emphasized in the 1940s, especially after World War II, which could have steered the concept of leadership away from personal cult worship to collective leadership. Numerous studies on leadership as traits were conducted during 1930s and 1940s (Yukl, 1994). Leadership as behaviors crept gradually into the 1950s and dominated leadership research in the 1960s (Rost, 1993; Yukl, 1994). The 1970s saw a significant increase in leadership research. Although the behaviorist theory of leadership continued to dominate the decade of 1970s, some leadership studies began to challenge its prevalent leadership view.

In the 1980s, according to Rost, there was an explosion of leadership research with new leadership paradigms and the comeback of several leadership theories from the early part of the century counteracting the strong behaviorist theory of the 60s and 70s. Rost observed that the Great Man Theory, the Influence Theory, and Traits Theory were revived in the 1980s. In his review of leadership theories, Rost excluded the important theory of Contingency Leadership. Contingency leadership was popularized by the Situational Leadership developed by Hersey and Blanchard. I used the theoretical framework of Situational Leadership to study the leadership styles of educational administration in relation to their computer attitudes.

The leadership definition. After making a comprehensive review of past leadership definitions, Rost (1993) defined leadership as “an influence relationship among leaders and followers who intend real changes that reflect their mutual purposes” (p. 102). Ralph M. Stogdill (1948), eminent leadership scholar and Professor Emeritus of Management Science and Psychology at Ohio State University, defined leadership as "the process of influencing
group activities toward goal setting and goal achievement" (p. 35). Leadership defined as "a process of influencing the activities of an individual or group in efforts to achieve a goal in a given situation" by Hersey and Blanchard (1988, p. 86) is used in this dissertation.

**Leadership Theories**

Rost (1993) outlined the various movements of leadership theory in this century: Great Man Theory (1900-1929), Group Theory (1930s and 1940s), Trait Theory (1940s and 1950s), Behavior Theory (1960s and 1970s), and Excellence Theory (1980s).

**Great Man Theory**

The study of leadership of great men was first initiated by F. Galton in 1869 (Bass, 1981). It dominated the early decades of this century. Its basic philosophy of leadership is that leadership qualities are born and not made (Bennis & Nanus, 1985; Marriner, 1982). "Those of the right breed could lead, all others must be led. Either you had it or you didn't. No amount of learning or yearning could change your fate" (Bennis & Nanus, 1985, p. 5). A comprehensive review of the great man theory was conducted in 1960 by E. E. Jennings, a prolific author in leadership (Bass, 1981). Since the great man theory assumes that leadership is a "commodity" among the elite, it is not compatible with today's global quest for a large number of leaders for numerous large corporations, institutions, agencies, communities, and other social organizations (Sashkin & Lassey, 1983). Another leadership theory closely related to the great man theory is the trait theory.
Trait Theory

The trait theory of leadership is the study of the personal characteristics, abilities, and skills of successful leaders as they differ from non-leaders (Bryman, 1992). It dominated the leadership research in the 1930s and 1940s (Marriner, 1982; Yukl, 1994). Stogdill completed a major comprehensive review of trait studies in 1948. He followed it up by another comprehensive review of trait studies from 1949-1970. The second review was less critical of the trait theory (Bryman, 1992).

Like the great man theory, the trait theory also assumes that few people are naturally endowed with leadership abilities and skills. Later trait theory research indicated that traits could be learned (Marriner, 1982). Although earlier trait studies did not shed much light on the impact of leadership traits on leadership effectiveness, Gary Yukl (1994), a professor of leadership and researcher at State University of New York at Albany, stated that "as evidence from better designed research slowly accumulated over the years, researchers have made progress in discovering how leader attributes are related to leadership behavior and effectiveness" (p. 11).

Some common leadership traits identified by researchers were intelligence, initiative, creativity, emotional maturity, good communication skills, persuasion, perceptive toward professional allies, and sociable (Marriner, 1982). Bryman (1992), an author in organization studies and lecturer at Loughborough University, identified three categories of leadership traits: physical attributes, ability characteristics, and personality features. Trait theory helps to identify some characteristics of successful leaders, but it is problematic in explaining the leadership process in dealing with people and situations (Marriner, 1982). The influential review by
Stogdill in 1948 did not find any evidence that personal traits impacted leadership effectiveness (Bryman, 1992).

**Behaviorist Theory**

The study in leadership as behaviors began in the 1950s when researchers swung away from the trait theory to focus on what leaders did instead of who leaders were (Yukl, 1994). The leadership behaviors studies at Ohio State University and the University of Michigan had dominated the leadership behaviors research during the 1950s and 1960s.

Sashkin and Lassey (1983) reviewed the leadership behavior studies and identified four levels of behaviorist theory: the one-dimensional approach (the early Michigan studies), the two-dimensional approach (the Ohio State Studies), the three-dimensional approach by Lewin, Lippitt, and White, and the four-factor approach by Bowers and Seashore. The one-dimensional approach is a continuum of employee-centered leadership on one end and production-centered leadership on the other. The two-dimensional approach views the two ends of the continuum as two independent leadership behaviors. The three-dimensional approach deals with the "autocratic," "democratic," and "laissez-faire" behaviors. The four-factor approach is made up of supportiveness, interaction facilitation, work facilitation, and goal emphasis.

*The Ohio studies.* In 1957, a questionnaire of 150 items derived from 1,800 examples of leadership behavior was administered by the Ohio State University Leadership research team and the responses scored heavily in two scales: consideration (relationship) and initiating structure (task) scales (Yukl, 1994). Eventually, the final version of the questionnaire was
developed and named Leader Behavior Description Questionnaire (LBDQ). In 1962, 10 additional scales were added to the questionnaire. The enlarged questionnaire, the Leader Behavior Description Questionnaire Form XII, had been used by many leadership studies during the past three decades. Most of the leadership studies using the enlarged questionnaire focused on the original two scales—consideration and initiating structure (Yukl, 1994).

The Michigan studies. The leadership studies at the University of Michigan in the 1950s identified three types of leadership behaviors that impact leadership effectiveness: task-oriented behavior, relationship-oriented behavior, and participative leadership (Yukl, 1994).

Contingency Theory

The contingency theory proposes that contextual and situational variables do impact leadership behaviors and effectiveness. It was first theorized by Tannenbaum and Schmidt (1958) that different situations might affect the balance between task-oriented and relationship-oriented leadership behaviors.

Fiedler's contingency theory argued that there were three situational variables that determined which leadership behavior was more suitable when dealing with subordinates. The three situational variables are: leader-member relations, task structure, and leader position and authority (Sashkin & Lassey, 1983). Marriner (1982) contended that Fiedler's contingency theory "is not easy to understand nor is it conclusively supported by research" (p. 69).

Situational Leadership Theory

The situational leadership theory developed by Hersey and Blanchard (1988)
theorized that the selection of different combinations between task and relationship was dependent on followers' maturity and willingness. Assuming that there is no single effective leadership behavior, they argued that situations determined the appropriate leadership behaviors (Hersey & Duldt, 1989). According to the Situational Leadership Theory, there are four basic leadership styles, which are derived from the four combinations of high-low task-oriented behavior and high-low relationship-oriented behavior (Hersey & Duldt, 1989). The high-task/low-relationship combination (R1) is the "telling" leadership style; the high-task/high-relationship combination (R2) is the "selling" leadership style; the low-task/high-relationship combination (R3) is the "participating" leadership style; the low-task/low-relationship combination (R4) is the "delegating" leadership style.

The effectiveness and appropriateness of each of the four leadership styles are determined by the readiness of the followers (Hersey & Duldt, 1989). R1 to R4 leadership styles are graduated on the follower readiness continuum from low to high. The followers at the low end of the continuum are "unable" and "unwilling" and they need the R1 leadership style—telling. The second notch on the continuum consisted of followers who are "unable" but "willing" and they need the R2 leadership style—selling. The third notch on the continuum consisted of followers who are "able" but "unwilling" and they need the R3 leadership style—participating. The high end on the continuum consisted of followers who are "able" and "willing" and they need the R4 leadership style—delegating.

The Situational Leadership Theory II revised by Kenneth Blanchard and his associates is more appropriate for measuring leadership styles among educational administrators (Blanchard, Zigarmi, & Zigarmi, 1987). The four basic leadership styles—S1,
S2, S3, S4—correspond to the older R1 to R4 versions. Except for the fourth leadership style, which remained unchanged, the first three—telling, selling, and participating—are renamed directing, coaching, and supporting leadership styles. These new terminologies are more appropriate and better understood in the arena of educational leadership. The follower readiness continuum is renamed development levels of group members: low competence/high commitment (D1), some competence/low commitment (D2), high competence/variable commitment (D3), and high competence/high commitment (D4). "In determining what style to use with what development level, remember that school leaders need to provide their people with help only for what they can't do for themselves at the present moment" (Blanchard et al., 1987, p. 15). D1 to D4 development levels describe the readiness of followers to accept the S1 to S4 leadership styles. This study focused on the primary leadership styles of S1 to S4.

**Studies of Educational Administrators Using LBA II**

Flinklea (1997) conducted a study examining relationships between leadership styles, leadership effectiveness, and leadership flexibility among 194 public secondary school principals in South Carolina. The principals' leadership effectiveness score was found to be significantly correlated with the percentage of students scoring at or above the 50th national percentile on the Metropolitan Achievement Test. Fluker (1995) investigated the leadership styles of chief student services administrators in Texas community colleges using the Leadership Behavior Analysis II instruments. The study did not find any leadership style as the "best" leadership style.
Leadership Styles and Computer Attitudes

In a doctoral dissertation using Friedler's contingency leadership theory, Placke (1983) investigated the relationship of teacher attitude toward computers and leadership style and reported no significant relationship between them. In another doctoral dissertation, Carlson (1985) used the situational leadership theory developed by Hersey and Blanchard to investigate whether the four basic leadership styles (S1 through S4) were related to information technology in a federal agency. The S4 (Delegating) and S2 (Selling) were somewhat correlated to the use of information technology. Using the Leader Behavior Description Questionnaire (LBDQ) Form XII to measure leadership styles, Mann (1988) indicated that one leadership style—consideration—was strongly correlated with positive attitudes toward successful implementation of information systems.

Stone (1990) used the situational leadership theory to examine how managers' leadership styles affect their computer attitudes. He found that the S1 leadership style (high direction/low support) had lower positive computer attitude scores and was significantly different from the other three leadership styles. Using Fiedler's Least Preferred Co-Worker (LPC) to measure leadership styles, Childers (1991) investigated the impact of leadership style, among other selected predictors, on educational administrators' computer anxiety and attitudes toward the computer. Leadership style was a significant predictor of computer anxiety.

After examining the various leadership theories, the researcher of this study had chosen the situational leadership for this study. The inclusion of situations provides an additional dimension: "when" rather than whether a leadership theory should or should not be used or whether one leadership is better than the other. The inclusion of the situational
leadership theory may help understand the relationship between computer attitudes and computer usage in schools in this study since the computer climate in a school is dependent on a number of situational factors: funding, technological readiness of teachers, students, and community, compatibility of software and hardware, and other external factors. This study will henceforth use the S1 to S4 leadership styles for data collection and analysis.

Summary

The research literature reviewed in this chapter has indicated that there is a strong correlation between computer attitudes of educators and computer use in schools. Educational administrators in particular have a key influence on the implementation and integration of computer use in schools. Although other variables have been shown to impact computer attitudes, on the basis of the literature reviewed, leadership styles of educational administrators have been linked to influencing the computer attitudes of administrators and teachers who may impact computer use in schools (Childers, 1991; Stone, 1990). Since leadership impacts the general direction and day-to-day management of schools, correlating computer attitudes and leadership styles may contribute significantly to the understanding of how school administrators influence the use of technology in schools.
CHAPTER III

METHODOLOGY

Introduction

The purpose of this study was to investigate the relationships between the attitudes toward computers of educational administrators, their leadership behaviors, and computer use in schools. This chapter includes a review of research methods, selection of survey instruments, population selection, and procedures to test the research hypotheses developed for this study. It describes the process of data collection and statistical analyses used in this chapter.

Research Design

The design of this study used a questionnaire survey to collect data investigating relationships between educational administrators' attitudes toward computers, their leadership styles, and computer use in schools. Survey methodology was commonly used among researchers in computer attitudes (Yaghi, 1997). Gary Yukl (1992) observed that questionnaires had also been the most widely used research methodology in leadership. Despite the limitations of questionnaire methodology, some questionnaires may be effective in measuring leadership behaviors (Clark & Clark, 1990).
Population Sample

The sample of this study was derived from educational administrators and teachers of 58 (out of a total of 95) Seventh-day Adventist senior academies (i.e., high schools) found in the United States and Canada. These academies were small, private, secondary schools (average of 150 students). Educational administrators of smaller schools tend to have a greater influence on school administration and operation because of its size and interaction.

In 1993, the 95 senior academies had a total of 1,231 instructional teachers (North American Division of Seventh-day Adventists, 1993). The distribution of senior academies was as follows: 7 senior academies with 82 teachers in Atlantic Union, 9 senior academies with 90 teachers in the Canadian Union, 8 senior academies with 130 teachers in the Columbia Union, 8 senior academies with 100 teachers in the Lake Union, 8 senior academies with 100 teachers in the Mid-America Union, 9 senior academies with 135 teachers in the North Pacific Union, 27 senior academies with 376 teachers in the Pacific Union, 12 senior academies with 149 teachers in the Southern Union, and 7 senior academies with 69 teachers in the Southwestern Union.

Principals in their third year or more, identified by their superintendents, were surveyed. Principals in their third year or more were selected because the first 2 or more years of principalship were presumed to be usually adjustment periods for both the new principal and the teaching staff. While teachers need adequate time to know and rate the leadership styles of their principals, principals also should have enough time to influence teachers' attitudes toward computers. The selected principals were given the Computer Attitude Scale. The teacher...
sample consisted of all teachers from 58 schools whose principals were serving in their third year or more. The teachers were given the Computer Attitude Scale and the Leader Behavior Analysis II-Other to assess their respective administrators' leadership styles.

Out of 95 Seventh-day Adventist secondary schools in North America, 58 schools were identified by superintendents to have their principals serving in their third year or more. While some teachers may need 6 months or a year or more to know their principals, by the third year they probably know the leadership styles of their principals, which explains why principals serving in their third year or more were selected.

Fifty-eight questionnaires were sent to principals and 600 questionnaires were sent to all teachers of the selected 58 schools. Principals from 51 schools and 219 teachers from 53 schools returned their questionnaires. Two of the 51 schools whose principals returned questionnaires did not have any returns from teachers. The remaining 49 schools from which principals and at least one teacher returned complete questionnaires were used as the sample in this study.

Out of 219 teachers who returned at least one questionnaire (return rate = 36.5%), 145 teachers completed both the Computer Attitude Scale and Leadership Behavior Analysis II-Other. The 219 teacher sample was called the complete teacher sample. The 145 teacher sample was used in the analysis of school as a unit. Since the data analysis was based primarily on each school as a unit, the return rate was based on the return rate of the principals, which was 84% (49 out of 58 schools).
Instrument Selection

Two instruments were selected for this study (see Appendix B). The Computer Attitude Scale (CAS) developed by Loyd and Gressard (1984a) was used for measuring attitudes toward computers of the educational administrators. The scale is still being used widely in computer attitudes studies (Eduljee, 1995; Ferrell, 1996; Kindel, 1995; Lim, 1996; Liu, 1996; Luckett, 1997; Tonsetic, 1996; Wood, 1996). The Leadership Behavior Analysis II-Other developed by Blanchard Training and Development was administered to assess the leadership styles of the educational administrators as perceived by teachers. The computer usage data were gathered by a researcher-developed questionnaire surveying the degree of computer implementation and integration in schools in terms of hardware, software, in-service, and school climate supportive of computer usage. The demographic questions and other personal questions for educational administrators included age, gender, educational background, administrative experience, and computer knowledge and experience.

Computer Attitude Scale (CAS)

Serious attempts to research computer attitudes in educational settings began in the early 1980s. Evidently, it coincided with the period of the more common use of computers in schools and the emergence of the personal microcomputer in the mid-1980s. Raub (1981), Maurer (1983), and Morrison (1983) first developed some scales to measure computer anxiety and attitudes. Important research came from the University of Virginia's Loyd and Gressard (1984a, 1984b), who developed and successfully tested the reliability and validity of their
Computer Attitude Scale (CAS), which has since been widely used in computer attitudes research. Later, the Computer Attitudes Scale (CATT) developed by Dambrot, Watkins-Malek, Silling, Marshall, and Garver (1985), the Attitudes Toward Computer Usage Scale (ATCUS) developed by Popovich, Hyde, Zakrajsek, and Blumer (1987), and the Blomberg-Erickson-Lowery Computer Attitude Task (Erickson, 1987) were found to measure both computer anxiety and computer attitudes.

Rationale. The Computer Attitude Scale developed by Loyd and Gressard is a widely tested scale that measures attitudes toward the computer (Yaghi, 1997). The scale sparked off many studies in computer attitudes. It has been and is still used by more studies in computer attitudes than any other scale that measures computer attitudes (see e.g. Burgos, 1991; Dolgos, 1991; Eduljee, 1995; Ferrell, 1996; Grogan, 1991; Gunter, 1994; Hwang, 1990; Kindel, 1995; Koohang, 1987; KuscheL, 1994; Lim, 1996; Liu, 1996; Luckett, 1997; Massoud, 1989; Roseboro, 1992; Shawareb, 1993; Tonsetic, 1996; Wood, 1996). For this reason, the CAS was selected for this study.

The Computer Attitude Scale (CAS) is a 40-item questionnaire measuring four subscales: computer anxiety, computer liking, computer confidence, and computer usefulness. Each subscale consists of 10 items. The reliability estimates (Cronbach’s alpha) of the four subscales were .90 (computer anxiety), .89 (computer confidence), .89 (computer liking), .82 (computer usefulness), and .95 for the total score of CAS (Loyd & Loyd, 1985).
Leadership Behavior Analysis II-Other

Teachers were given the Leadership Behavior Analysis (LBA) II-Other to identify the leadership styles of their respective educational administrators. The LBA II-Other was used rather than the self-perceived scale because the assessment of leadership styles of educational administrators by teachers would be less biased.

Rationale. The Leader Behavior Analysis (LBA) II-Other was selected for this study because it was a reliable scale increasingly used by more leadership research than any other measurement scale except for the Leader Behavior Description Questionnaire (LBDQ). The most recent survey of dissertations in leadership research for the past decade indicated that the above two leadership measuring instruments dominated the study of leadership.

