MICROCOMPUTER INTEGRATION IN THE MANAGEMENT PROCESS OF OKLAHOMA SECONDARY SCHOOLS

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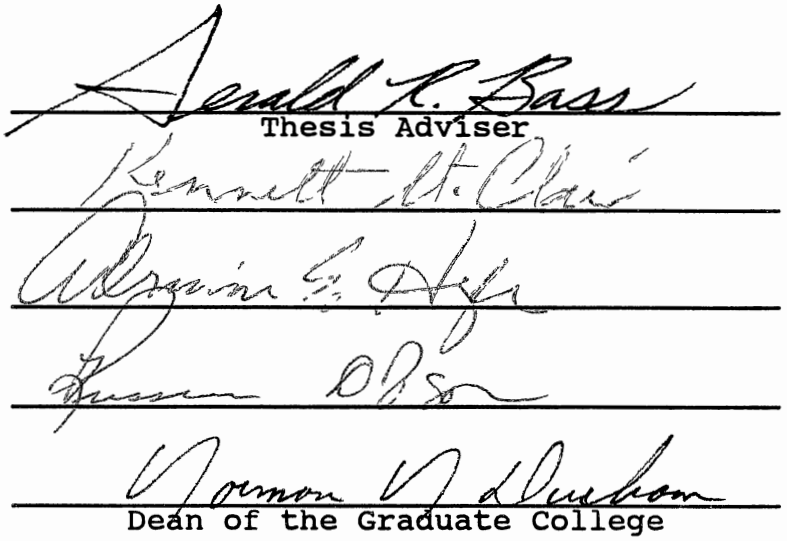

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PREFACE

This study was designed to gather information on how fast and to what extent secondary schools of Oklahoma were integrating microcomputer technology into their task management process. McLean's 1986 study of this subject was the foundation upon which this research was built. In addition to repeating the five major questions from that earlier research, additional demographic and general information questions were posed.

Microcomputer technology has developed so rapidly over the past decade that defining the extent of its integration into society and more specifically its integration into the public educational system is of major interest to this researcher. Through this research I hope to supply administrators with pertinent information that will help them in designing their future school management processes.

I wish to express my gratitude to Dr. Gerald Bass, my thesis advisor, who originally got me interested in pursuing this project and who has shown extreme patience in guiding me through the exercise. I am especially grateful to Dr. Kenneth St. Clair, whose counsel and assistance in acquiring the funds to support this research were very helpful. I also wish to thank the other members of my committee,

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CHAPTER I

INTRODUCTION

There is no area of our society that has not been touched by computer technology (Rifkin, 1987). For decades, computer technology has been a magical abstraction in the minds of the majority of the citizens of this society (Carlyle, 1989). With the advent of microcomputer technology however, technological power has now been literally placed in the hands of everyone. While the early microcomputers did not contain enough memory storage to accomplish many tasks then being handled by mainframe computers, this limitation has changed rapidly in the last few years. Microcomputers presently have storage capacities equaling, and even surpassing, the minicomputers and older mainframe computers found in many school district data processing departments (Baily, 1989). The microcomputer not only has stand-alone capabilities for program operation, it can also be used to access other computers through local area networking and the use of telecommunications software.

However, the speed by which microcomputer technology has been advanced (the first microcomputers were sold in 1979) has presented a major problem within society, namely a

lack of technological proficiency and literacy on the part of those individuals with the greatest ability to influence the integration of the technology into the daily task management process (Kondruchuck & Monahan, 1986). It is now time for educational administrators to join with the technology or else fail to keep pace with the managerial responsibility that society has assigned to them (Hill, 1987).

Studies conducted in the business community have determined that those individuals with the greatest ability to make change, the middle- and upper-management administrators, have the least comprehensive understanding and expertise regarding the microcomputer technology (Goll, 1989). While there exists a wealth of information concerning how the integration of end-user microcomputing within the business community is progressing, 10 years after the introduction of the microcomputer there is little available research reflecting the extent of end-user computing within the management processes of public educational systems.

Statement of the Problem

While schools are charged with the responsibility of reflecting the society they serve, they have traditionally been slow to respond to changes in that society. There are minimal existing data available to indicate the speed with

which educators and educational administrators are accepting the new technology. An earlier study by McLean (1986) on microcomputer usage in the management process of secondary schools was focused only on whether the technology was being applied, not the extent of its integration.

This study, on the other hand, was designed not only to determine the extent of microcomputer usage, but also to question the current end-user integration within the management structure of public secondary schools. The primary purpose of this study thus was to identify the extent of integration of the stand-alone microcomputer as an administrative task management tool in the secondary schools of the independent school districts in Oklahoma.

In order to assess and compare the use of microcomputers by current school administrators with that use five years ago, this study was in part guided by the five primary questions that were analyzed in McLean's 1986 study of secondary school principals.

(1) Do Oklahoma's secondary school principals use microcomputers as an administrative tool?

(2) What demographic characteristics are associated with the use of microcomputers as an administrative tool?

(3) How and for what purposes are secondary school principals in Oklahoma using microcomputer technology?

(4) Does size of school or district have any relationship to administrative usage of a microcomputer?

(5) What microcomputer hardware do secondary school principals in Oklahoma use?

In addition to these questions asked by McLean (1986), this research involved an analysis of the principals' perceptions of microcomputer usage in their schools. This was accomplished by asking the principals to what degree they used microcomputers in the performance of 19 management tasks which, according to the literature, are common to the operation of public schools. Since each of the identified tasks may be associated with the manipulation and storage of data, the possibility exists that they may be performed more quickly and efficiently with the use of a microcomputer and appropriate software.

Significance of the Study

The results of this study may be of importance in determining the quality of the present educational management system in Oklahoma and the manner in which secondary school administrators may more effectively embrace microcomputer technology to enhance the performance of their management tasks much as have their administrative counterparts in the business world.

Limitations of the Study

The conclusions of this study may be limited in application by several factors. The study was limited to

secondary schools in Oklahoma independent school districts. The research was not designed to evaluate the overall effectiveness of the educational systems or the manner in which its members embraced microcomputer technology for application to curriculum or instruction. In addition, the instrument may have been susceptible to the provision of a "socially acceptable" response, indicating that microcomputers were being used in the school office because of the prevalent attitude that such use would indicate contemporary and effective administrative practices, when in fact there was no such use of that technology.

Definitions of Terms

This research was confined to the study of microcomputers which were defined in this study as stand-alone, desktop computers. Secondary schools are defined as those schools with a grade configuration including one or more of grades 7-12. School management tasks, as identified from the literature, are those daily tasks of administration that require the manipulation, organization, and storage of data. These tasks include the 19 functions of scheduling, attendance accounting, student records, grade analysis and reporting, library/media center, word processing, athletics, school calendar, guidance, financial accounting, inventory and property records, budgeting, staff/personnel records and supervision, food service, student transportation,

instructional management, information from databanks, planning and statistical forecasting, and teacher negotiations/conflict management.

Summary

The purpose of this study was to determine the extent to which the microcomputer was used as an administrative task management tool by Oklahoma secondary school principals. While portions of the study were designed to followup the earlier 1986 study by McLean, additional items were used to identify principals' perceptions of the manner in which microcomputers had been integrated into their office management.

Chapter II contains a review of literature focused on an overview of microcomputer technology development. A description of the research method is provided in Chapter III, while Chapter IV contains the results of the research. A summary of the study's findings, the conclusions and recommendations, and a commentary are presented in Chapter V.

CHAPTER II

REVIEW OF LITERATURE

This chapter provides a review of pertinent literature relative to the topic of this study. The first segment of the chapter contains an overview of the historical development of computing while the latter portion focuses on current administrative computing practices, particularly as they are relevant to educational administration.

History of Computing

In general, humans are not good at processing large amounts of data (e.g., adding long columns of numbers or memorizing large amounts of data). Thus, throughout history, they have found it expedient to substitute mechanical processes for cognitive processes so as to assist their memories and minimize mistakes (Simkin, 1987).

The latest technological developments were designed to not only save time and space, but to assist in making day-to-day decisions. The modern computer can calculate at a greatly accelerated rate of speed and can also store large

amounts of data in a very small space. Small storage diskettes can replace many traditional filing cabinets and thousands of sheets of paper. The current computer technology is the current end-product of thousands of years of evolution.