The Leader Behavior Analysis (LBA) II-Other was chosen because it included an additional dimension to the understanding of leadership: situational levels of follower readiness. It also assumed that there was no single best leadership style, and the effectiveness and appropriateness of a leadership style were dependent on the level of readiness of followers.

The LBA II-Other was designed to measure leadership style, style flexibility, and style effectiveness (Blanchard, Zigarmi, & Nelson, 1993). The style flexibility refers to how flexible leaders are in the choice of leadership styles. The style effectiveness refers to leaders' choice of appropriate leadership styles (preset in questionnaire scoring key) in given situations.

This study focused on leadership styles and correlated them with educational administrators' computer attitudes. The LBA II-Other has 20 items. Teachers were asked to
evaluate how their educational administrators will respond to the four options provided for each item, which consists of a leadership or administrative situation. Each option represented one of the four leadership styles (S1 through S4). S1 leadership style (Directing) represented low competence/high commitment, S2 leadership style (Coaching) represented some competence/low commitment, S3 leadership style (Supporting) represented high competence/variable commitment, and S4 leadership style (Delegating) represented high competence/high commitment. Based on the reliability studies on the LBA and LBA II questionnaires administered over a period of 8 years, Zigaimi and Zigarmi (1991) concluded that the instruments were stable and reliable and the internal consistencies (ranging from .54 to .86) were adequate.

**Procedures**

A questionnaire consisting of the Computer Attitude Scale (CAS), demographic questions, and several questions about computer usage in schools was sent to principals (serving in their third year or more) of Seventh-day Adventist academies throughout the United States and Canada in September 1995. The principals serving in their third year or more were identified by their superintendents through a phone survey.

A separate questionnaire consisting of the Computer Attitudes Scale, Leader Behavior Analysis II-Other, and several questions about computer usage in schools was sent directly to the teachers of these respective academies. The names of these teachers were systematically sampled from the education directory of each union (i.e., organizational territory of the North
American Seventh-day Adventist Church). The questionnaires were expected to be returned to the researcher by the end of November 1995.

The package sent to principals and teachers included a self-addressed stamped envelope, a cover letter, and endorsement letters from the North American Division Education Department and the respective Union Education Department and Conference Education Department. To encourage a high return rate, follow-up letters were sent once to principals and their teachers who had not returned the questionnaire to encourage them to return them promptly. Coding on questionnaires (see Appendix A) originally intended to match principals and teachers of the same school helped to identify the schools whose principals and teachers did not return the questionnaires.

Incomplete questionnaires (5 or more questions omitted) were not included in the study. The completed questionnaires were entered into the computer for descriptive and inferential statistical analyses. During the analysis, the missing cases for each of the four subscales (10 questions per subscale) of CAS were based on one or more missing values. Since the missing cases were not more than three per subscale, I left out the missing cases.

Null Hypotheses

On the basis of the existing literature and the theoretical framework of the relationship between computer attitudes and the leadership behaviors of educational administrators and computer usage in schools, the following null hypotheses were developed:

**Null Hypothesis 1:** There is no relationship between the computer attitudes of
educational administrators and their leadership styles as perceived by their teachers.

1a. There is no relationship between educational administrators' leadership styles and their attitudes toward computers.

1b. There is no relationship between educational administrators' leadership style flexibility and their attitudes toward computers.

1c. There is no relationship between educational administrators' leadership style effectiveness and their attitudes toward computers.

**Null Hypothesis 2.** There is no relationship between the computer attitudes of educational administrators and their demographic background.

**Null Hypothesis 3.** There is no significant relationship between teachers' attitudes toward computers and educational administrators' primary leadership styles, leadership style effectiveness, and leadership style flexibility as perceived by teachers.

3a. There is no relationship between teachers' attitudes toward computers and educational administrators' primary leadership styles.

3b. There is no relationship between teachers' attitudes toward computers and educational administrators' leadership style effectiveness.

3c. There is no relationship between teachers' attitudes toward computers and educational administrators' leadership style flexibility.

**Null Hypothesis 4.** There is no significant relationship between educational administrators' leadership styles and teachers' computer attitudes.

**Null Hypothesis 5.** Computer attitudes of educational administrators and teachers do
not correlate significantly with computer usage in schools.

5a. There is no relationship between attitudes toward computers of educational administrators and computer usage in schools.

5b. There is no relationship between attitudes toward computers of teachers and computer usage in schools.

**Null Hypothesis 6.** There is no relationship between principals' encouragement of technological innovations and attitudes toward computers of teachers and educational administrators and computer usage in schools.

**Analysis of Data**

Mean scores of continuous data and summary scores of categorical data of teachers of each school were used for the unit of analysis. The composite scores for the primary leadership styles as reported by teachers of each school were calculated by obtaining the percentage of the total number of responses of each style divided by the total number of possible answers, which is the number of respondents multiplied by 20 (Zigarmi & Zigarmi, 1991). The resultant dominant leadership style would become the composite primary leadership style of the principal of each school.

The data gathered were analyzed using SPSS descriptive and inferential statistical analysis. Correlations, t tests, and ANOVA were used to analyze the data, and the results were applied to the above research questions to establish significant relationships. Simple correlations were used for all variables to test for potential significant relationships.
In Hypothesis 1, ANOVA was used to test for significant relationships between the attitudes toward computers of educational administrators and their leadership styles. A t test was performed for significant relationships between attitudes toward computers of principals and the two dominant primary leadership styles S3 and S4. Pearson r correlations were used to find relationships between attitudes toward computers of educational administrators and their leadership style effectiveness and leadership style flexibility.

In Hypothesis 2, ANOVA was used to test for significant relationships between attitudes toward computers of educational administrators and their age. A t test was performed to test for significant differences among the ethnic groups of educational administrators regarding their attitudes toward computers.

In Hypothesis 3, ANOVA was used to test for significant relationships between the attitudes toward computers of teachers and the educational administrators’ primary leadership styles. A t test was performed for significant relationships between attitudes toward computers of teachers and the two dominant primary leadership styles, S3 and S4. Pearson r correlations were used to find relationships between attitudes toward computers of teachers and the educational administrators’ leadership style effectiveness and leadership style flexibility.

In Hypothesis 4, Pearson r correlations were used to find relationships between educational administrators’ attitudes toward computers and teachers’ attitudes toward computers.

In Hypothesis 5, Pearson r correlations were used to find relationships between educational administrators’ attitudes toward computers and computer usage and teachers’
attitudes toward computers and computer usage.

In Hypothesis 6, Pearson $r$ was used to find correlations between principals' encouragement of technological innovation and principals' and teachers' computer attitudes and computer usage.
CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

The purpose of this study was to determine if attitudes toward the computer and leadership styles of educational administrators and attitudes toward the computer of teachers have any impact on computer usage in secondary schools. This chapter presents the demographics of the sample, the leadership styles of educational administrators as perceived by their teachers, the computer attitudes of educational administrators and teachers, the status of computer usage in schools, and the statistical data derived from testing the five hypotheses. Other pertinent data analysis based on the complete teacher sample is presented as well.

Description of the Sample

There were 49 schools from which complete questionnaires were returned by each principal and at least one teacher. Schools were used as the unit of analysis in this study. Since the data analysis is based on each school as a unit, the return rate would be based on the return rate of the principals, which is 84% (49 out of 58).

Table 1 presents the demographic data of principals. The majority of the principals were male (94%). Most of the principals were 40 years of age or more. Caucasian (86%) dominated the ethnicity of the principals. Table 2 presents the demographic data of
the teachers. The number of male teachers in the sample is almost twice that of the female teachers. Teacher age groups are fairly evenly distributed except for the smaller groups among the youngest (25-29) and the oldest (55 or more). The total years of teaching experience are also fairly evenly distributed except for a slightly larger group in the 6-10 interval and a smaller group in the 21-25 interval. However, close to half of the teachers (44%) have taught at their current school for less than 6 years. In fact, 71% of the teachers have been at their current school for not more than 10 years.

TABLE 1

DEMOGRAPHIC DATA OF PRINCIPALS

<table>
<thead>
<tr>
<th>Demographic data</th>
<th>n</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>46</td>
<td>94</td>
</tr>
<tr>
<td>Female</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30-34</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>35-39</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>40-44</td>
<td>12</td>
<td>25</td>
</tr>
<tr>
<td>44-49</td>
<td>13</td>
<td>27</td>
</tr>
<tr>
<td>50-54</td>
<td>9</td>
<td>18</td>
</tr>
<tr>
<td>50&amp;&gt;</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Asian American</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Caucasian</td>
<td>42</td>
<td>86</td>
</tr>
<tr>
<td>Hispanic</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Variable</td>
<td>n</td>
<td>Percentage</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>----</td>
<td>------------</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
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<td></td>
</tr>
<tr>
<td>Male</td>
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<td>65</td>
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<tr>
<td>Female</td>
<td>76</td>
<td>35</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25-29</td>
<td>27</td>
<td>12</td>
</tr>
<tr>
<td>30-34</td>
<td>33</td>
<td>15</td>
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<tr>
<td>35-39</td>
<td>31</td>
<td>14</td>
</tr>
<tr>
<td>40-44</td>
<td>34</td>
<td>16</td>
</tr>
<tr>
<td>45-49</td>
<td>32</td>
<td>15</td>
</tr>
<tr>
<td>50-54</td>
<td>38</td>
<td>17</td>
</tr>
<tr>
<td>55 or more</td>
<td>24</td>
<td>11</td>
</tr>
<tr>
<td><strong>Total Years of Teaching</strong></td>
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<td></td>
</tr>
<tr>
<td>0-5</td>
<td>35</td>
<td>16</td>
</tr>
<tr>
<td>6-10</td>
<td>46</td>
<td>21</td>
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<td>11-15</td>
<td>39</td>
<td>18</td>
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<td>16-20</td>
<td>34</td>
<td>16</td>
</tr>
<tr>
<td>21-25</td>
<td>25</td>
<td>11</td>
</tr>
<tr>
<td>&gt;25</td>
<td>35</td>
<td>16</td>
</tr>
<tr>
<td><strong>Years At Current School</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-5</td>
<td>97</td>
<td>44</td>
</tr>
<tr>
<td>6-10</td>
<td>60</td>
<td>27</td>
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<tr>
<td>11-15</td>
<td>23</td>
<td>11</td>
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<td>16-20</td>
<td>15</td>
<td>7</td>
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<tr>
<td>21-25</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>&gt;25</td>
<td>11</td>
<td>5</td>
</tr>
</tbody>
</table>
Hypothesis 1

Hypothesis 1: There is no relationship between the attitudes toward computers of educational administrators and their primary leadership styles, leadership style effectiveness, and leadership style flexibility as perceived by their teachers.

From this hypothesis, three subhypotheses were developed.

Hypothesis 1a: There is no relationship between educational administrators’ leadership styles and their attitudes toward computers.

In Table 3, the dominant primary leadership style among the principals in the sample is S3 (43% of the sample) followed by S4 (35% of the sample). Both leadership styles make up almost 80% of the entire sample, which means that the majority of the principals are exhibiting supporting and delegating leadership styles.

The attitudes toward computers of principals are generally positive. The mean score on computer usefulness is 3.57, which is the highest among the four sub-scales, whereas the mean score of computer liking (3.20) is the lowest. The mean score of the combined scales is 3.38. (See Table 4.)

Table 5 presents the ANOVA analysis for attitudes toward computers of principals with regard to the four primary leadership styles. No significant differences were found among the four primary leadership styles. The lack of significant differences among the four primary leadership styles may be due to the small sample size of S1 and S2. The two subjects in TIE (S3 & S4) are not included since they cannot arbitrarily be determined as either S3 or S4. However, as shown in Table 6, the leadership style S4 had significantly
more positive scores than the leadership style S3 in computer anxiety (t = -2.24; p < .05), computer liking (t = -2.04; p < .05), and combined scales (t = -2.05; p < .05).

TABLE 3

PRIMARY LEADERSHIP STYLES OF PRINCIPALS
AS PERCEIVED BY TEACHERS

<table>
<thead>
<tr>
<th>Leadership Styles</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>S2</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>S3</td>
<td>21</td>
<td>43</td>
</tr>
<tr>
<td>S4</td>
<td>17</td>
<td>35</td>
</tr>
<tr>
<td>TIE (S3 &amp; S4)</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>49</td>
<td>100</td>
</tr>
</tbody>
</table>

Note. S1: Directing (high directive/low supportive behavior); S2: Coaching (high directive/high supportive behavior); S3: Supporting (low directive/high supportive behavior); S4: Delegating (low directive/low supportive behavior).
### TABLE 4

**COMPUTER ATTITUDES OF PRINCIPALS BY LEADERSHIP STYLES**

<table>
<thead>
<tr>
<th>Computer Attitude</th>
<th>S1 N</th>
<th>S1 M</th>
<th>S2 N</th>
<th>S2 M</th>
<th>S3 N</th>
<th>S3 M</th>
<th>S4 N</th>
<th>S4 M</th>
<th>Total Sample N</th>
<th>Total Sample M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety</td>
<td>4</td>
<td>3.13</td>
<td>5</td>
<td>3.62</td>
<td>19</td>
<td>3.30</td>
<td>16</td>
<td>3.72</td>
<td>46</td>
<td>3.47</td>
<td>.59</td>
</tr>
<tr>
<td>Confidence</td>
<td>4</td>
<td>3.15</td>
<td>5</td>
<td>3.40</td>
<td>20</td>
<td>3.22</td>
<td>17</td>
<td>3.52</td>
<td>48</td>
<td>3.33</td>
<td>.53</td>
</tr>
<tr>
<td>Liking</td>
<td>4</td>
<td>3.28</td>
<td>5</td>
<td>3.38</td>
<td>19</td>
<td>2.99</td>
<td>17</td>
<td>3.41</td>
<td>47</td>
<td>3.20</td>
<td>.61</td>
</tr>
<tr>
<td>Usefulness</td>
<td>4</td>
<td>3.25</td>
<td>4</td>
<td>3.70</td>
<td>20</td>
<td>3.53</td>
<td>17</td>
<td>3.72</td>
<td>47</td>
<td>3.57</td>
<td>.43</td>
</tr>
<tr>
<td>Combined</td>
<td>4</td>
<td>3.20</td>
<td>4</td>
<td>3.43</td>
<td>18</td>
<td>3.26</td>
<td>16</td>
<td>3.58</td>
<td>44</td>
<td>3.38</td>
<td>.50</td>
</tr>
</tbody>
</table>

*Note. Range of Mean = 1.00 to 4.00.

*aComputer Anxiety: The higher the score, the less computer anxiety.*

### TABLE 5

**ONE-WAY ANOVA OF ATTITUDES TOWARD COMPUTERS OF PRINCIPALS BY PRIMARY LEADERSHIP STYLES**

<table>
<thead>
<tr>
<th>Attitudes</th>
<th>df</th>
<th>F</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comp. Anxiety</td>
<td>3, 40</td>
<td>2.1887</td>
<td>.1044</td>
</tr>
<tr>
<td>Comp. Confidence</td>
<td>3, 42</td>
<td>1.2376</td>
<td>.3081</td>
</tr>
<tr>
<td>Comp. Liking</td>
<td>3, 41</td>
<td>1.5904</td>
<td>.2064</td>
</tr>
<tr>
<td>Comp. Usefulness</td>
<td>3, 41</td>
<td>1.9594</td>
<td>.1352</td>
</tr>
<tr>
<td>Combined Scales</td>
<td>3, 38</td>
<td>1.5524</td>
<td>.2168</td>
</tr>
</tbody>
</table>

*Note. The difference in numbers in the degree of freedom is due to the different number of missing cases in each category.

*p < .05.*
TABLE 6

† TEST OF ATTITUDES TOWARD COMPUTERS OF PRINCIPALS BY TWO DOMINANT PRIMARY LEADERSHIP STYLES (S3 & S4)

<table>
<thead>
<tr>
<th>Attitudes</th>
<th>S3</th>
<th>S4</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>N</td>
<td>M</td>
</tr>
<tr>
<td>Comp. Anxiety</td>
<td>3.30</td>
<td>.69</td>
<td>19</td>
<td>3.72</td>
</tr>
<tr>
<td>Comp. Confidence</td>
<td>3.21</td>
<td>.54</td>
<td>20</td>
<td>3.52</td>
</tr>
<tr>
<td>Comp. Liking</td>
<td>2.99</td>
<td>.70</td>
<td>19</td>
<td>3.41</td>
</tr>
<tr>
<td>Comp. Usefulness</td>
<td>3.53</td>
<td>.40</td>
<td>20</td>
<td>3.72</td>
</tr>
<tr>
<td>Combined Scales</td>
<td>3.26</td>
<td>.55</td>
<td>18</td>
<td>3.58</td>
</tr>
</tbody>
</table>

Note. The difference in N is due to the different number of missing cases in each category.
* p < .05.

Hypothesis 1b: There is no relationship between educational administrators' leadership style flexibility and their attitudes toward computers.

Table 7 presents the correlations between computer attitudes of principals and perceived leadership style flexibility. There is no correlation between leadership style flexibility and computer attitudes of principals. The null hypothesis is retained.

Hypothesis 1c: There is no relationship between educational administrators' leadership style effectiveness and their attitudes toward computers.

No significant correlations were found between perceived leadership style effectiveness and educational administrators' attitudes toward computers. The null hypothesis is retained. (See Table 7.)
TABLE 7

COMPUTER ATTITUDE SCALES OF PRINCIPALS CORRELATED WITH LEADERSHIP STYLE EFFECTIVENESS AND FLEXIBILITY AS PERCEIVED BY TEACHERS

<table>
<thead>
<tr>
<th>Attitudes</th>
<th>Leadership Style Effectiveness (M=17.76; SD=3.61)</th>
<th>Leadership Style Flexibility (M=46.16; SD=3.29)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Anxiety</td>
<td>.0735</td>
<td>-.0471</td>
</tr>
<tr>
<td>Computer Confidence</td>
<td>.1517</td>
<td>-.0216</td>
</tr>
<tr>
<td>Computer Liking</td>
<td>-.0404</td>
<td>.0692</td>
</tr>
<tr>
<td>Computer Usefulness</td>
<td>.1670</td>
<td>-.1409</td>
</tr>
<tr>
<td>Combined Scales</td>
<td>.0871</td>
<td>-.0293</td>
</tr>
</tbody>
</table>

Hypothesis 2

Hypothesis 2: There is no relationship between the attitudes toward computers of educational administrators and their gender, age, and ethnicity.