Pre-1940s

The historical development of the computer can be separated into six distinct phases (Simkin, 1987). The first and longest phase of this evolutionary process was the pre-1940s development, a period of development which can be traced back to the early Egyptians (500 B.C.). In fact, some trace the original developments in computing to the Hindus and/or Egyptians of about the same era, some three thousand years ago (Roberts, 1984). The abacus was one of the first mechanical devices to assist in the processing of numerical data and for thousands of years was the merchant's calculator. It was used to add, subtract, multiply, and divide numbers by the Egyptians, Babylonians, Japanese, Arabs, Chinese, and Romans. In fact, when the early electronic computers were introduced, a very able abacus user could still out-compute a computer.

The evolution of calculating machines continued with the development of other mechanical devices such as the adding machine and punched card processing equipment (Simkin, 1987). One of the early inventors who contributed

to the development of the computer was John Napier (1550-1617), a Scottish mathematician. His "machine" used marked strips of wood or bone, side by side, to multiply and divide. This tool became known as Napier's "Bones" (Roberts, 1984).

Blaise Pascal (1623-1662), a French mathematician devised the Pascaline (Roberts, 1984). However, this adding machine was shunned for fear it would create higher levels of unemployment. Today, the programming language Pascal honors the inventor's work (Simkin, 1987).

Leibniz's calculator was developed by Gottfried Wilhelm von Leibniz (1646-1716), a German philosopher who is remembered for his independent development of calculus (Simkin, 1987). Leibniz's calculator was an improvement on Pascal's adding machine because of the added capability of multiplication and division functions. Introduced as a labor-saving device, it also failed to gain popular acceptance.

Joseph-Marie Jacquard (1752-1834) devised a loom that used punched cards to direct the weaving pattern (Simkin, 1987). This machine was successfully marketed, with over 10,000 looms sold. With this invention, punched card technology was introduced.

The title "father of the computer" is usually given to Charles Babbage (1791-1871) (Roberts, 1984). In 1882, the Royal Mathematical Society gave Babbage a grant to work on a

device which was to be used to calculate the roots of polynomial equations and to prepare astronomy tables for the British navy. The machine was called the "Difference Engine." As Babbage worked with his machine, he developed the idea of storing instructions within the computer itself. This revised project led to the invention of his "Analytical Engine." While this machine was never actually built, it was to be similar to the Difference Engine with the major difference being the ability for the calculator to be programmed by instructions coded on punched cards and later stored internally. Lady Augusta Ada Byron, (1815-1852), a colleague of Babbage and the daughter of poet Lord Byron, wrote a demonstration program for the Analytical Engine. Because of this effort, Lady Byron is often recognized as the world's first programmer. In fact, the computer programming language ADA was named after her.

Xavier Thomas de Comar refined the early ideas of Leibniz and created what was called the "arithmometer." This device solved the problem of wheels being accidentally turned part-way between digit positions, thus causing errors in calculations. The device was successfully manufactured as the first adding machine to be widely distributed.

Development of adding machines continued to be improved by individuals such as Comar, Ohdner, Steiger, and Burroughs (Simkin, 1987). These adding machines became very popular in the late 1800s and the demand by financial institutions

greatly exceeded the expectations of their developers.

W.T. Ohdner developed a device called the "Ohdner Wheel." The major improvement of this device was that the main shaft of the machine could be turned in either direction, thus allowing the operator to turn the handle fewer times and therefore perform calculations more quickly.

Otto Steiger, a Swiss, invented an adding machine called "The Millionaire" that became one of the most popular machines built just before the turn of the century (Simkin, 1987).

In the United States, William Seward Burroughs (1855-1898) devised an alternate device called the "Adding and Listing Machine." At the time of his invention, Burroughs estimated that he could sell one to each of the 8,000 U.S. banks. By 1908, his company had in fact sold 50,000 units and sales by 1926 reached one million units (Simkin, 1987).