The female group (n=3) is too small to compare with the male group. Thus, no test for gender differences was performed. (See Tables 1 & 9.) There are no significant differences among the principals' age groups regarding their computer attitudes. (See Tables 8 & 10.) Since the age group below 40 is a small group, it was combined with the age group 40-44 and a comparison was made among age groups: below 45, 45-49, 50-54, and 55 and above (see Table 1). Table 11 presents principals' computer attitudes by ethnicity. Table 12 shows that there are no significant differences among the principals’ ethnic groups regarding their computer attitudes (the combined group of “Other ethnicity” compared with the Caucasian group). Thus hypothesis 2 is retained.
### TABLE 8

**ONE-WAY ANOVA OF COMPUTER ATTITUDES OF PRINCIPALS BY AGE**

<table>
<thead>
<tr>
<th>Attitudes</th>
<th>df</th>
<th>F</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
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<td>1.9650</td>
<td>.1339</td>
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<tr>
<td>Comp. Confidence</td>
<td>3, 44</td>
<td>1.0945</td>
<td>.3615</td>
</tr>
<tr>
<td>Comp. Liking</td>
<td>3, 43</td>
<td>.6623</td>
<td>.6044</td>
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<tr>
<td>Comp. Usefulness</td>
<td>3, 43</td>
<td>1.7808</td>
<td>.1651</td>
</tr>
<tr>
<td>Combined Scales</td>
<td>3, 40</td>
<td>1.2050</td>
<td>.3203</td>
</tr>
</tbody>
</table>

**Note.** The difference in numbers in degree of freedom is due to the different number of missing cases in each category.

### TABLE 9

**COMPUTER ATTITUDES OF PRINCIPALS BY GENDER**

<table>
<thead>
<tr>
<th>Attitudes</th>
<th>Male</th>
<th></th>
<th>Female</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>N</td>
<td>M</td>
</tr>
<tr>
<td>Comp. Anxiety</td>
<td>3.46</td>
<td>.59</td>
<td>46</td>
<td>3.67</td>
</tr>
<tr>
<td>Comp. Confidence</td>
<td>3.32</td>
<td>.54</td>
<td>45</td>
<td>3.60</td>
</tr>
<tr>
<td>Comp. Liking</td>
<td>3.19</td>
<td>.62</td>
<td>44</td>
<td>3.40</td>
</tr>
<tr>
<td>Comp. Usefulness</td>
<td>3.57</td>
<td>.43</td>
<td>45</td>
<td>3.55</td>
</tr>
<tr>
<td>Combined Scales</td>
<td>3.38</td>
<td>.50</td>
<td>42</td>
<td>3.40</td>
</tr>
</tbody>
</table>

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
<table>
<thead>
<tr>
<th>Attitudes</th>
<th>Means</th>
<th>30-34</th>
<th>35-39</th>
<th>40-44</th>
<th>45-49</th>
<th>50-54</th>
<th>55 +</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Anxiety</td>
<td></td>
<td>3.50</td>
<td>3.50</td>
<td>3.54</td>
<td>3.60</td>
<td>3.66</td>
<td>3.09</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>.71</td>
<td>.51</td>
<td>.49</td>
<td>.50</td>
<td>.40</td>
<td>.85</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>2</td>
<td>3</td>
<td>11</td>
<td>13</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td>Computer Confidence</td>
<td></td>
<td>3.25</td>
<td>3.40</td>
<td>3.32</td>
<td>3.52</td>
<td>3.31</td>
<td>3.12</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>.50</td>
<td>.36</td>
<td>.49</td>
<td>.51</td>
<td>.44</td>
<td>.73</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>2</td>
<td>3</td>
<td>12</td>
<td>13</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Computer Liking</td>
<td></td>
<td>3.10</td>
<td>2.93</td>
<td>3.32</td>
<td>3.33</td>
<td>3.22</td>
<td>2.98</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>-</td>
<td>.23</td>
<td>.50</td>
<td>.70</td>
<td>.38</td>
<td>.85</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>2</td>
<td>3</td>
<td>11</td>
<td>13</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Computer Usefulness</td>
<td></td>
<td>3.85</td>
<td>3.60</td>
<td>3.59</td>
<td>3.62</td>
<td>3.71</td>
<td>3.31</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>.21</td>
<td>.17</td>
<td>.40</td>
<td>.47</td>
<td>.25</td>
<td>.54</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>2</td>
<td>3</td>
<td>12</td>
<td>12</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Combined Scales</td>
<td></td>
<td>3.42</td>
<td>3.34</td>
<td>3.47</td>
<td>3.48</td>
<td>3.44</td>
<td>3.12</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>.35</td>
<td>.31</td>
<td>.44</td>
<td>.49</td>
<td>.28</td>
<td>.70</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>2</td>
<td>3</td>
<td>10</td>
<td>12</td>
<td>7</td>
<td>10</td>
</tr>
</tbody>
</table>
## TABLE 11

**COMPUTER ATTITUDES OF PRINCIPALS BY ETHNICITY**

<table>
<thead>
<tr>
<th>Attitudes</th>
<th>Afri-American</th>
<th>Asian-American</th>
<th>Caucasian</th>
<th>Hispanic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M  SD  N</td>
<td>M  SD  N</td>
<td>M  SD  N</td>
<td>M  SD  N</td>
</tr>
<tr>
<td>Comp.Anx</td>
<td>3.86 .23 3</td>
<td>4.00 .00 1</td>
<td>3.46 .57 41</td>
<td>2.00 .00 1</td>
</tr>
<tr>
<td>Comp.Con</td>
<td>3.38 .46 5</td>
<td>3.50 .00 1</td>
<td>3.35 .52 41</td>
<td>2.10 .00 1</td>
</tr>
<tr>
<td>Comp.Lik</td>
<td>3.40 .28 5</td>
<td>2.90 .00 1</td>
<td>3.20 .64 40</td>
<td>2.40 .00 1</td>
</tr>
<tr>
<td>Comp.Use</td>
<td>3.66 .29 4</td>
<td>3.80 .00 1</td>
<td>3.57 .44 40</td>
<td>3.00 .00 1</td>
</tr>
<tr>
<td>Combined</td>
<td>3.66 .18 3</td>
<td>3.55 .00 1</td>
<td>3.38 .49 39</td>
<td>2.38 .00 1</td>
</tr>
</tbody>
</table>

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TABLE 12

$t$ TEST OF COMPUTER ATTITUDES OF PRINCIPALS BY ETHNICITY

<table>
<thead>
<tr>
<th>Attitudes</th>
<th>Non-Caucasian</th>
<th>Caucasian</th>
<th>$t$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comp. Anxiety</td>
<td>3.52</td>
<td>3.46</td>
<td>.20</td>
<td>.843</td>
</tr>
<tr>
<td>SD</td>
<td>.867</td>
<td>.566</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>5</td>
<td>41</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comp. Confidence</td>
<td>3.21</td>
<td>3.35</td>
<td>-.63</td>
<td>.529</td>
</tr>
<tr>
<td>SD</td>
<td>.623</td>
<td>.523</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>7</td>
<td>41</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comp. Liking</td>
<td>3.19</td>
<td>3.21</td>
<td>-.08</td>
<td>.940</td>
</tr>
<tr>
<td>SD</td>
<td>.456</td>
<td>.642</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>7</td>
<td>40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comp. Usefulness</td>
<td>3.59</td>
<td>3.57</td>
<td>.09</td>
<td>.929</td>
</tr>
<tr>
<td>SD</td>
<td>.353</td>
<td>.442</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>7</td>
<td>40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Attitude</td>
<td>3.38</td>
<td>3.38</td>
<td>-.01</td>
<td>.991</td>
</tr>
<tr>
<td>SD</td>
<td>.579</td>
<td>.493</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>5</td>
<td>39</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Hypothesis 3**

**Hypothesis 3**: There is no relationship between teachers' attitudes toward computers and educational administrators' primary leadership styles, leadership style effectiveness, and leadership style flexibility as perceived by their teachers.

From this, three subhypotheses were developed.
Hypothesis 3a: There is no relationship between teachers' attitudes toward computers and educational administrators' primary leadership styles.

There are no significant differences among the primary leadership styles regarding teachers' computer attitudes. The null hypothesis is retained. (See Tables 13, 14, and 15.)

Hypothesis 3b: There is no relationship between teachers' attitudes toward computers and educational administrators' leadership style effectiveness.

Table 16 shows there is no significant relationship between leadership style effectiveness and teachers' attitudes toward computers. Thus hypothesis 3b is retained.

Hypothesis 3c: There is no relationship between teachers' attitudes toward computers and educational administrators' leadership style flexibility.

Inverse relationships were found between leadership style flexibility and teachers' attitudes toward computer usefulness ($r = -.3263; p < .05$), which indicates that higher leadership flexibility is correlated with teachers' less positive attitudes toward computer usefulness. The null hypotheses is retained except for the computer usefulness scale. (See Table 16.)

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### TABLE 13

**MEANS AND STANDARD DEVIATIONS OF COMPUTER ATTITUDES OF TEACHERS BY PRIMARY LEADERSHIP STYLES**

<table>
<thead>
<tr>
<th>Attitudes</th>
<th><strong>Style 1</strong></th>
<th><strong>Style 2</strong></th>
<th><strong>Style 3</strong></th>
<th><strong>Style 4</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>N</td>
<td>M</td>
</tr>
<tr>
<td>Comp. Anx</td>
<td>3.52 .19 4</td>
<td>3.58 .39 5</td>
<td>3.60 .36 21</td>
<td>3.47 .27 17</td>
</tr>
<tr>
<td>Comp. Con</td>
<td>3.35 .16 4</td>
<td>3.56 .25 5</td>
<td>3.44 .29 21</td>
<td>3.42 .25 16</td>
</tr>
<tr>
<td>Comp. Lik</td>
<td>3.03 .09 4</td>
<td>3.44 .22 5</td>
<td>3.20 .41 21</td>
<td>3.12 .45 16</td>
</tr>
<tr>
<td>Comp. Use</td>
<td>3.60 .24 4</td>
<td>3.59 .32 5</td>
<td>3.65 .21 21</td>
<td>3.61 .18 17</td>
</tr>
<tr>
<td>Comp. Ovr</td>
<td>3.36 .13 4</td>
<td>3.54 .22 5</td>
<td>3.47 .28 21</td>
<td>3.41 .25 15</td>
</tr>
</tbody>
</table>

### TABLE 14

**ONE-WAY ANOVA OF COMPUTER ATTITUDES OF TEACHERS (SCHOOL COMPOSITES) BY PRIMARY LEADERSHIP STYLES**

<table>
<thead>
<tr>
<th>Attitudes</th>
<th>df</th>
<th>F Ratio</th>
<th>E Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comp. Anxiety</td>
<td>3, 43</td>
<td>.5139</td>
<td>.6749</td>
</tr>
<tr>
<td>Comp. Confidence</td>
<td>3, 42</td>
<td>.5546</td>
<td>.6479</td>
</tr>
<tr>
<td>Comp. Liking</td>
<td>3, 42</td>
<td>1.0460</td>
<td>.3822</td>
</tr>
<tr>
<td>Comp. Usefulness</td>
<td>3, 43</td>
<td>.2041</td>
<td>.8930</td>
</tr>
<tr>
<td>Combined Scales</td>
<td>3, 41</td>
<td>.5238</td>
<td>.6684</td>
</tr>
</tbody>
</table>

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TABLE 15

<table>
<thead>
<tr>
<th>Attitudes</th>
<th>S3</th>
<th>S4</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>N</td>
<td>M</td>
</tr>
<tr>
<td>Comp. Anxiety</td>
<td>3.60</td>
<td>.36</td>
<td>21</td>
<td>3.47</td>
</tr>
<tr>
<td>Comp. Confidence</td>
<td>3.44</td>
<td>.29</td>
<td>21</td>
<td>3.42</td>
</tr>
<tr>
<td>Comp. Liking</td>
<td>3.20</td>
<td>.41</td>
<td>21</td>
<td>3.12</td>
</tr>
<tr>
<td>Comp. Usefulness</td>
<td>3.65</td>
<td>.21</td>
<td>21</td>
<td>3.61</td>
</tr>
<tr>
<td>Combined Scales</td>
<td>3.47</td>
<td>.28</td>
<td>21</td>
<td>3.41</td>
</tr>
</tbody>
</table>

Note. The difference in N is due to the different number of missing cases in each category.
* p < .05.

TABLE 16

<table>
<thead>
<tr>
<th>Attitudes</th>
<th>Style Effectiveness</th>
<th>Style Flexibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Anxiety</td>
<td>.1494</td>
<td>-.1052</td>
</tr>
<tr>
<td>Computer Confidence</td>
<td>.0074</td>
<td>-.2427</td>
</tr>
<tr>
<td>Computer Liking</td>
<td>.2659</td>
<td>-.1895</td>
</tr>
<tr>
<td>Computer Usefulness</td>
<td>.1344</td>
<td>-.3263*</td>
</tr>
<tr>
<td>Combined Scales</td>
<td>.1710</td>
<td>-.2368</td>
</tr>
</tbody>
</table>

* p < .05.
Hypothesis 4: There is no relationship between teachers’ attitudes toward computers and educational administrators’ attitudes toward computers.

Table 17 shows the means and standard deviations of teachers’ computer attitudes and principals’ computer attitudes. Table 18 presents the correlation matrix of computer attitudes of teachers and educational administrators. There is no significant correlation between any two variables. The null hypothesis is retained. Most of the correlations are near zero. The negative correlations between attitudes toward computers of educational administrators and teachers may indicate the discrepancy of perceiving the role of technology in education between administrators and teachers (see Table 25 for further explanation).

**TABLE 17**

**COMPUTER ATTITUDES OF TEACHERS (COMPOSITES) AND PRINCIPALS**

<table>
<thead>
<tr>
<th>Attitudes</th>
<th>Teachers</th>
<th></th>
<th>Principals</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Means</td>
<td>SD</td>
<td>N</td>
<td>Means</td>
</tr>
<tr>
<td>Anxiety</td>
<td>3.55</td>
<td>.32</td>
<td>49</td>
<td>3.47</td>
</tr>
<tr>
<td>Confidence</td>
<td>3.43</td>
<td>.26</td>
<td>48</td>
<td>3.33</td>
</tr>
<tr>
<td>Liking</td>
<td>3.20</td>
<td>.40</td>
<td>48</td>
<td>3.20</td>
</tr>
<tr>
<td>Usefulness</td>
<td>3.63</td>
<td>.21</td>
<td>49</td>
<td>3.57</td>
</tr>
<tr>
<td>Overall</td>
<td>3.46</td>
<td>.25</td>
<td>47</td>
<td>3.38</td>
</tr>
<tr>
<td></td>
<td>TCH_OVR</td>
<td>TCH_ANX</td>
<td>TCH_LIK</td>
<td>TCH_CON</td>
</tr>
<tr>
<td>--------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>PRN_ANX</td>
<td>-0.0613</td>
<td>-0.0346</td>
<td>-0.0386</td>
<td>-0.0361</td>
</tr>
<tr>
<td>PRN_CON</td>
<td>0.1196</td>
<td>0.1456</td>
<td>-0.1317</td>
<td>-0.2170</td>
</tr>
<tr>
<td>PRN_LIK</td>
<td>-0.1108</td>
<td>-0.0747</td>
<td>-0.0938</td>
<td>-0.0428</td>
</tr>
<tr>
<td>PRN_USE</td>
<td>-0.0619</td>
<td>-0.0324</td>
<td>-0.0584</td>
<td>-0.0768</td>
</tr>
<tr>
<td>PRN_OVR</td>
<td>-0.0347</td>
<td>-0.0018</td>
<td>-0.0184</td>
<td>-0.0997</td>
</tr>
</tbody>
</table>

Note. PRN=Principals; TCH=Teachers; ANX=Computer Anxiety; LIK=Computer Liking; CON=Computer Confidence; USE=Computer Usefulness; OVR=Overall Computer Attitudes.
Hypothesis 5

**Hypothesis 5**: There is no relationship between attitudes toward computers of educational administrators and teachers and computer usage in schools.

**Hypothesis 5a**: There is no relationship between attitudes toward computers of educational administrators and computer usage (see Appendix B) in schools.

As shown in Table 19, no significant correlations were found between educational administrators' attitudes toward computers and computer usage in classroom teaching, homework involving computer usage, and using the computer lab to teach. The null hypothesis is retained.

**Hypothesis 5b**: There is no relationship between attitudes toward computers of teachers and computer usage in schools.

Table 20 presents significant correlations between teachers using computers in classroom teaching and computer confidence ($r = .30, p = .05$) and computer usefulness scales ($r = .51, p = .05$). Based on the combined scales as the computer attitudes measure, computer usage in classroom teaching was significantly correlated with teachers' attitudes toward computers ($r = .32, p = .05$). As expected, the computer usefulness scale ($r = .51, p = .001$) had a moderate correlation with computer usage in classroom teaching. The computer usefulness scale ($r = .30, p = .05$) was also found to be significantly related to using the computer lab to teach lessons. Tables 21 and 22 show that there is no significant correlation between teachers' and principals' computer attitudes and classes using a computer lab.
### TABLE 19

**CORRELATION MATRIX OF PRINCIPALS' COMPUTER ATTITUDES AND COMPUTER USAGE QUESTIONS REPORTED BY TEACHERS**

<table>
<thead>
<tr>
<th>Principals' Computer Attitudes</th>
<th>T8</th>
<th>T9</th>
<th>T10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Anxiety</td>
<td>.0027</td>
<td>.0965</td>
<td>.0187</td>
</tr>
<tr>
<td>Computer Confidence</td>
<td>.0571</td>
<td>.1364</td>
<td>-.0613</td>
</tr>
<tr>
<td>Computer Liking</td>
<td>.0355</td>
<td>.1497</td>
<td>-.0535</td>
</tr>
<tr>
<td>Computer Usefulness</td>
<td>-.1403</td>
<td>-.0277</td>
<td>-.1451</td>
</tr>
<tr>
<td>Combined Scales</td>
<td>-.0034</td>
<td>.1068</td>
<td>-.0594</td>
</tr>
</tbody>
</table>

*Note. T8 = Use computer in classroom teaching (M=2.66; SD=0.77); T9 = Assign homework requiring some computer usage (M=2.51; SD=0.78); T10 = Use computer lab to teach a lesson (M=2.18; SD=0.81).*

### TABLE 20

**CORRELATION MATRIX OF TEACHERS’ COMPUTER ATTITUDES AND COMPUTER USAGE QUESTIONS REPORTED BY TEACHERS**

<table>
<thead>
<tr>
<th>Teachers’ Computer Attitudes</th>
<th>T8</th>
<th>T9</th>
<th>T10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Anxiety</td>
<td>.2618</td>
<td>.1020</td>
<td>.0822</td>
</tr>
<tr>
<td>Computer Confidence</td>
<td>.2961*</td>
<td>.2303</td>
<td>.0716</td>
</tr>
<tr>
<td>Computer Liking</td>
<td>.1492</td>
<td>-.1102</td>
<td>.0899</td>
</tr>
<tr>
<td>Computer Usefulness</td>
<td>.5111**</td>
<td>.0967</td>
<td>.3004*</td>
</tr>
<tr>
<td>Combined Scales</td>
<td>.3206*</td>
<td>.0678</td>
<td>.1405</td>
</tr>
</tbody>
</table>

*Note. T8 = Use computer in classroom teaching; T9 = Assign homework requiring some computer usage; T10 = Use computer lab to teach a lesson. 
* p = < .05.  ** p = < .001.