In 1887, Dr. Herman Hollerith (1860-1926) approached the U.S. Census Bureau with the idea of building a machine for faster completion of the statistical tabulations for the 1890 census (McKeown, 1987). Hollerith, using Jacquard's and Babbage's ideas for storing data on punched cards, successfully re-introduced this technology with the tabulating equipment necessary to effectively process the cards' data. The equipment read the holes punched in the cards and mechanically performed the statistical analyses required by the Census Bureau. When this technology was

found to be successful in meeting the demands of the census, punched card technology came to the forefront. With this success, Hollerith established a commercial venture, the Tabulating Machine Company. One of his employees was Thomas Watson, Sr., who eventually became president of the company and, in 1924, changed the company name to International Business Machines (IBM) (Simkin, 1987). By the 1940s, the punch card tabulating technology was considered too limited for existing data processing needs. Faster devices that could be more conveniently programmed on a custom basis were needed.

Vacuum Tubes

Five distinct generations of electronic computer equipment can be distinguished (Simkin, 1987). The first generation was characterized by vacuum-tube equipment and, for the most part, experimental machinery. One of the first truly electronic computers was the ENIAC, which became operational in 1946. As were other first generation computers, ENIAC was reliant on the vacuum tube for storage of data and programming instructions. Because of the large amount of electricity which these tubes consumed and the large quantity of heat which they generated, these computers were relatively unreliable. The products of this second phase of computer development were distinct from the abacus and the adding machine in that they were removed from access

by the many individual businesspersons and became the technology of large business, the government, and the military. Even the cheapest of these early electronic computers was extremely expensive and required a large, specially cooled environment and a specially-trained staff (Goldstein, 1987). When, in 1948, the Bell Labs developed the transistor, computer development moved to its next generation.

Transistors

The third phase of the computer, the second generation of electronic computers, was distinguished by the substitution of transistors and solid-state circuitry for vacuum tubes and the achievement of impressive cost/ performance improvements in reliability, processing speed, and storage requirements (Simkin, 1987). Highlights of this stage included the development of UNIVAC I for the census bureau (1951), the entrance of IBM into the market place (1953), the delivery of the IBM 650 to General Electric (1954), and the introduction of two new programming languages, FORTRAN I (1957) and COBOL (1959). When comparing the advances made possible in this generation by the use of the new transistor and solid-state circuitry to the capabilities of the previous generation, it may be noted that the component size changed from 6,000 to 100,000 circuits per cubic foot, the execution speed increased from

milliseconds (thousandths) to microseconds (millionths), the number of instructions executed per second from 250 to 30,000, the cost of executing one million instructions dropped from $4.50 to $0.30, the mean time between machinery failures went from hours to days, and the internal memory capacity increased from 4,000 to 30,000 characters (Simkin, 1987).

Integrated Circuits

In the fourth stage, computer equipment began to be developed using integrated circuits on silicon wafer chips. The integrated circuits phase began with the introduction of the IBM 360 in 1965 and continued with the IBM SYS/3 minicomputer in 1969 and the IBM 370 in 1970. The introduction of the microprocessor chip by INTEL in 1971 eventually led to the development of the personal computer or microcomputer. Early microcomputers include the Apple II (1978), the Tandy/Radio Shack TRS-80 (1979), the IBM PC (1981), and the IBM PC-AT (1984). The advances made during this generation of development were impressive. Component size increased to 10 million circuits/cubic foot, execution speed increased from microseconds to nanoseconds (billionths), the typical number of instructions executed per second increased to 200,000, the cost ($0.05) of executing one million instructions declined to one sixth of the cost of the second generation equipment, the mean time

between failures increased from days to weeks, and the internal memory capacity increased to 512,000 characters (Simkin, 1987).

Personal Computers

The fifth stage of computer development was characterized by advanced, integrated circuitry, microprocessor chips, real-time data-processing systems with menu-driven prompts, and most importantly, the further development of the personal computer. Then the technology began to be made available to anyone and everyone.

The advancements again made from one generation to the next are typical of the acceleration of the technology. Large-scale integrated circuits and very large-scale integrated circuits became prevalent, component size increased from 10 million circuits/cubic foot to over 500 billion, the execution speed went from nanoseconds to picoseconds (trillionths), the number of instructions executed per second multiplied from 200,000 to 80 million, the cost of executing one million instructions decreased to less than $.01, the mean time between failures declined from weeks to months, and the internal memory capacity increased to over 4 million characters (Simkin, 1987).