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TABLE 21
CORRELATION MATRIX OF TEACHERS' COMPUTER ATTITUDES AND COMPUTER LAB USAGE REPORTED BY PRINCIPALS

<table>
<thead>
<tr>
<th>Teachers' Computer Attitudes</th>
<th>Classes Using Computer Lab Daily</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Anxiety</td>
<td>0.1142</td>
</tr>
<tr>
<td>Computer Confidence</td>
<td>0.1426</td>
</tr>
<tr>
<td>Computer Liking</td>
<td>0.1108</td>
</tr>
<tr>
<td>Computer Usefulness</td>
<td>-0.0413</td>
</tr>
<tr>
<td>Combined Scales</td>
<td>0.1036</td>
</tr>
</tbody>
</table>

TABLE 22
CORRELATION MATRIX OF PRINCIPALS’ COMPUTER ATTITUDES AND COMPUTER LAB USAGE REPORTED BY PRINCIPALS

<table>
<thead>
<tr>
<th>Principals' Computer Attitudes</th>
<th>Classes Using Computer Lab Daily</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Anxiety</td>
<td>0.1630</td>
</tr>
<tr>
<td>Computer Confidence</td>
<td>0.0251</td>
</tr>
<tr>
<td>Computer Liking</td>
<td>0.1094</td>
</tr>
<tr>
<td>Computer Usefulness</td>
<td>0.0810</td>
</tr>
<tr>
<td>Combined Scales</td>
<td>0.1040</td>
</tr>
</tbody>
</table>

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Hypothesis 6

Hypothesis 6: There is no relationship between principals' encouragement of technological innovations and attitudes toward computers of teachers and educational administrators and computer usage in schools.

Tables 23 and 24 indicate that principals' encouragement of technological innovations were not significantly correlated with attitudes toward computers of teachers and educational administrators. As shown in Table 25, educational administrators' self-perceived encouragement of technological innovations had no significant correlations with using computers in classroom teaching, assigning homework requiring some computer usage, using the computer lab to teach a lesson, and teachers' perception of principals' encouragement of technological innovation. The null hypothesis is retained.

TABLE 23

CORRELATION MATRIX OF TEACHERS' COMPUTER ATTITUDES AND PRINCIPALS' ENCOURAGEMENT OF TECHNOLOGICAL INNOVATION REPORTED BY PRINCIPALS

<table>
<thead>
<tr>
<th>Teachers’ Computer Attitudes</th>
<th>Principals Encouraging Technological Innovation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Anxiety</td>
<td>.0749</td>
</tr>
<tr>
<td>Computer Confidence</td>
<td>.0738</td>
</tr>
<tr>
<td>Computer Liking</td>
<td>.0590</td>
</tr>
<tr>
<td>Computer Usefulness</td>
<td>-.0414</td>
</tr>
<tr>
<td>Combined Scales</td>
<td>.0590</td>
</tr>
</tbody>
</table>
TABLE 24
CORRELATION MATRIX OF PRINCIPALS' COMPUTER ATTITUDES AND PRINCIPALS' ENCOURAGEMENT OF TECHNOLOGICAL INNOVATION REPORTED BY PRINCIPALS

<table>
<thead>
<tr>
<th>Principals' Computer Attitudes</th>
<th>Principals Encouraging Technological Innovation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Anxiety</td>
<td>.0964</td>
</tr>
<tr>
<td>Computer Confidence</td>
<td>.1738</td>
</tr>
<tr>
<td>Computer Liking</td>
<td>.0347</td>
</tr>
<tr>
<td>Computer Usefulness</td>
<td>.0088</td>
</tr>
<tr>
<td>Combined Scales</td>
<td>.0886</td>
</tr>
</tbody>
</table>

TABLE 25
CORRELATION MATRIX OF PRINCIPALS' SELF-PERCEIVED ENCOURAGEMENT OF TECHNOLOGICAL INNOVATIONS AND COMPUTER USAGE QUESTIONS

<table>
<thead>
<tr>
<th>Computer Usage</th>
<th>Principals' Self-Perceived Encouragement of Technological Innovation</th>
</tr>
</thead>
<tbody>
<tr>
<td>In Classroom Teaching</td>
<td>-.0776</td>
</tr>
<tr>
<td>Required in Homework</td>
<td>.0148</td>
</tr>
<tr>
<td>Computer Lab to Teach</td>
<td>.1105</td>
</tr>
<tr>
<td>Teachers' Perception of Principals' Encouragement of Technological Innovations</td>
<td>-.0259</td>
</tr>
</tbody>
</table>
Other Findings

Although the hypothesis testing was based on schools as the unit of analysis, it would provide additional insight about teachers' impact on computer usage in schools if the findings of the entire sample of teachers were considered as well. The entire teacher sample consisted of 219 teachers who returned at least one questionnaire.

Table 26 presents the computer background of teachers. Most teachers own a computer at school (81%) and at home (76%). Close to two-thirds (62%) of the teachers learned how to use a computer on their own. About a third (30%) of the teachers have had a workshop or seminar in computer usage; 22% of them attended a college course in computers; 25% of them had a few college courses in computers; and only 4% of them had a college major or minor in computer.

Table 27 presents the variables that impact the computer climate in schools. More than half of the teachers (52%) had no computer in-service during the past 3 years. About a third of the teachers (30%) attended an annual computer in-service during the past 3 years, whereas 3% of them had one twice a year during the past 3 years. Most teachers (71%) reported that their principals did encourage technological innovation in classroom teaching (the frequency was “sometimes” to “often”).

Table 28 shows the means of computer attitudes of various subject teachers. Expectedly, computer and business teachers top the list in all computer attitude categories. They have more positive computer attitudes than any other teachers. Beside computer (overall mean = 3.69, SD = 0.42, N = 32) and business teachers (overall mean = 3.63, SD
**TABLE 26**

FREQUENCY DISTRIBUTION OF TEACHER COMPUTER BACKGROUND VARIABLES

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Ownership</td>
<td></td>
<td></td>
</tr>
<tr>
<td>At School</td>
<td>177</td>
<td>81</td>
</tr>
<tr>
<td>At Home</td>
<td>166</td>
<td>76</td>
</tr>
<tr>
<td>Computer Experience*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-taught computer</td>
<td>137</td>
<td>62</td>
</tr>
<tr>
<td>A workshop/seminar in computer</td>
<td>65</td>
<td>30</td>
</tr>
<tr>
<td>A college course in computer</td>
<td>47</td>
<td>22</td>
</tr>
<tr>
<td>A few college courses in computer</td>
<td>55</td>
<td>25</td>
</tr>
<tr>
<td>Major/Minor in computer</td>
<td>9</td>
<td>4</td>
</tr>
</tbody>
</table>

*Respondents were to check all that apply.

**TABLE 27**

FREQUENCY DISTRIBUTION OF SCHOOL COMPUTER CLIMATE VARIABLES

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer In-service</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>115</td>
<td>52</td>
</tr>
<tr>
<td>Once a year</td>
<td>66</td>
<td>30</td>
</tr>
<tr>
<td>Twice a year</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Once a quarter</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Once a month</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Others</td>
<td>27</td>
<td>12</td>
</tr>
<tr>
<td>Principals Encourage Technological Innovation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>18</td>
<td>8</td>
</tr>
<tr>
<td>Seldom</td>
<td>45</td>
<td>21</td>
</tr>
<tr>
<td>Sometimes</td>
<td>82</td>
<td>37</td>
</tr>
<tr>
<td>Often</td>
<td>74</td>
<td>34</td>
</tr>
</tbody>
</table>
three other groups, math teachers (overall mean = 3.49, SD = 0.48, N = 50), science teachers (overall mean = 3.47, SD = 0.50, N = 44), and music teachers (overall mean = 3.47, SD = 0.55, N = 18), also have more positive computer attitudes than others.

### Table 28

**Means of Computer Attitudes by Teaching Subjects**

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Anxiety M</th>
<th>N SD</th>
<th>Confidence M</th>
<th>N SD</th>
<th>Liking M</th>
<th>N SD</th>
<th>Usefulness M</th>
<th>N SD</th>
<th>Combined M</th>
<th>N SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer</td>
<td>3.75</td>
<td>32</td>
<td>3.71</td>
<td>33</td>
<td>3.56</td>
<td>33</td>
<td>3.76</td>
<td>33</td>
<td>3.69</td>
<td>72</td>
</tr>
<tr>
<td>Business</td>
<td>3.70</td>
<td>24</td>
<td>3.61</td>
<td>24</td>
<td>3.36</td>
<td>23</td>
<td>3.82</td>
<td>24</td>
<td>3.63</td>
<td>23</td>
</tr>
<tr>
<td>Languages</td>
<td>3.43</td>
<td>54</td>
<td>3.28</td>
<td>53</td>
<td>2.98</td>
<td>54</td>
<td>3.58</td>
<td>52</td>
<td>3.33</td>
<td>52</td>
</tr>
<tr>
<td>Religion</td>
<td>3.31</td>
<td>49</td>
<td>3.16</td>
<td>48</td>
<td>2.95</td>
<td>47</td>
<td>3.46</td>
<td>48</td>
<td>3.21</td>
<td>46</td>
</tr>
<tr>
<td>Music</td>
<td>3.47</td>
<td>19</td>
<td>3.42</td>
<td>19</td>
<td>3.32</td>
<td>18</td>
<td>3.68</td>
<td>19</td>
<td>3.47</td>
<td>18</td>
</tr>
<tr>
<td>History</td>
<td>3.37</td>
<td>39</td>
<td>3.12</td>
<td>38</td>
<td>3.00</td>
<td>38</td>
<td>3.58</td>
<td>36</td>
<td>3.26</td>
<td>36</td>
</tr>
<tr>
<td>Sciences</td>
<td>3.60</td>
<td>44</td>
<td>3.49</td>
<td>44</td>
<td>3.17</td>
<td>44</td>
<td>3.63</td>
<td>44</td>
<td>3.47</td>
<td>44</td>
</tr>
<tr>
<td>Math</td>
<td>3.57</td>
<td>52</td>
<td>3.51</td>
<td>53</td>
<td>3.28</td>
<td>52</td>
<td>3.63</td>
<td>52</td>
<td>3.49</td>
<td>50</td>
</tr>
<tr>
<td>Art</td>
<td>3.37</td>
<td>13</td>
<td>3.24</td>
<td>13</td>
<td>3.05</td>
<td>13</td>
<td>3.32</td>
<td>13</td>
<td>3.25</td>
<td>13</td>
</tr>
<tr>
<td>Home Ed</td>
<td>3.21</td>
<td>13</td>
<td>3.03</td>
<td>12</td>
<td>2.79</td>
<td>12</td>
<td>3.48</td>
<td>11</td>
<td>3.14</td>
<td>10</td>
</tr>
<tr>
<td>Phys. Ed</td>
<td>3.19</td>
<td>12</td>
<td>2.97</td>
<td>13</td>
<td>2.58</td>
<td>12</td>
<td>3.30</td>
<td>12</td>
<td>2.91</td>
<td>10</td>
</tr>
<tr>
<td>Tech. Ed</td>
<td>3.56</td>
<td>16</td>
<td>3.29</td>
<td>15</td>
<td>3.03</td>
<td>15</td>
<td>3.56</td>
<td>14</td>
<td>3.38</td>
<td>13</td>
</tr>
</tbody>
</table>

Table 29 describes the distribution of teachers using computers in instruction. The tendency of teachers using computers in instruction is indicated by the respective means: 2.43 (in classroom teaching), 2.37 (homework involving computers), and 1.94 (using lab to teach). The general picture is that the frequency of teachers using computers for...
instructional purposes is somewhere between seldom and sometimes. Close to half of the teachers did use computers in classroom teaching and homework between the frequency of sometimes and often. About a third of the teachers never used computers in classroom teaching and homework assignment, whereas half of the teachers never used the computer lab to teach any lesson.

### TABLE 29
NUMBER OF TEACHERS USING COMPUTERS FOR INSTRUCTIONAL PURPOSES
(Percentages in Parenthesis)

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1) Never</th>
<th>(2) Seldom</th>
<th>(3) Sometimes</th>
<th>(4) Often</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use computer in classroom teaching</td>
<td>72 (33)</td>
<td>40 (18)</td>
<td>47 (21)</td>
<td>59 (27)</td>
<td>2.43</td>
<td>1.21</td>
</tr>
<tr>
<td>Assign homework that requires computer usage</td>
<td>63 (29)</td>
<td>49 (22)</td>
<td>71 (32)</td>
<td>37 (17)</td>
<td>2.37</td>
<td>1.07</td>
</tr>
<tr>
<td>Use computer lab to teach lessons</td>
<td>118 (54)</td>
<td>32 (15)</td>
<td>33 (15)</td>
<td>36 (16)</td>
<td>1.94</td>
<td>1.16</td>
</tr>
</tbody>
</table>

As shown in Table 30, there are more female teachers in business, languages, and home economics. Table 31 presents those subjects that teachers have used computers most often for instructional purposes. Business and computer teachers top the lists in all three categories: computer usage in classroom teaching, homework that requires computer usage, and using computer lab to teach lessons. Language teachers came in a distant third
in the first (M=2.60) and second categories (M= 2.54). Although religion teachers came in last in the first and third categories, they reported some computer usage (2.41) involving homework in the second category.

**TABLE 30**

**FREQUENCY DISTRIBUTION OF TEACHERS BY SUBJECTS**

<table>
<thead>
<tr>
<th>Teaching Subjects</th>
<th>M</th>
<th>F</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer</td>
<td>18</td>
<td>15</td>
<td>33</td>
<td>15</td>
</tr>
<tr>
<td>Business</td>
<td>5</td>
<td>19</td>
<td>24</td>
<td>11</td>
</tr>
<tr>
<td>Languages</td>
<td>23</td>
<td>31</td>
<td>54</td>
<td>25</td>
</tr>
<tr>
<td>Religion</td>
<td>43</td>
<td>6</td>
<td>49</td>
<td>22</td>
</tr>
<tr>
<td>Physical Education</td>
<td>7</td>
<td>5</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>Music</td>
<td>12</td>
<td>7</td>
<td>19</td>
<td>9</td>
</tr>
<tr>
<td>Home Economics</td>
<td>1</td>
<td>12</td>
<td>13</td>
<td>6</td>
</tr>
<tr>
<td>History</td>
<td>33</td>
<td>6</td>
<td>39</td>
<td>18</td>
</tr>
<tr>
<td>Sciences</td>
<td>38</td>
<td>7</td>
<td>45</td>
<td>21</td>
</tr>
<tr>
<td>Math</td>
<td>44</td>
<td>8</td>
<td>52</td>
<td>24</td>
</tr>
<tr>
<td>Technology Education</td>
<td>14</td>
<td>1</td>
<td>15</td>
<td>7</td>
</tr>
<tr>
<td>Art</td>
<td>8</td>
<td>5</td>
<td>13</td>
<td>6</td>
</tr>
</tbody>
</table>

*Note. It is a “check all that apply” question. Most teachers teach multiple subjects. M=Male Teachers; F=Female Teachers; N=Total Number of Teachers.*
TABLE 31
MEANS OF COMPUTER USAGE BY SUBJECTS
(Mean Scores in Parentheses)

<table>
<thead>
<tr>
<th>Use Computer in Classroom Teaching (Sample Mean=2.43)</th>
<th>Assign Homework That Requires Computer Usage (Sample Mean=2.37)</th>
<th>Use Computer Lab to Teach Lessons (Sample Mean=1.94)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business (3.63)</td>
<td>Computer (3.12)</td>
<td>Business (3.58)</td>
</tr>
<tr>
<td>Computer (3.52)</td>
<td>Business (3.00)</td>
<td>Computer (3.39)</td>
</tr>
<tr>
<td>Languages (2.60)</td>
<td>Languages (2.54)</td>
<td>Music (2.11)</td>
</tr>
<tr>
<td>Sciences (2.56)</td>
<td>Religion (2.41)</td>
<td>Math (2.06)</td>
</tr>
<tr>
<td>Math (2.55)</td>
<td>Physical Ed (2.38)</td>
<td>Tech. Ed (2.06)</td>
</tr>
<tr>
<td>Home Ec (2.46)</td>
<td>Music (2.32)</td>
<td>Languages (2.00)</td>
</tr>
<tr>
<td>Music (2.32)</td>
<td>Home Ec (2.31)</td>
<td>Home Ec (2.00)</td>
</tr>
<tr>
<td>Tech. Ed (2.31)</td>
<td>History (2.20)</td>
<td>Art (2.00)</td>
</tr>
<tr>
<td>History (2.24)</td>
<td>Sciences (2.20)</td>
<td>Sciences (1.84)</td>
</tr>
<tr>
<td>Art (2.15)</td>
<td>Math (2.19)</td>
<td>History (1.69)</td>
</tr>
<tr>
<td>Physical Ed (1.92)</td>
<td>Tech. Ed (2.06)</td>
<td>Physical Ed (1.46)</td>
</tr>
<tr>
<td>Religion (1.90)</td>
<td>Art (1.62)</td>
<td>Religion (1.37)</td>
</tr>
</tbody>
</table>

Note. 1.0 = Never; 2.0 = Seldom; 3.0 = Sometimes; 4.0 = Often.

Inferential Statistics

Table 32 indicates the differences between gender in computer attitudes and in using computers in instruction. There are no significant differences among computer attitude scales based on gender except for the computer usefulness scale (t = -2.13; p < .05). Generally, the female teachers had higher means than male teachers in all three categories of computer usage. However, only the use of the computer lab to teach lessons was statistically significant (t = -2.97; p < .01). Female teachers seemed to use computers for instruction more often than did male teachers. The fact that there were more female
teachers teaching business (19 out of 24 business teachers) and languages (31 out of 54 language teachers) may explain why females were reported to use computers more often than male teachers.

**TABLE 32**

**COMPUTER ATTITUDES AND COMPUTER USAGE BY GENDER**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M  SD N</td>
<td>M  SD N t p</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer Attitudes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer Anxiety</td>
<td>3.49 .60 141</td>
<td>3.47 .55 75</td>
<td>.15</td>
<td>.884</td>
</tr>
<tr>
<td>Computer Confidence</td>
<td>3.37 .56 139</td>
<td>3.37 .52 75</td>
<td>.05</td>
<td>.957</td>
</tr>
<tr>
<td>Computer Liking</td>
<td>3.18 .65 138</td>
<td>3.07 .70 75</td>
<td>1.20</td>
<td>.233</td>
</tr>
<tr>
<td>Computer Usefulness</td>
<td>3.55 .44 137</td>
<td>3.68 .39 74</td>
<td>-2.13</td>
<td>.034*</td>
</tr>
<tr>
<td>Overall Computer Attitude</td>
<td>3.40 .50 132</td>
<td>3.41 .48 42</td>
<td>-1.11</td>
<td>.915</td>
</tr>
<tr>
<td>Computer Usage</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In Classroom Teaching</td>
<td>2.33 1.14 142</td>
<td>2.63 1.30 75</td>
<td>-1.66</td>
<td>.100</td>
</tr>
<tr>
<td>Required in Homework</td>
<td>2.34 1.02 143</td>
<td>2.45 1.17 75</td>
<td>-.66</td>
<td>.511</td>
</tr>
<tr>
<td>In Computer Lab</td>
<td>1.77 1.06 143</td>
<td>2.28 1.28 75</td>
<td>-2.97</td>
<td>.004**</td>
</tr>
</tbody>
</table>

* p < .05. ** p < .01.
Tables 33 and 34 present the differences in computer attitudes and computer usage based on teachers’ age. There are significant differences in computer confidence (F = 2.35; p < .05) and computer usefulness (F = 2.81; p < .05) according to teachers’ age groups. A SNK (Student-Neuman-Keuls) procedure was conducted to determine where the group differences lie for both computer confidence and computer usefulness. With respect to confidence, the 55+ group had significantly lower computer confidence than any of the other age group. The same age group (55+) had a significantly lower computer usefulness score than any of the other age groups. Although there are no significant differences in computer usage variables, the youngest teachers (between 25 and 29) appear to have used computers for instruction in all three computer usage categories more than others.

Table 35 presents the impact of teachers’ computer experience on their computer attitudes and computer usage in schools. Computer experience had significant relationships with all four computer attitude scales and the overall scale. Teachers who had a few college courses in computers and those who had a major/minor in computers were significantly more positive in computer attitudes than others. A SNK (Student-Neuman-Keuls) procedure was conducted to determine where the differences lie among the various computer backgrounds regarding teachers’ computer attitudes. For computer anxiety, a few college courses in computers were significantly higher than self-taught computer, computer workshop/seminar, and a college course in computers. Majoring or
### TABLE 33

**COMPUTER ATTITUDES BY TEACHER AGE GROUPS**

<table>
<thead>
<tr>
<th>Computer Attitudes</th>
<th>25-29</th>
<th>30-34</th>
<th>35-39</th>
<th>40-44</th>
<th>45-49</th>
<th>50-54</th>
<th>55+</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comp. Anxiety</td>
<td>3.56</td>
<td>3.41</td>
<td>3.56</td>
<td>3.52</td>
<td>3.51</td>
<td>3.26</td>
<td></td>
<td>.88</td>
<td>.51</td>
</tr>
<tr>
<td>N</td>
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<td>3.36</td>
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<td>3.52</td>
<td>3.44</td>
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<td>34</td>
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<td>Comp. Usefulness</td>
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<tr>
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<td>3.41</td>
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<td>.09</td>
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<td>0.43</td>
<td>0.39</td>
<td>0.61</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*a* Age group 55 and above is significantly different from groups 25-29, 45-49, and 50-54.

*b* Age group 55 and above is significantly different from other age groups (SNK procedure).

p < .05.
### TABLE 34

**COMPUTER USAGE VARIABLES BY TEACHER AGE GROUPS**

<table>
<thead>
<tr>
<th>Computer Usage</th>
<th>25-29</th>
<th>30-34</th>
<th>35-39</th>
<th>40-44</th>
<th>45-49</th>
<th>50-54</th>
<th>55+</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>In Classroom</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching</td>
<td>2.74</td>
<td>2.36</td>
<td>2.35</td>
<td>2.38</td>
<td>2.40</td>
<td>2.58</td>
<td>2.17</td>
<td>.63</td>
<td>.71</td>
</tr>
<tr>
<td>N</td>
<td>27</td>
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<td>31</td>
<td>34</td>
<td>32</td>
<td>36</td>
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<tr>
<td>SD</td>
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<td>1.31</td>
<td>1.16</td>
<td>1.20</td>
<td>1.27</td>
<td>1.20</td>
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<tr>
<td><strong>Required In</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Homework</td>
<td>2.78</td>
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</tr>
<tr>
<td>SD</td>
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<td>1.06</td>
<td>1.02</td>
<td>1.05</td>
<td>1.12</td>
<td>1.00</td>
<td>0.99</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>In Computer Lab</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To Teach Lessons</td>
<td>2.41</td>
<td>1.87</td>
<td>2.03</td>
<td>1.70</td>
<td>2.09</td>
<td>1.79</td>
<td>1.79</td>
<td>1.28</td>
<td>.27</td>
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<tr>
<td>N</td>
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<td></td>
</tr>
<tr>
<td>SD</td>
<td>1.28</td>
<td>1.13</td>
<td>1.17</td>
<td>1.03</td>
<td>1.25</td>
<td>1.12</td>
<td>1.14</td>
<td></td>
<td></td>
</tr>
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</table>

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### TABLE 35

**COMPUTER ATTITUDES AND COMPUTER USAGE BY COMPUTER EXPERIENCE**

<table>
<thead>
<tr>
<th>Computer Attitudes</th>
<th>Computer Experience</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comp. Anxiety</td>
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<td>3.37</td>
<td>3.30</td>
<td>3.23</td>
<td>3.80</td>
<td>3.84</td>
<td>4.75</td>
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<td>.57</td>
<td>.68</td>
<td>.37</td>
<td>.21</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
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<td>70</td>
<td>11</td>
<td>17</td>
<td>26</td>
<td>9</td>
<td></td>
<td></td>
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<td>Comp. Confidence</td>
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<td>3.24</td>
<td>3.10</td>
<td>3.16</td>
<td>3.60</td>
<td>3.84</td>
<td>5.82</td>
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<td>.46</td>
<td>.48</td>
<td>.37</td>
<td>.20</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>69</td>
<td>11</td>
<td>18</td>
<td>26</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comp. Liking</td>
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<td>2.93</td>
<td>2.92</td>
<td>3.52</td>
<td>3.58</td>
<td>5.36</td>
<td>.000**</td>
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<td></td>
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<td>.59</td>
<td>.67</td>
<td>.38</td>
<td>.45</td>
<td></td>
<td></td>
</tr>
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<td>10</td>
<td>18</td>
<td>26</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comp. Usefulness</td>
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<td>3.54</td>
<td>3.28</td>
<td>3.51</td>
<td>3.83</td>
<td>3.81</td>
<td>4.76</td>
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<td></td>
<td>SD</td>
<td>.43</td>
<td>.57</td>
<td>.42</td>
<td>.31</td>
<td>.18</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>67</td>
<td>11</td>
<td>18</td>
<td>26</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Attitude</td>
<td></td>
<td>3.32</td>
<td>3.11</td>
<td>3.21</td>
<td>3.69</td>
<td>3.77</td>
<td>6.51</td>
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<tr>
<td></td>
<td>SD</td>
<td>.50</td>
<td>.44</td>
<td>.51</td>
<td>.31</td>
<td>.23</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>66</td>
<td>10</td>
<td>17</td>
<td>26</td>
<td>9</td>
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<td></td>
</tr>
</tbody>
</table>

| In Classroom Teaching |                     | 2.14 | 2.09 | 1.94 | 2.54 | 3.00 | 1.86  | .121  |
|                      | SD                  | 1.09 | 1.13 | 1.16 | 1.27 | 1.32 |       |       |
|                      | N                   | 70   | 11   | 18   | 26   | 9    |       |       |
| Required in Homework |                     | 2.34 | 2.36 | 1.94 | 2.46 | 2.89 | 1.28  | .281  |
|                      | SD                  | 1.08 | 1.02 | .94  | 1.07 | 1.27 |       |       |
|                      | N                   | 70   | 11   | 18   | 26   | 9    |       |       |
| In Computer Lab      | To Teach Lessons    | 1.61 | 1.09 | 1.56 | 2.23 | 2.78 | 5.12  | .000**|
|                      | SD                  | .98  | .30  | .92  | 1.37 | 1.20 |       |       |
|                      | N                   | 70   | 11   | 18   | 26   | 9    |       |       |

*Note. A = Self-Taught Computer; B = A workshop/seminar in computer; C = A college course in computer; D = A few college courses in computer; E = Major/minor in computer.

* *p < .01. ** p < .001.
minoring in computers was significantly higher than self-taught computer, computer workshop/seminar, and a college course in computers.

For computer confidence, a few college courses in computers was significantly higher than self-taught computer, computer workshop/seminar, and a college course in computers. Majoring or minoring in computers was significantly higher than self-taught computer, computer workshop/seminar, and a college course in computers. For computer liking, a few college courses in computers was significantly higher than self-taught computer, computer workshop/seminar, and a college course in computers. Majoring or minoring in computers was significantly higher than self-taught.

For computer usefulness, a few college courses in computers was significantly higher than self-taught computer and computer workshop/seminar. Majoring or minoring in computers was significantly higher than computer workshop/seminar. For overall computer attitudes, a few college courses in computers was significantly higher than self-taught computer, computer workshop/seminar, and a college course in computers. Majoring or minoring in computers was significantly higher than self-taught computer, computer workshop/seminar, and a college course in computers.

As for computer usage, there is a significant relationship between computer experience ($F = 5.12, p < .001$) and the use of computer labs to teach lessons. A SNK (Student-Neuman-Keuls) procedure was conducted to determine where the differences lie among the various computer backgrounds. Having a few college courses in computers was significantly higher than self-taught computer and computer workshops and seminar.
regarding using the computer lab to teach. Majoring or minoring in the computer field was significantly higher than self-taught computer and computer workshops and seminars regarding using the computer lab to teach.

Table 36 presents the correlations between computer attitudes and computer usage in schools. Computer attitudes are significantly correlated (positive, $p<.001$) with computer usage in classroom teaching and using the computer lab to teach lessons. There is no significant relationship between computer attitudes and assigning homework that requires computer usage.

**TABLE 36**

**CORRELATIONS OF COMPUTER USAGE AND COMPUTER ATTITUDES**

<table>
<thead>
<tr>
<th>Computer Usage Variables</th>
<th>Computer Usage Variables</th>
<th>Anxiety</th>
<th>Confidence</th>
<th>Liking</th>
<th>Usefulness</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use Computer in Classroom Teaching</td>
<td>Use Computer in Classroom Teaching</td>
<td>.2919**</td>
<td>.3801**</td>
<td>.2331**</td>
<td>.3830**</td>
<td>.3509**</td>
</tr>
<tr>
<td>Assign Homework That Requires Computer Usage</td>
<td>Assign Homework That Requires Computer Usage</td>
<td>.1191</td>
<td>.1558</td>
<td>.0749</td>
<td>.1674</td>
<td>.1390</td>
</tr>
<tr>
<td>Use Computer Lab To Teach Lessons</td>
<td>Use Computer Lab To Teach Lessons</td>
<td>.2908**</td>
<td>.3546**</td>
<td>.2751**</td>
<td>.3444**</td>
<td>.3492**</td>
</tr>
</tbody>
</table>

** $p < .001$. 

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Table 37 shows the correlations between principals' encouragement of technological innovation in classroom teaching and computer usage in schools. Principals' encouragement of technological innovations in classroom teaching is significantly correlated (p<.001) with all three categories of computer usage. The more often principals encourage technological innovation, the more often teachers use computers for instruction.

**TABLE 37**

CORRELATIONS OF COMPUTER USAGE AND TEACHER-PERCEIVED PRINCIPALS' ENCOURAGEMENT OF TECHNOLOGICAL INNOVATIONS

<table>
<thead>
<tr>
<th>Computer Usage Variables</th>
<th>Principals' Encouragement of Technological Innovation as Perceived by Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use Computer in Classroom Teaching</td>
<td>.3574**</td>
</tr>
<tr>
<td>Assign Homework That Requires Computer Usage</td>
<td>.2528**</td>
</tr>
<tr>
<td>Use Computer Lab to Teach Lessons</td>
<td>.3023**</td>
</tr>
</tbody>
</table>

** p < .001.

Table 38 presents the impact of computer in-service on computer attitudes and computer usage. There are no significant relationships between computer in-service and computer attitudes. Computer in-service is also not significantly correlated with all three
TABLE 38
COMPUTER ATTITUDES, COMPUTER USAGE,
AND COMPUTER CLIMATE BY COMPUTER INSERVICE

<table>
<thead>
<tr>
<th>Attitudes &amp; Usage</th>
<th>None</th>
<th>Once/Year</th>
<th>Twice/Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>N</td>
</tr>
<tr>
<td>Computer Attitudes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comp. Anxiety</td>
<td>3.50 .58</td>
<td>113</td>
<td>3.52 .54</td>
</tr>
<tr>
<td>Comp. Confidence</td>
<td>3.40 .56</td>
<td>113</td>
<td>3.34 .52</td>
</tr>
<tr>
<td>Comp. Liking</td>
<td>3.20 .66</td>
<td>113</td>
<td>3.09 .69</td>
</tr>
<tr>
<td>Comp. Usefulness</td>
<td>3.60 .45</td>
<td>110</td>
<td>3.60 .41</td>
</tr>
<tr>
<td>Overall Attitude</td>
<td>3.43 .50</td>
<td>106</td>
<td>3.39 .48</td>
</tr>
<tr>
<td>Computer Usage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use Computer in Classroom Teaching</td>
<td>2.30 1.24</td>
<td>115</td>
<td>2.50 1.13</td>
</tr>
<tr>
<td>Assign Homework That Requires</td>
<td>2.26 1.12</td>
<td>115</td>
<td>2.50 .95</td>
</tr>
<tr>
<td>Computer Lab to Teach Lessons</td>
<td>1.98 1.23</td>
<td>114</td>
<td>1.77 1.00</td>
</tr>
<tr>
<td>Computer Climate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Principal Encourages Technology</td>
<td>2.75 1.00</td>
<td>115</td>
<td>3.23 .72</td>
</tr>
</tbody>
</table>

**p < .001.
variables in computer usage. But there is a significant relationship between computer in-service (F = 8.51; p < .001) and principals' encouragement of technological innovation in classroom teaching. It seems that principals who provide computer in-service to teachers tend to encourage technological innovation more often.

The difference between the two samples, school as a unit and teacher as a unit, was due to the difference between the teachers' scores as school composites and teachers' individual scores. Tables 39 and 40 show the correlations between teachers' computer attitudes and computer usage questions “using computer in classroom teaching” and “using computer lab to teach” for 74 teachers (the difference between school as a unit sample and teacher as a unit sample) and 145 individual teachers' score (not school composite).

### TABLE 39

<table>
<thead>
<tr>
<th>Computer Usage Variables</th>
<th>Anxiety</th>
<th>Confidence</th>
<th>Liking</th>
<th>Usefulness</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use Computer In Class</td>
<td>.1915</td>
<td>.3603*</td>
<td>.1143</td>
<td>.3148*</td>
<td>.2807</td>
</tr>
<tr>
<td>Assign Homework Requiring Computer Usage</td>
<td>.1147</td>
<td>.1109</td>
<td>.0188</td>
<td>.0417</td>
<td>.0877</td>
</tr>
<tr>
<td>Use Computer Lab To Teach Lessons</td>
<td>.3181*</td>
<td>.4058**</td>
<td>.1894</td>
<td>.2411</td>
<td>.3468*</td>
</tr>
</tbody>
</table>

* p < .05; ** p < .001.
TABLE 40

CORRELATIONS OF COMPUTER USAGE AND COMPUTER ATTITUDES FOR 145 TEACHERS WHO COMPLETED BOTH CAS AND LBA II (TEACHER AS A UNIT)

<table>
<thead>
<tr>
<th>Computer Usage Variables</th>
<th>Anxiety</th>
<th>Confidence</th>
<th>Liking</th>
<th>Usefulness</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use Computer in Classroom Teaching</td>
<td>0.2974**</td>
<td>0.3428**</td>
<td>0.2145</td>
<td>0.4209**</td>
<td>0.3440**</td>
</tr>
<tr>
<td>Assign Homework That Requires Computer Usage</td>
<td>0.0977</td>
<td>1.031</td>
<td>0.0105</td>
<td>0.1440</td>
<td>0.0914</td>
</tr>
<tr>
<td>Use Computer Lab To Teach Lessons</td>
<td>0.2474*</td>
<td>0.3153**</td>
<td>0.2535*</td>
<td>0.3634**</td>
<td>0.3225**</td>
</tr>
</tbody>
</table>

* p < .05; ** p < .001.

Summary

Educational administrators' primary leadership styles (comparing S3 and S4) had significant correlations with educational administrators' computer anxiety, computer liking, and combined scales, whereas leadership style effectiveness and leadership style flexibility had no significant correlations with educational administrators' attitudes toward computers. The age and ethnicity of educational administrators also had no significant correlation with their attitudes toward computers.

Although educational administrators' primary leadership styles and leadership style effectiveness had no significant correlations with teachers' attitudes toward computers,
inverse relationships were found between leadership style flexibility and teachers’ attitudes toward computers, particularly significant with computer usefulness scale ($r = -.33; p < .05$). No significant relationships were found between attitudes toward computers of educational administrators and attitudes toward computers of teachers.

Attitudes toward computers of teachers are significantly correlated with computer usage in classroom teaching. The computer usefulness scale ($r = .51; p < .01$) was found to have some correlation with computer usage in classroom teaching. Computer usefulness ($r = .30; p < .05$) was significantly correlated with using the computer lab for instructional purposes.

Although most teachers reported owning computers at school (81%) and at home (76%), 52% of the teachers had no computer in-service during the past 3 years. Half of the teachers hardly or never used the computer for instructional purposes. Attitudes toward computers among teachers were generally positive (3.4 out of 4.0) with computer and business teachers topping the list (3.69 and 3.63 respectively).

Although the age of teachers was significantly correlated with computer confidence and computer usefulness scales, there were no significant differences in computer usage. Although gender had no correlation with attitudes toward computers of teachers except for computer usefulness, female teachers using computers for instruction more than male teachers was especially significant in using the computer lab for instruction. Teachers’ computer experience had a significant relationship with their attitudes toward computers, particularly among those who had a few college computer
courses. Computer experience of teachers also had a significant relationship with teachers using computer lab for instruction.

Attitudes toward computers of teachers were significantly correlated with using computers in classroom teaching and using computer lab for instruction. It seems that teachers' with more positive computer attitudes use computers more often for instructional purposes. Although the statistical data in unit analysis indicated no correlation from principals’ self-reported data on technological encouragement, principals’ encouragement of technological innovations reported by teachers had significant positive correlations with all three computer usage questions: computer usage in classroom teaching, assigning homework requiring computer usage, and using computer lab for instruction. The difference may be due to the fact that principals’ self-perceived encouragement of technological innovation was dissimilar to teachers’ perception of what constituted encouragement of technological innovation. Principals may perceive “pushing” as encouragement whereas teachers might perceive principals’ “encouragement” as administrative pressure.

Computer in-service was not correlated with teachers' attitudes toward computers and computer usage, but it had a significant correlation with principals’ encouragement of technological innovation in classroom teaching.
CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

This chapter presents the summary of the research study, the conclusions derived from the findings and discussions, recommendations for implementation, and suggestions for further research.

Summary of the Study

Introduction

The purpose of this study was to investigate whether there are significant relationships between educational administrators' attitudes toward computers, their leadership styles as perceived by their teachers, and computer usage in schools. It was hoped that the results of this study would yield findings on factors that influence attitudes toward computers among educators and computer usage in schools. Since the survey was conducted in late 1995, the easy access to the Internet in education over the past three years may have allowed teachers more accessibility in using computers in the classroom.

Review of Literature

The early research in attitudes toward computers began with the investigation of relationships between attitudes toward computers and demographic variables such as age...
and gender. The research that focused on age and gender yielded mixed results, which raised questions about the potential impact of age perceptions and gender roles, rather than the actual age and gender, on attitudes toward computers. The research investigating the impact of computer background or experience on attitudes toward computers produced more conclusive results of its strong influence on attitudes toward computers. Significant studies involving teachers' and educational administrators' attitudes toward computers discussed in the review of literature were found to have mixed results. Other studies in computer usage found that attitudes toward computers and computer training had a significant impact on computer usage.

The leadership section of the review of literature covered the various theories of leadership. The leadership theories of "Great Man Theory" and "Trait Theory" focused on the distinct qualities of "born" leaders. The "Behaviorist Theory" moved away from emphasizing the qualities of leaders to measurable behaviors. The leadership behavior studies at Ohio State University and the University of Michigan dominated the leadership behaviors research during the 1950s and 1960s. The "Contingency Theory" and "Situational Leadership Theory" examined how contextual and situational variables affect leadership behaviors and effectiveness. This study selected the "Situational Leadership Theory" because of its encompassing approach toward the study of leadership and its additional situational dimension that could include many factors that impact computer attitudes and computer usage in schools.
Procedures

A questionnaire consisting of the Computer Attitude Scale (CAS), demographic questions, and questions about computer usage in schools was sent to selected principals of Seventh-day Adventist academies throughout the United States. A separate questionnaire consisting of the Computer Attitudes Scale, Leader Behavior Analysis II-Other, and several questions about computer usage in schools was sent to the teachers of these respective academies. Each questionnaire was accompanied by a cover letter and endorsement letters from the North American Division Education Department and the respective Union Education Department and Conference Education Department. To encourage a 100% return rate, follow-up letters were sent to principals and their teachers who had not returned the questionnaire to encourage them to return them promptly.

The Computer Attitude Scale (CAS) was selected for this study because of its wide use in measuring the attitudes toward computers among educators and students and its high reliability and validity. The alpha coefficients of reliability for the four subscales of the Computer Attitude Scale are .90 (computer anxiety), .89 (computer confidence), .89 (computer liking), .82 (computer usefulness), and .95 for the total score of CAS (Loyd & Loyd, 1985). The Leader Behavior Analysis (LBA) II-Other was selected for this study because it is a reliable scale used by many researchers in leadership research. Based on the reliability studies on the LBA and LBA II questionnaires administered over a period of 8 years, Zigarmi and Zigarmi (1991) concluded that the instruments were stable and reliable.
Summary of the Findings and Conclusions

This section presents the summary statements of findings and conclusions in the study.

1. The dominant primary leadership styles among the educational administrators as perceived by their teachers are “Supporting Style” (S3, 43%) of low directive and high supportive and “Delegating Style” (S4, 35%) of low directive and low supportive. The teachers perceived their administrators as supportive and delegating facilitators. The dominant primary leadership style of S3 (Supporting Style) confirmed what Hershey and Blanchard (1988) observed as the most frequently identified primary leadership style in the United States and the developed world. Most educational administrators (78%) were perceived by their teachers as assuming a less directive leadership role in accomplishing tasks in schools. They were using the supportive and delegating styles.

2. The “Delegating Style” administrators have more positive attitudes toward computers than the rest in all four scales and the combined scale. The more positive attitudes toward computers of S4 (Delegating Style) supported the findings of Carlson (1985) who observed some correlations between S4 and information technology.

3. Teachers perceived their administrators as not highly flexible in their leadership style flexibility ($M = 17.76$ on a 0-30 scale) and also not highly effective in their leadership style effectiveness ($M = 46.16$ on a 20-80 scale). The educational administrators were perceived by their teachers as displaying slightly above average flexibility in choosing leadership styles. Inflexible leaders chose one leadership style
more often than other leadership styles, whereas flexible leaders used the four leadership styles more evenly (Blanchard et al., 1993). The findings indicate that educational administrators did prefer a certain direction in their choice of leadership styles as well as some flexibility in certain situations. Teachers perceived their educational administrators as less effective in their choice of correct leadership styles as set by the developers of the instrument. Effective leaders are those who choose the appropriate leadership styles according to the situations described (Blanchard et al., 1993).

4. Primary leadership styles, leadership style flexibility, and leadership style effectiveness were found to have no significant relationships with educational administrators’ attitudes toward computers. This finding confirmed the results from the study of a group of managers in which Stone (1990) did not find any significant correlation between leadership styles and computer attitudes. Nevertheless, Stone (1990) indicated that the S1 leadership style, which is high directive and low relationship, had a lower positive computer attitude score. His finding complemented what Mann (1988) indicated as a strong correlation between the leadership style of consideration, which is relationship-based, and positive attitudes toward computer implementation.

However, when comparing the two dominant leadership styles S3 and S4, there were significant differences for computer anxiety, computer liking, and the combined scales (see Table 6). S4 leadership style was correlated with more positive computer attitudes. Since S4 leadership style is low directive/low relationship, the finding was in
contrast with the correlation Mann (1988) found between “high relationship”
leadership style and positive computer attitudes. The significant differences between
the two dominant leadership styles for computer anxiety may confirm the correlation
Childers (1991) found between leadership style and computer anxiety.

5. There were no significant relationships between age and ethnicity of
educational administrators and their attitudes toward computers. Although
educational administrators’ age was not significantly correlated with their computer
attitudes due to the low sample size, there is a pattern that the age group 55 or more
had less positive computer attitudes than other age groups.

Studies correlating age with attitudes toward computers found inconclusive
findings. Some studies found that age correlated significantly with attitudes toward
computers (Dolgos, 1991; Eduljee, 1995; Kindel, 1995; Lim, 1996; Tonsetic, 1996),
whereas other studies did not find any significant correlations (Grogan, 1991; Liu, 1996;
Massoud, 1989; McGregor, 1993). The lack of a significant relationship between ethnicity
and computer attitudes may be due to the small sample for non-Caucasians.

6. There were no significant relationships between educational administrators’
primary leadership styles, leadership flexibility, and leadership style effectiveness and
teachers’ attitudes toward computers. The lack of significance may be due to the fact
that the composite teacher score (for 49 schools) in computer attitudes may not be
large enough a sample as compared to the 219 individual teacher scores in computer
attitudes.
7. There was no relationship between educational administrators’ attitudes toward computers and teachers’ attitudes toward computers. Studies show that teachers’ positive attitudes toward computers are influenced more by personal factors and computer exposure (Dolgos, 1991).

8. There were significant relationships between teachers’ attitudes toward computers and using computers in classroom teaching except for computer liking and computer anxiety scales. The statistical analysis from the complete teacher sample (219 teachers) confirmed the above significant relationship for all scales. Research has shown that teachers’ attitudes toward computers had a significant correlation with computer usage in the classroom (Dupagne & Krendl, 1992). In this study, teachers with more positive attitudes toward computers tend to use computers in classroom teaching more often than teachers with less positive attitudes toward computers. The proliferation of computers and emerging technologies may have also influenced teachers to incorporate more computer usage in the classroom (Hollingsworth & Eastman, 1997).

9. There were significant relationships between teachers’ attitudes toward computers (combined scale) and using computer labs for instruction. The statistical analysis from the complete teacher sample confirmed the above significant relationships for all scales. This finding confirmed the correlation Kindel (1995) found between computer attitudes and computer usage for instruction.

10. There were no significant relationships between educational administrators’ attitudes toward computers and computer usage in schools. This
finding confirmed the study of senior high-school principals in Taiwan by Lin (1993) who did not find any significant correlation between principals’ computer attitudes and traditional instructional computer usage. The lack of significant relationships may also be due to the small sample of composite scores (49) for the computer usage questions.

11. Female teachers used computers more often than male teachers in classroom teaching, assigning homework that required computer usage, and using the computer lab for instruction. There was a significant relationship between gender and using computer labs for instruction.

Since the majority of the business teachers are female (19 out of 24) and business teachers rank at the top in using computers for instructional purposes, it is not surprising that female teachers used computers more often than their male counterparts did. Moreover, language teachers, which is the only other group that had more female teachers (31 out of 54 who teach languages), also used computers more in classroom teaching and homework, after business and computer teachers. The significant relationship between female teachers and using the computer lab for instruction could be due to female teachers using more business and word processing applications to teach in the computer lab. Although some studies supported the significant relationship between gender and computer attitudes (Childers, 1991; Grogan, 1991; Hwang, 1990; Lim, 1996; Shawareb, 1993; Tonsetic, 1996), other studies found gender not to be a significant factor on computer attitudes (Connell, 1991; Eduljee, 1995; Francis, 1990; Kindel, 1995; Knighton, 1990; Liu, 1996; Luckett, 1997; Sariya, 1992; Wood, 1996).
12. Computer and business teachers had the most positive computer attitudes and used computers for instruction more than other subject teachers. This finding supported a study of 130 faculty members at a junior college which found business and technology faculty members had more positive computer attitudes and used computers more than others (Fuller, 1994).

13. There was a significant relationship between computer experience and teachers' attitudes toward computers. This finding confirmed many studies (Eduljee, 1995; Francis, 1990; Grogan, 1991; Knighton, 1990; Lim, 1996; Liu, 1996; Roseboro, 1992) that found significant correlations between computer experience and attitudes toward computers. The review of literature by Jay and Willis (1992) confirmed the relationship between computer experience and positive attitudes toward computers, especially among older adults.

14. There was a significant relationship between computer experience and using the computer lab for instruction. Although computer experience did not have any significant impact on computer usage in classroom teaching and homework, it had a very significant correlation with using the computer lab for teaching purposes. This finding is in agreement with Fuller (1994) who found significant correlation between computer experience among faculty members and their computer use.

15. There was a significant relationship between administrators' encouragement of technological innovation in classroom teaching and all three computer usage questions: using computers in classroom teaching, assigning homework that required computer usage, and using the computer lab for instruction.
The personal influence and encouragement of principals may have impacted computer implementation and usage (Mann, 1988).

16. There was a significant relationship between administrators' encouragement of technological innovation in classroom teaching and computer in-service for teachers. It may be true that principals who provide computer in-service for teachers tend to encourage teachers to apply what they learned in classroom teaching.

**Personal Observations**

This section describes some personal observations of the researcher of this study. The observations are based on the researcher's personal experience and projections from the study and should not be taken as substantiated findings.

1. **Principals' leadership styles.** The majority of the principals (78%) were using a low-directive approach in their administration. This may favor creativity and innovation in the use of computers in schools. Since principals of low-directive/low-relationship S4 leadership style had more positive computer attitudes, they tend to provide a less intrusive environment and a better computer climate to encourage innovation. They may also feel less threatened by the presence of teachers who regularly propose new ideas and new technologies for instructional purposes.

   Teachers who are early adopters of technology may need any directive from principals to further integrate computers into the curriculum. Teachers who are resistant toward computers or have great computer anxiety tend to resist or ignore any
strong "push" to use computers for instruction. Providing the necessary resources, funding, and conducive computer climate would be a better approach to increase computer usage and integration.

The lack of flexibility in the choice of leadership styles among educational administrators may have prevented them from selecting the appropriate leadership styles for certain situations. Since educational administrators in this study were neither highly flexible nor effective in their choice of leadership styles, they may not be as open and receptive toward technological innovations in education. Some of them could feel uncomfortable about teachers who are highly innovative in using computers in education. More in-service and conference attendance for educational administrators may help increase their flexibility and effectiveness in their leadership styles.

2. Principals' computer attitudes. Since educational administrators' attitudes toward computers had no significant correlation with computer usage in schools, they should not expect that somehow their interest in computers may trickle down to their teachers. They need to make strategic efforts to encourage intrinsic motivation within teachers to integrate computers into classroom teaching. Providing a conducive computer climate in schools is crucial to getting teachers into the mode of being innovative in using technology. An effective strategy would be to let teachers experiment with various kinds of instructional technology. Although some of their experimental efforts with using computers might not amount to anything worthwhile, the process of getting started with some form of instructional technology might
provide teachers with the necessary momentum toward integration of computers in classroom teaching. Thus, educational administrators must not rely merely on hoping that their interests in computers would somehow generate increased computer usage for instructional purposes. Strategic efforts must be made to motivate teachers if educational administrators hope to see their impact on computer usage in schools. Dolgos (1991) concurred that teachers’ attitude and motivation were influenced by innate factors.

3. **Teacher gender.** Research studying gender and computer attitudes has produced inconclusive results. Contrary to the stereotype that men have more positive computer attitudes and greater computer use than women, this study found that female teachers had more positive attitudes toward computer usefulness and used computers for instruction more often than their male counterparts. This may suggest that the perception of gender role and not gender may be correlated with computer attitudes and computer use. This study indicates that female teachers used computers more frequently than the male teachers in classroom instruction.

4. **Teaching subjects.** As expected, computer and business teachers had the most positive computer attitudes and used computers for instruction more often than other subject teachers. Since computer experience was also significantly correlated with computer attitudes and the use of the computer lab for instruction, it may be true that teachers in computer and business fields had a greater advantage than other subject teachers because of their early exposure to computers in college. Likewise, if other academic programs also incorporate computer use adequately into college
teaching, there may be a substantial increase of early exposure for other college graduates, particularly crucial for education majors since they will most likely become teachers themselves.

5. **Teacher computer experience.** Teachers’ computer experience in this study was found to have a significant impact on positive attitudes toward computers. Having several computer college courses seems to have the greatest impact on positive attitudes toward computers. The computer exposure that teachers experienced during their college days may have played a pivotal role in developing their positive attitudes toward computers, which in turn impacted more computer usage for instructional purposes later on in their teaching careers.

Computer training and in-service for teachers in the form of short seminars or workshops may not be the most productive since they usually do not provide enough in terms of content and time to sustain teachers’ interest in using computers in teaching. The lack of ongoing computer in-service and the lack of continuity in short seminars and workshops may also have contributed to less impact on positive attitudes toward computers than having several college computer courses. If computer in-service is patterned after the self-contained nature in a college course, its impact on positive attitudes toward computers may be greater. Requiring good instructional design for computer in-service similar to those in college courses may also bring about a more productive outcome in improving teachers’ attitudes toward computers.

Having several college computer courses or a computer major or minor increased computer lab usage significantly. It may be more challenging for teachers
who have less computer experience to deal with many computers in a computer lab. Since most schools have only one computer lab, teachers may have to justify the use of the computer lab for instructional purposes. Justifying the need and scheduling problems may discourage teachers with less computer experience from using the computer lab for instruction.

Teachers who had several college computer courses had spent considerable time in a college computer lab for classes and programming projects. Being familiar with how computers work in a lab and seeing how their college instructors used the computer lab to teach classes gave these teachers more confidence in using the computer lab for instructional purposes. Having teachers use computers in the lab during computer in-service may help them feel more comfortable with using the computer lab to teach classes later on. Observing competent computer trainers teach in the computer lab would also help teachers visualize how they themselves could use the lab to teach. Likewise, college professors in teacher training programs should model the use of technology in classroom teaching. Modeling the use of technology in classroom teaching and providing the necessary computer experience during teacher training may greatly increase the use of computers in classroom teaching among K-12 teachers.

6. **Principals’ encouragement of technological innovation.** Teachers’ perception of educational administrators’ encouragement of technological innovation in classroom teaching had a significant correlation with computer usage. Although teachers may not like being pressured to use computers for instruction, they may
appreciate principals who are supportive and encouraging. What teachers perceived to be genuine encouragement, especially when accompanied by some incentives, may have some impact on computer usage.

Teachers’ perception of educational administrators’ encouragement of technological innovation in classroom teaching also had a significant correlation with the frequency of computer in-service for teachers. The study indicated that educational administrators who were perceived to encourage technological innovation more often tend to provide more computer in-service for teachers. It could also be possible that educational administrators who provided more computer in-service may encourage technological innovations in classroom teaching more often.

Educational administrators who are perceived by teachers as encouraging technological innovations more frequently tend to spend more time thinking and planning how they could equip teachers with better skills in using computers to teach. Educational administrators may have to justify the need of having more computer in-service by encouraging technological innovations more frequently. More encouragement of technological innovations may also result in more requests from teachers for more computer in-service. If educational administrators want to see more technological innovations in the classroom, they ought to be prepared to have more computer training and in-service for teachers.
Implications of the Study

Based on the findings and conclusions of this study, these implications are noted:

1. The leadership behavior of educational administrators does not necessarily reflect favorable or unfavorable attitudes toward computers since primary leadership styles, leadership style flexibility, and leadership style effectiveness were not significantly related to educational administrators' attitudes toward computers. Both age and ethnicity of educational administrators may not be used for evaluating principals' attitudes toward computers since educational administrators' age and ethnicity were not significantly related to their attitudes toward computers.

2. Attitudes toward computers of educational administrators may not be used to determine if they influence teachers' computer attitudes since educational administrators' attitudes toward computers were not significantly related to teachers' attitudes toward computers.

3. Educational administrators' attitudes toward computers may be used to project whether there will be a greater integration of the computer in the curriculum or a greater usage of the computer lab for instruction. It is more important to see principals encouraging technological innovations in classrooms since teacher-perceived principals' encouragement of technological innovation is significantly correlated with computer usage.

4. Since the computer experience of teachers had a significant impact on their positive attitudes toward computers and use of computer labs for instruction,
providing a conducive computer climate and more computer in-service would help teachers' attitudes toward computers to be more positive. A more conducive computer climate through educational administrators' strong encouragement in using technology tends to increase computer usage in schools.

5. Gender is not a factor when considering in strengthening or increasing computer usage for instruction. Educational administrators should not consider male teachers first for computer training or in-service. Female teachers are equally receptive, if not more receptive, toward participating in computer training. Female teachers who were primarily business and language teachers used the computer lab for instruction more often than did their male counterparts. They also used computers in classroom teaching and homework assignments more often than did the male teachers.

6. Educational administrators should regularly obtain feedback from teachers to evaluate their perceptions of administrators' role in promoting computer usage in schools. It is possible that some educational administrators who are overtly sold on computers exert undue pressure on teachers who may not be ready to embrace the use of computers in classroom teaching. It is more important to assess teachers' perceptions toward the computer climate in schools and pursue computer implementation and integration according to the pace of teachers of various degrees of positiveness of attitudes toward computers. It is better to work with teachers from within to help them to be intrinsically motivated to use computers for instruction rather than increase their anxiety toward computers.
Recommendations for Further Research

1. More detailed questions should be asked regarding the types of computer applications used and the kinds of activities involving computers as tools in instruction. Knowing the types of application software used and computer activities would help if computer usage is restricted to word processing, which would narrow the implication of computer usage. A more specific definition of computer usage should be stated and used in future research.

2. Questions about educational administrators’ computer background should be asked and studied to learn if their computer experience has an impact on their attitudes toward computers and computer usage in schools.

3. Further research into the kinds of computer in-service should be conducted to determine if different types of computer in-service and the nature of the computer training would have any impact on teachers’ attitudes toward computers and computer usage in schools.

4. Interviews should be conducted to provide contextual information relevant to the leadership styles, attitudes toward computers of educational administrators and teachers, and computer usage for instruction.

5. Since the sample of this study was restricted to a Christian denominational secondary school system, the findings cannot be generalized to the larger population of other private or public secondary schools. This study should be replicated in other settings to establish more conclusive findings.
APPENDIX A

CORRESPONDENCE
September 11, 1995

Daniel Lim
500 Garland Avenue, G-12
Berrien Springs, MI 49103

Dear Mr. Lim:

In response to your inquiry, I am enclosing a copy of our survey of attitudes towards computers.

The survey is scored according to the following:

- For questions 1, 3, 4, 6, 9, 11, 12, 14, 16, 17, 19, 22, 25, 27, 28, 30, 33, 35, 36, 38 (Strongly Agree=4, Slightly Agree=3, Slightly Disagree=2, Strongly Disagree=1).
- For questions 2, 5, 7, 8, 10, 13, 15, 18, 20, 21, 23, 24, 26, 29, 31, 32, 34, 37, 39, 40 (Strongly Agree=1, Slightly Agree=2, Slightly Disagree=3, Strongly Disagree=4).

The questions are coded so that the higher the score, the more positive the attitude.

Four subscores can also be obtained from the questions.

- Anxiety: 1, 5, 9, 13, 17, 21, 25, 29, 33, 37
- Confidence: 2, 6, 10, 14, 18, 22, 26, 30, 34, 38
- Liking: 3, 7, 11, 15, 19, 23, 27, 31, 35, 39
- Usefulness: 4, 8, 12, 16, 20, 24, 28, 32, 36, 40
Again, higher scores correspond to more positive attitude, e.g., a higher confidence score means more confidence and a higher anxiety score means less anxiety.

If you need any additional information about the scale, please contact me. Permission is granted for use of this scale.

Sincerely,

Brenda H. Loyd
Professor

Enclosure
Dear Dr. Zigarmi,

We talked over the phone regarding the use of your leadership questionnaire, Leader Behaviors Analysis II - Other, in my doctoral dissertation. I am working toward a Ph.D in Educational Administration at Andrews University in Berrien Springs, Michigan.

In my study, the LBA II - Other questionnaire will be administered to 450 secondary teachers who will evaluate their respective principals' leadership styles. I hope to send out the questionnaire to the teachers in mid-September, 1995. The topic of my dissertation is researching the impact of secondary principals' computer attitudes and leadership styles on computer usage in schools. I understand that there are some stipulations regarding the use of your questionnaire. Please send me a copy of the stipulations.

Thank you for your support in my dissertation research.

Yours sincerely,

Daniel Lim
September 5, 1995

Mr. Daniel Lim  
500 Garland Avenue G-12  
Berrien Springs, MI 49103

Dear Daniel:

Over the years the LBAI® Self or Other has been used in over forty dissertations on Master studies. We are pleased that the model and instruments have become more visible. As the requests for LBAI®s increase, we have found it necessary to humbly request that researchers follow some general guidelines.

BTD will provide the LBAI® instruments to you at no cost providing you are willing to meet the following conditions:

• That any dissertations, papers, etc. written from this theoretical framework and using these instruments give citations and references as to where the instruments can be obtained.

• That you do not sell or make economic gain from selling the instruments for popular consumption and that any copies of the instruments used be clearly marked "For research only."

• That Blanchard Training and Development receive a full bound copy of any dissertation or monograph written concerning this research.

• That Blanchard Training and Development be allowed to pass on your research (in summary form) to others who might be doing similar research as a way of supporting those who are working hard to further the field of education.

• That the following scores be produced and reported in your publication using your sample base.

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1. Average Flexibility Score and Standard Deviation
2. Average Effectiveness Score and Standard Deviation
3. Average Style Score Means and Standard Deviations to S4
4. Per cent of Primary Styles 1 through S4
5. Per cent of Secondary Styles 1 through S4
6. Per cent of Developing Styles 1 through S4
7. Maximums and Minimums

This request has emerged because researchers do not fully utilize the six scores that can be derived from the LBAII®. With these scores, BTD will be able to compare across populations. These numbers may aid in a future meta analysis.

Optional scores that would help further comparisons are

8. Average Flexibility Scores and Standard Deviations by Gender
9. Average Effectiveness Scores and Standard Deviations by Gender
10. Average Style Score Means and Standard Deviations by Gender

Upon your request we will be glad to send you a copy of the Reliability/Validity Study which describes the LBAII® Self and Other and relevant research. If you decide to use the LBAII®, please call me so we can discuss your research design.

Enclosed is an article which summarizes some of the changes in the model since 1981 and some pertinent research findings.

Sincerely,

Drea Zigarmi, Ed.D.
Research Coordinator

Enc: Situational Leadership after 25 Years
October 24, 1995

Academy Principals
North American Division

Re: Doctoral Study Survey

Mr. Daniel Lim, a graduate student working on a doctorate degree in the field of education at Andrews University, is desirous of securing some information essential to his dissertation topic. The enclosed survey will provide confidential information on the topic, which is investigating the relationship between the principal's attitude towards computers, leadership styles, and computer usage in secondary schools. Mr. Lim would like to examine whether attitudes toward computers among principals and teachers and leadership styles of principals have any impact on computer usage in secondary schools.

We feel that the results of Mr. Lim's study can also be very helpful to NADOE in a general sense as we plan for administrative in-service programs in the future. Your cooperation and timely response will be greatly appreciated and we want you to know that NADOE supports this survey investigation. Your responses will be kept in strict confidence by Mr. Lim.

Your help in completing the enclosed survey questionnaire is greatly appreciated.

Sincerely,

G. L. Plubell, Ph.D., Director
Office of Education
North American Division
Principals and Teachers
Southwestern Union Academies

Dear Educational Leaders:

I would appreciate your taking time from your busy schedules to participate in Mr. David Lim's study of computer usage and attitudes across North America. The results of this study will be helpful in planning for future computer curriculum in our NAD schools.

May God bless you in your labors for Him.

Sincerely,

Douglas Walker
Director of Education
October 4, 1995

Senior Academy Principals  
PACIFIC UNION CONFERENCE

Dear Colleagues:

This letter will introduce you to a research project that will involve a sampling of senior academy principals serving in their third year and selected secondary teachers in the senior academies in the North American Division.

The study will be conducted by Daniel Lim who is a Ph.D. candidate in the School of Education, Andrews University. He is working on a dissertation topic that will investigate the relationship between principals' attitudes toward computers, their leadership styles, and computer usage in secondary schools.

He will be sending questionnaires to 400 selected teachers derived from a systematic sampling of senior academies in North America. In addition a questionnaire will be sent to all academy principals serving in their third year.

I would encourage you and the teachers who may receive a questionnaire to assist Daniel in this research project by completing and returning the questionnaires as requested. Such scholarly research can provide results that will benefit the secondary schools in the Seventh-day Adventist system. It is Daniel's hope that the findings will assist in determining how computers and related technologies can be used to improve teaching and learning in Seventh-day Adventist secondary schools.

Sincerely,

G. E. Thompson, Director  
OFFICE OF EDUCATION

xc: Conference Superintendents of Schools

2686 Townsgate Road, Westlake Village, California 91381
October 16, 1995

Senior Academy Principals
and Teachers
North Pacific Union Conference

Dear Friends:

Mr. Daniel Lim, a Ph.D. candidate at Andrews University, is engaged in research on leadership styles and their impact on computer usage in secondary schools.

Your cooperation in completing his questionnaire will be greatly appreciated.

Sincerely,

Don R. Keele
Director of Education

keb
September 26, 1995

Daniel Lim
500 Garland Avenue G-12
Berrien Springs, MI 49103

Dear Mr. Lim:

I fully endorse the investigation that you are doing as part of your dissertation research on the relationship between principals' attitudes toward computers, leadership styles, and computer usage in secondary schools. I think that this will be a very valuable study for the Seventh-day Adventist Church.

I am very hopeful that all of the Columbia Union educators that you asked to respond to your survey will do so very soon.

We look forward to the results of your very important dissertation topic.

Cordially yours,

[Signature]

Richard C. Osborn
Vice President for Education

cc: Dr. David Penner
    Dr. Warren Minder
Academy Principals  
North American Division of SDAs  

Dear Principals:  

I am a Ph.D candidate in the School of Education, Andrews University. I am working on a dissertation topic investigating the relationship between principals' attitudes toward computers, leadership styles, and computer usage in secondary schools. The underlying intent of this study hopes to find some innovative solutions to strengthen computer implementation in schools and computer integration in classroom teaching. Since the findings will be useful to plan better computer inservice for academy teachers, your participation is very important to this study.

Enclosed is a questionnaire measuring attitudes toward computer and computer usage in your school. The data from this questionnaire will be kept completely confidential. The coding on this questionnaire is not intended to identify any school or individual but strictly for matching purposes. I thank you for taking time to complete the questionnaire. Please return the questionnaire in the self-addressed envelope before October 6, 1995. The questionnaire must be completely filled to make it valid. Thank you for taking your precious time to contribute to this crucial study. If you have any questions or you need more time to complete the questionnaire, please feel free to contact me by phone or fax or email.

Yours sincerely,

Daniel Lim  
PhD Candidate  
School of Edu  
Andrews University

Dr. David Penner  
Committee Chair  
Registrar  
Andrews University

Dr. Warren Minder  
Committee Member  
Dean, School of Edu  
Andrews University

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November 16, 1995

Academy Principals
North American Division

Dear Academy Principals:

If you have completed the computer attitude scale (CAS), please ignore this reminder. I do thank you so much for your prompt return.

If you have not completed the CAS questionnaire, I hope you would fill out the questionnaire because your teachers have already sent in their questionnaires. Without your questionnaire, their questionnaires would become invalid. I thank you for your valuable contribution to this crucial study. If you do not have a copy of the questionnaire, please contact me right away and I will get a copy to you immediately. Thank you for your generous support for this study.

Sincerely yours,

Daniel Lim
Phd Candidate
Andrews University
October 24, 1995

Academy Teachers
North American Division of SDAs

Dear Teachers:

I am a Ph.D candidate in the School of Education, Andrews University. I am working on a dissertation topic investigating the relationship between principals' attitudes toward computers, leadership styles, and computer usage in secondary schools. The underlying intent of this study hopes to find some innovative solutions to strengthen computer implementation in schools and computer integration in classroom teaching. Since the findings will be useful to plan better computer inservice for academy teachers, your participation is very important to this study.

Enclosed are two questionnaires measuring attitudes toward computer, computer usage, and leadership styles of your principal. The directions for the questionnaires are as follows:

1. Leadership Behavior Analysis II: Transfer your knowledge of your principal's administrative style to the business situations described in the questionnaire. The purpose is to establish your principal's leadership style, not to evaluate his/her leadership effectiveness. You may find difficulty in some situations. Nevertheless, please select the most appropriate option.

2. Computer Attitude Scale: Check or circle the options from questions 1 to 12. Check one option per question for the forty questions in the computer attitude scale.

I thank you for taking time to complete the questionnaires. The data from these questionnaires will be kept completely confidential. The coding on the questionnaires is not intended to identify any school or individual but strictly for matching purposes. I thank you for taking time to complete the questionnaires. Please return both questionnaires in the self-addressed envelope before November 21, 1995. The questionnaires must be completely filled and returned together to be considered valid. Thank you for taking your precious time to contribute to this crucial study. If you have any questions, please contact me by phone or fax or email.

Yours sincerely,

Daniel Lim
PhD Candidate
School of Edu
Andrews University

Dr. David Penner
Committee Chair
Registrar
Andrews University

Dr. Warren Minder
Committee Member
Dean, School of Edu
Andrews University
APPENDIX B

INSTRUMENTS
SURVEY OF ATTITUDES TOWARD LEARNING ABOUT AND WORKING WITH COMPUTERS
Academy Principal


2. Computers in your school are located (check all apply) 
   Hooked up to Internet?
   YES  NO
   in each classroom
   YES  NO
   in some classrooms
   YES  NO
   in the computer lab
   YES  NO
   in the principal's office
   YES  NO
   in the administration office
   YES  NO

3. Is there a computer coordinator or specialist providing support for instructional technology in the classroom? YES NO
   If no, is there a plan to hire a computer coordinator? YES NO

4. Does your school have a computer lab? YES NO
   If no, go to question 5. If yes,
   a) How many computers does your computer lab have?
      5-10  11-20  21-30  31-40  50 or more
   b) Who manages the computer lab?
      Full-time computer network administrator
      Part-time computer coordinator
      A community volunteer (non-paid)
      A volunteer teacher
      No one
   c) On the average, how many classes use the computer lab in your school each day?
      None  1-2  3-4  5-6  7-8  10 or more

5. To what extent do you encourage your teachers to use technological innovation in classroom teaching?
   Not at all  Sometimes  Often

6. How often has computer inservice been conducted for the teaching staff? (average of the past three years)
   None  Once a year  Twice a year  Once a quarter  Once a month  Other:__________

7. Do you own a computer a) in your class/office? Yes/No  b) in your home? Yes/No
Gender: Male  Female

Age:  20-24  25-29  30-34  35-39  40-44  45-49  50-54  55 and above

Ethnic: African American  Asian American  Caucasian  Hispanic  Native American/Alaskan

COMPUTER ATTITUDE SCALE
(By Brenda Loyd & Clarice Gressard)

Below are a series of statements. There are no correct answers to these statements. They are designed to permit you to indicate the extent to which you agree or disagree with the ideas expressed. Place a check mark in the parentheses under the label which is closest to your agreement or disagreement with the statements.

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2. I'm no good with computers. [  ] [  ] [  ] [  ]
3. I would like working with computers. [  ] [  ] [  ] [  ]
4. I will use computers many ways in my life. [  ] [  ] [  ] [  ]
5. Working with a computer would make me very nervous. [  ] [  ] [  ] [  ]
6. Generally I would feel OK about trying a new problem on the computer. [  ] [  ] [  ] [  ]
7. The challenge of solving problems with computers does not appeal to me. [  ] [  ] [  ] [  ]
8. Learning about computers is a waste of time. [  ] [  ] [  ] [  ]
9. I do not feel threatened when others talk about computers. [  ] [  ] [  ] [  ]
10. I don't think I would do advanced computer work. [  ] [  ] [  ] [  ]
11. I think working with computers would be enjoyable and stimulating. [  ] [  ] [  ] [  ]
12. Learning about computers is worthwhile. [  ] [  ] [  ] [  ]
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15. Figuring out computer problems does not appeal to me. [  ] [  ] [  ] [  ]
16. I'll need a firm mastery of computers for my future work. [  ] [  ] [  ] [  ]
17. It wouldn't bother me at all to take computer courses. [  ] [  ] [  ] [  ]
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THANK YOU SO MUCH FOR YOUR CONTRIBUTION TO THIS IMPORTANT STUDY

3
SURVEY OF ATTITUDES TOWARD LEARNING ABOUT
AND WORKING WITH COMPUTERS
Academy Teacher

1. Gender
   __Male  __Female

2. Teaching Areas
   __Religion  __Languages  __Sciences  __Math  __Computer  __Business
   __Home Ec  __History  __Music  __PE  __Edu  __Art  __Technology

3. Year of teaching experience
   a) Total: ___  b) At current school: ___

4. Computer experience
   __None
   __Self-taught
   __Major/minor in computer
   __A college course in computer
   __A few college courses in computer
   __A workshop or short seminar in computer

5. Do you own a computer
   a) in your class/office? Yes/No
   b) in your home? Yes/No

6. Age:
   20-24  25-29  30-34  35-39  40-44  45-49  50-54  55 and above

7. Ethnic:
   African American  Asian American  Caucasian  Hispanic  Native American/Alaskan

   Never  Seldom  Sometimes  Often
8. I use computer in classroom teaching  1  2  3  4
9. I assign homework that requires some computer usage  1  2  3  4
10. I use the computer lab (if available) to teach a lesson  1  2  3  4
11. My principal encourages technological innovation in classroom teaching  1  2  3  4
12. How often does your school provide computer inservice? (average of the past three years)
   None  Once a year  Twice a year  Once a quarter  Once a month  Other:_____
## COMPUTER ATTITUDE SCALE
(By Brenda Loyd & Clarice Grassard)

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THANK YOU SO MUCH FOR YOUR CONTRIBUTION TO THIS IMPORTANT STUDY
LEADER BEHAVIOR ANALYSIS II

Kenneth H. Blanchard, Ronald K. Hambleton, Drea Zigarmi and Douglas Forsyth

OTHER
PERCEPTIONS OF LEADERSHIP STYLE

Leader's Name ________________________________

You are this leader's (fill in one circle only):
- Boss (If you are this leader's boss, fill in this circle.)
- Peer/Associate (If you are on the same managerial level as the leader named above, fill in this circle.)
- Team Member/Subordinate (If the leader named above is your boss, fill in this circle.)

DIRECTIONS:
The purpose of the LBAII Other is to provide a leader with information about your perceptions of his or her leadership style. This instrument consists of twenty typical job situations that involve a leader and one or more staff members. Following each situation are four possible actions that a leader may take. Assume the leader listed above is involved in each of the twenty situations. In each of the situations, you must choose one of the four leader decisions. Circle the letter of the decision that you think would best describe the behavior of this leader in the situation presented. Circle only one choice.
A new employee has been asked to write a report to buy new equipment for the division. She needs to learn more about this equipment to make a sound decision about options and costs. She feels this assignment will stretch her already full schedule. This manager would

A) Tell her when the report is needed, and what should be in the report. Outline the steps the employee should take to become knowledgeable about the new equipment. Set weekly meetings with her to track progress.

B) Ask her to produce the report, and discuss its importance. Ask her for a deadline for completion. Give her the resources she thinks she needs. Periodically check with her to track progress.

C) Tell her when the report is needed, and discuss its importance. Explain what the report should include. Outline steps the employee should take to learn more about the equipment. Listen to her concerns and use her ideas when possible. Plan weekly meetings to track her progress.

D) Ask her to produce the report, and discuss its importance. Explore the barriers the employee feels must be removed and the strategies for removing them. Ask her to set a deadline for completion and periodically check with her to track progress.

This manager's task force has been working hard to complete its division-wide report. A new member has joined the group. He must present cost figures at the end of next week, but he knows nothing about the report requirements and format. He is excited about learning more about his role in the group. This manager would

A) Tell him exactly what is needed, and specify the format and requirements. Introduce him to other task-force members. Check with him frequently during the week to monitor his progress and to specify corrections.

B) Ask him if there is anything he or she can do to help. Introduce him to other task-force members. Explore with him what he thinks he needs to get “up to speed” with the report. Check with him frequently during the week to see how he is doing.

C) Specify the report format and information needed, and solicit his ideas. Introduce him to each task-force member. Check with him frequently during the week to see how the report is progressing and to help with modifications.

D) Welcome him and introduce him to members of the task force who could help him. Check with him during the week to see how he is doing.

This manager has recently noticed a performance problem with an employee. He seems to show a “don't care” attitude. Only this manager's constant prodding has brought about task completion. The manager suspects this employee may not have enough expertise to complete the high-priority task that has been given him. This manager would

A) Specify the steps this employee needs to take and the desired outcomes. Clarify timelines and paperwork requirements. Frequently check to see if the task is progressing as it should.

B) Specify the steps this employee needs to take and the desired outcomes. Ask for his ideas and incorporate them as appropriate. Ask him to share his feelings about this task assignment. Frequently check to see the task is progressing as it should.

C) Involve this employee in problem solving for this task. Offer help and encourage him to use his ideas to complete the project. Ask him to share his feelings about the assignment. Frequently check to see that the task is progressing as it should.

D) Let this employee know how important this task is. Ask him to outline his plan for completion and to send the manager a copy. Frequently check to see if the task is progressing as it should.
Leader Behavior Analysis II'

4 The composition of this manager's work group has changed because of company restructuring. Performance levels have dropped. Deadlines are being missed, and the manager's boss is concerned. Group members want to improve their performance but need more knowledge and skills. This manager would

A) Ask the group members to develop their own plan for improving performance. Be available to help them, if asked. Ask them what training they think they need to improve performance, and give them the resources they need. Continue to track performance.

B) Discuss a plan to solve this problem. Ask the group members for their input and include their ideas in the plan, if possible. Explain the rationale for the plan. Track performance to see how it is carried out.

C) Outline the specific steps the group should follow to solve this problem. Be specific about the time requirements and the skills they need to learn. Continue to track performance.

D) Help them determine a plan, and encourage them to be creative. Support their plan and continue to track performance.

5 Because of budget cuts, it is necessary to consolidate. A highly experienced department member has been asked to take charge of the consolidation. This person has worked in all areas of this manager's department. In the past, she has usually been eager to help. While this manager feels she is able to perform the assignment, the employee seems indifferent to the task. This manager would

A) Reassure her. Outline the steps she should take to handle this project. Ask for her ideas and incorporate them when possible, but make sure she follows the manager's general approach. Frequently check to see how things are going.

B) Reassure her. Ask her to handle the project as she sees fit. Be patient, but be available to help. Frequently check to see what is being done.

C) Reassure her. Ask her to determine the best way to approach the project. Help her develop options, and encourage her to use her own ideas. Frequently check to see how she is doing.

D) Reassure her. Outline an overall plan and specify the steps she should follow. Frequently check to see how the steps are being implemented.

6 For the second time in a month, an employee's weekly progress reports have been incomplete and late. In the past year, he has submitted accurately completed reports on time. This is the first time this manager has spoken to him about this problem. This manager would

A) Tell him to improve the completeness and timeliness of his paperwork. Go over the areas that are incomplete. Make sure he knows what is expected and how to fill out each report section. Continue to track his performance.

B) Ask him to turn in his paperwork on time and accurately, without pushing him. Continue to track his performance.

C) Discuss time and completion standards with him. Listen to his concerns, but make sure he knows what is expected. Go over each report section, and answer any questions he may have. Use his ideas, if possible. Continue to track his performance.

D) Ask him why the paperwork is incomplete. Listen to his concerns, and do what can be done to help him understand the importance of timeliness and completeness. Continue to track his performance.

(continued on page 4)
A senior employee has been asked to take on a new project. In the past, his performance has been outstanding. The project he has been given is important to the future of this manager's work group. He is excited about the new assignment but doesn't know where to begin because he lacks project information. The manager's relationship with him is good. This manager would

A) Explain why this employee has the skills to do the job. Ask him what problems he anticipates and help him explore alternative solutions. Frequently stay in touch to support him.

B) Specify how this employee should handle the project. Define the activities necessary to complete the job. Regularly check to see how things are going.

C) Ask this employee for a plan for completing the project in two weeks. Ask him to send a copy for approval. Give him enough time to get started, without pushing him. Frequently offer support.

D) Outline how the project should be handled, and solicit the employee's ideas and suggestions. Use his ideas when possible, but make sure the manager's general outline is followed. Regularly check to see how things are going.

A staff member is feeling insecure about a job that has been assigned to him. He is highly competent, and this manager knows that this employee has the skills to successfully complete the task. The deadline for completion is near. This manager would

A) Let the employee know of his or her concerns about the impending deadline. Help him explore alternative action steps, and encourage him to use his own ideas. Frequently check with him to lend support.

B) Discuss his or her concerns about the impending deadline. Outline an action plan for the employee to follow, and get his reactions to the plan. Modify the plan if possible and make sure the employee follows the general outline. Frequently check with him to see how things are going.

C) Specify the reasons for on-time completion of the assignment. Outline the steps the employee should follow. Ask that the steps be followed. Frequently check to see how he is progressing.

D) Ask the employee if there are any problems, but let him resolve the issue himself. Remind him of the impending deadline, without pushing him. Ask for an update in three days.

The staff has asked this manager to consider a change in their work schedule. Their changes make good sense, and the manager is well aware of the need for change. Members are very competent and work well together. This manager would

A) Help them explore alternative scheduling possibilities. Be available to facilitate their group discussion. Support the plan they develop. Check to see how they implement their plan.

B) Design the work schedule and explain the rationale behind the design. Listen to their reactions, ask for their ideas and use their recommendations when possible. Check to see how they carry out the schedule.

C) Allow the staff to set a work schedule on their own. Let them implement their plan after the manager has approved it. Check with them at a later date to assess their progress.

D) Design the work schedule and explain how it will work. Answer any questions they may have. Check to see that the schedule is followed.
**Leader Behavior Analysis II**

10. Due to an organizational change, this manager has been assigned six new people whose performance has been declining over the past three months. They do not seem to have the task knowledge and skills to do their new jobs, and their attitudes have worsened because of the change. In a group meeting, this manager would

A) Make them aware of their three-month performance trend. Ask them to decide what to do about it and set a deadline for implementing their solution. Monitor their progress.

B) Make them aware of their three-month performance trend. Specify the action steps they should follow. Give them constructive feedback on how to improve their performance. Continue to monitor performance.

C) Make them aware of their three-month performance trend. Outline the steps they should follow. Explain why the steps are important, and seek their feedback. Use their ideas when possible, but make sure they follow the general approach. Continue to monitor performance.

D) Make them aware of their three-month performance trend. Ask them why their performance is declining. Listen to their concerns and ideas. Help them create their own plan for improving performance. Track their performance.

11. A department member has had a fine performance record over the last 22 months. This employee is excited by the challenges of the upcoming year. Budgets and unit goals have not changed much from last year. In a meeting with him to discuss goals and an action plan for next year, this manager would

A) Ask this employee to submit an outline of his goals and an action plan for next year for the manager's approval. Tell the employee to expect a call if there are any questions.

B) Prepare a list of goals and an action plan for the employee to accomplish next year. Send it to him and meet with him to see if he has any questions.

C) Prepare a list of goals and an action plan for the employee to achieve next year. Meet with him to discuss his reactions and suggestions. Modify the plan while listening to his ideas, but make the final decisions.

D) Ask this employee to submit an outline of his goals and an action plan for next year. Review the goals and plan with him. Listen to his ideas and help him explore alternatives. Let him make the final decisions on his goals and plan.

12. This manager's unit has had an excellent performance record over the past two years. However, they have recently experienced three major setbacks due to factors beyond their control. Their performance and morale have drastically dropped, and the manager's boss is concerned. In a group meeting, this manager would

A) Discuss the recent setbacks. Give them the specific steps they should follow to improve their performance. Continue to track performance.

B) Ask them how they feel about the recent setbacks. Listen to their concerns, encourage and help them explore their ideas for improving performance. Continue to track performance.

C) Discuss the recent setbacks. Clarify the steps they should follow to improve performance. Listen to their ideas and incorporate them, if possible. Emphasize results. Encourage them to keep trying. Continue to track performance.

D) Discuss the recent setbacks, without pressuring them. Ask them to set a deadline to improve performance and to support each other along the way. Continue to track performance.

(continued on page 6)
This manager was recently assigned a new employee who will perform an important job in the unit. Even though this employee is inexperienced, she is enthusiastic and feels she has the confidence to do the job. This manager would

A) Allow her time to determine what the job requires and how to do it. Let her know why the job is important. Ask her to be in touch if she needs help. Track her progress.

B) Specify the desired results and timelines. Clearly define the steps the employee should take to achieve results. Show her how to do the job. Track her progress.

C) Discuss the desired results and timelines. Clearly define the steps she can take to achieve the results. Explain why these steps are necessary and get her ideas. Use her ideas if possible, but make sure the manager's general plan is followed. Track her performance.

D) Ask her how she plans to tackle this job. Help her explore the problems she anticipates by generating possible alternative solutions. Encourage her to carry out her plan. Be available to listen to her concerns. Track her performance.

This manager's boss has asked to have someone assigned to serve on a company-wide task force. This task force will make recommendations for restructuring the company's compensation plan. This manager has chosen a highly productive employee, who knows how her co-workers feel about the existing compensation plan. She has successfully led another unit task force. She wants the assignment. This manager would

A) Give this employee the assignment, but tell her how she should represent her co-workers' point-of-view. Specify that she give the manager a progress report within two days of each task-force meeting.

B) Ask this employee to accept the assignment. Help her develop the point-of-view she will take on the task force. Periodically check with her.

C) Give this employee the assignment. Discuss what she should do to ensure her co-workers' perspective is considered by the task force. Ask for her ideas and make sure she follows the manager's general approach. Ask her for a report after every task-force meeting.

D) Give this employee the assignment. Ask for updates as things progress. Periodically check with her.
Due to a family illness, this manager has been forced to miss two meetings of a committee he or she directs. Upon attending the next meeting, this manager finds that the committee is operating well and making progress toward completing its goals. All group members come prepared, participate and seem to be enthusiastic about their progress. This manager is unsure of what his or her role should be. This manager would

A) Thank the committee members for their work so far. Let the group continue to work as it has during the last two meetings.

B) Thank the committee members for their work so far. Set the agenda for the next meeting. Begin to direct the group's activities.

C) Thank the committee members for their work so far. Make the members feel important and involved. Try to solicit alternative ideas and suggestions.

D) Thank the committee members for their work so far. Set the agenda for the next meeting, but make sure to solicit their ideas and suggestions.

This manager's staff is very competent and works well on their own. Their enthusiasm is high because of a recent success. Their performance as a group is outstanding. Now, this manager must set unit goals for next year. In a group meeting, this manager would

A) Praise them for last year's results. Involve the group in problem solving and goal setting for next year. Encourage them to be creative and help them explore alternatives. Track the implementation of their plan.

B) Praise them for last year's results. Challenge them by setting the goals for next year. Outline the action steps necessary to accomplish these goals. Track implementation of the plan.

C) Praise them for last year's results. Ask them to set the goals for next year and to define their action plan to accomplish these goals. Be available to contribute when asked. Track the implementation of their plan.

D) Praise them for last year's results. Set the goals for next year and outline the action steps necessary to accomplish these goals. Solicit the group's ideas and suggestions and incorporate them, if possible. Track implementation of their plan.

This manager and his or her boss know that the manager's department needs a new set of work procedures to improve long-term performance. Department members are eager to make some changes but, because of their specialized functions, they lack the knowledge and skills for understanding the "big picture." This manager would

A) Outline the new procedures. Organize and direct the implementation. Involve the group in a discussion of alternatives. Use their suggestions when possible, but see that they follow the general outline. Track their use of the new procedures.

B) Outline and demonstrate the new procedures. Closely direct the group in their initial use of the new procedures. Track their use.

C) Involve the group in a discussion of what the new procedures should be. Encourage their initiative and creativity in developing the new procedures. Help them explore possible alternatives. Support their use of the new procedures. Closely track results.

D) Ask the group to formulate and implement a set of new procedures. Answer any informational concerns, but give them the responsibility for the task. Closely track the use of the new procedures.

(continued on page 8)
This manager was recently appointed head of the division. Since taking over, there has been a drop in performance. There have been changes in technology, and this manager's staff has not mastered the new skills and techniques. Worst of all, they do not seem to be motivated to learn these skills. In a group meeting, this manager would

A) Discuss the staff's drop in performance. Listen to their concerns. Ask for their solutions for improving performance. Express faith in their strategies. Emphasize their past efforts, but track performance as they carry out their strategies.

B) Outline the necessary corrective actions they should take. Explore alternatives and incorporate their ideas. Modify the plan if appropriate, but see that they implement it. Track their performance.

C) Tell them about the drop in performance. Ask them to analyze the problem, and draft a set of action steps for approval. Set a deadline for the plan. Track its implementation.

D) Outline and direct the necessary corrective actions they should take. Define roles, responsibilities, and standards. Frequently check to see if their performance is improving.

This manager has noticed that an inexperienced employee is not properly completing certain tasks. She has submitted inaccurate and incomplete reports. She is not enthusiastic about this task and often thinks paperwork is a waste of time. This manager would

A) Let the employee know that she is submitting inaccurate and incomplete reports. Discuss the steps she should take and clarify why these steps are important. Ask for her suggestions, but make sure she follows the manager's general outline.

B) Let the employee know that she is submitting inaccurate and incomplete reports. Ask her to set and meet her own paperwork deadlines. Give her more time to do the job properly. Monitor her performance.

C) Let the employee know that she is submitting inaccurate and incomplete reports. Ask her what she plans to do about it. Help her develop a plan for solving her problems. Monitor her performance.

D) Let the employee know that she is submitting inaccurate and incomplete reports. Specify the steps she should take with appropriate deadlines. Show her how to complete the reports. Monitor her performance.
Leader Behavior Analysis II

STYLE DIAGNOSIS

To better understand how you might improve your effectiveness as a leader, it is helpful to examine the appropriateness of your style selections. The numbers in substeps in the year and the style descriptions columns are the leadership styles you have used where you listed experience A, B, C or D. Below the number of Style I choices you made in the year and for each column, place that number in the cell at the end of the Style Diagnosis section. Repeat this procedure for Style II, Style III, and Style IV within the year and for each column. A pattern of least or most occurs in the first and second columns, as your leadership style seems to be the one you are using the most. These columns reflect your experience in groups with whom you are working, making decisions, and choosing a leadership style. Go back to your LEAD chart and examine the other columns to see if you can better understand why you may be using these styles disproportionately.

LEADER BEHAVIOR ANALYSIS II

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SCORING-A

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**LBA II**

**Style Flexibility**

1. The column headings and style flexibility scores are used to identify the type of leadership style.

- SI (Silent Intervener, Low Supportive Behavior)
- S2 (Silent Intervener, High Supportive Behavior)
- S3 (Low Supporter, Low Directive Behavior)
- S4 (Low Supporter, High Directive Behavior)

The column numbers (SI, S2, S3, and S4) with the largest number of checked boxes in your primary leadership style, indicate the numbers in the circles in the appropriate squares on the Primary Style Matrix. For example, assume that the columns with the largest number of checked boxes are column S1, S2, and S3. In the S1 column, check the square at the bottom of the Style Flexibility Graph. In the S2 column, check the square at the top of the Style Flexibility Graph. In the S3 column, check the square in the appropriate row in the Style Flexibility column. For example, if the total to column S1 is 8, and the difference between S2 and S3 is 1, then the difference between S1 and S2 should be 2, and the difference between S1 and S3 should be 1. The difference between S2 and S3 should be 1, and the difference between S2 and S1 should be 3. Add all numbers in the Style Flexibility Column, and use the total to identify the type of leadership style.

**Style Flexibility Score**

1. Add all numbers in the Style Flexibility Column, and use the total to identify the type of leadership style.

**Style Effectiveness**

1. Identify your high, low, or zero points, and circle the number(s) in the Style Flexibility Column. Add all numbers and use the total to identify the type of leadership style.

**Effectiveness Score**

1. Place a mark in the corresponding square along the Style Flexibility Graph.
SELECTED BIBLIOGRAPHY


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Professional Experience

1997 – Present  Director of Instructional Technology Center, University of Minnesota, Crookston.


1991 – 1993  ESL Instructor, English Language Institute, Andrews University.

1988 – 1990  Teaching Assistant, English Language Institute, Andrews University.

1983 – 1988  Chaplain & Bible Teacher, San Yu High School, Singapore

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Educational Background

1998  PhD in Educational Administration, Andrews University.

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