Current Developments

We have now entered into the sixth generation of

computer development and the technology continues to advance at a staggering speed (Rifkin, 1987; Seymour, 1988). Dreams of a year or two ago of mega-chip memories, the ability to perform parallel data processing, and developments in artificial intelligence are now becoming realities. New advancements in peripheral technology, such as fiber-optic telecommunications which will further promote end-user networking, is fast becoming a reality (Slate & Popko, 1986). New philosophies for computer usage are also receiving careful attention (Turkle, 1984; Roszak, 1986). Changes in the overall structural design of business and government organizations is being affected by the changes in the technology. The way persons, both individually and collectively, conduct business, think, and structure their lives is being affected by the runaway technology (Rifkin, 1987).

Computers and Management

Managers, whether in business, government, or education, have always used information in the performance of their tasks, so the subject of management of information is not a new concept. The innovation that makes information management a current issue of efficiency and accountability is the electronic computer. Its first applications to management tasks were confined mainly to accounting information (McLeod, 1986). With the advent of the personal

computer (microcomputer), managers can now have their own individual information and decision support systems (La Plante, 1989). Thus, anyone can have the technological support that only a few years ago was the private domain of the large organization.

For organizational executives to be successful, they must do two things: enlist intelligent individuals in their service and then use that intelligence intelligently (Ullmer, 1986). Leaders of successful business organizations have recognized the need to have a solid, computer-supported infrastructure with readily accessible information and accountability at all levels of the organization. Computer technology can improve the management process by providing instruments which are less time-consuming, and more flexible, than conventional print instruments such as desk calculators and typewriters (Becker & Schur, 1986). Even business organizations that are not using their microcomputers for strategy planning are completing normal management tasks faster (Miller, 1989).

Recent surveys have indicated that over the past few years the ratio between business executives and secretaries has gone down while the number of personal computers has gone up (Miller, 1989). Arnold Birenbaum, Vice President and General Manager of the new Information Center at the Bank of America was asked if this was a "chicken-and-egg" situation. He responded that, in the case of Bank of

America, the organization was needing to be downscaled and the microcomputers and other office automation allowed it to do so. While this "downscaling" has been a trend in the business world, it has not spread to all organizations.

Surveys have shown that there was a reluctance by older executives to take the time to familiarize themselves with the new computer technology, thus causing a delay in its effective implementation (Miller, 1989). Other studies have shown that top-ranked executives often related the computer keyboard with menial typing tasks (Goll, 1989). More pointedly, those managers who had not used the typewriter and did not believe they had the time to learn to keyboard, while accepting the technology, left the use of the technology to younger, less experienced organizational members. This attitude was found to have created a lack of organizational direction and to have limited the efficient implementation of the technology into the organization. While the younger people possessed the overall technological skill and machine knowledge, they lacked the expertise in decision making or, frequently, did not have the power to make and implement decisions regarding technology. This has constituted a problem throughout society and must be addressed in any effort to save the integrity of educational, government, or business institutions.

According to Allison and Garbosky (1987), a new group of professional managers, from all organizational levels,

has been trained in the emergent technology. These individuals have proved to be helpful in solving management's literacy shortcomings. Allison and Garbosky found that there was so much available information to be evaluated that administrators without the technological literacy had to adjust their practices in order to hire associates who had been trained in a different manner than they. The intelligent administrator, it was concluded, must start to recognize that the planning and problem-solving skills necessary for successful management may be found in the competencies of technologists. In selecting future associates, the perceptive administrators will thus find good technologists (i.e., with both administration and computer training) to help them get a grasp on their organizational information needs (Allison & Garbosky, 1987).

The development of performance technology is necessary for high level organizational and individual performance (Mitchell, 1987). Technology training becomes of particular importance for "time-hassled" people (Spitzer, 1986). Most manual systems for handling information have become too cumbersome and have tended to generate both a "paper blizzard" and excessive "red tape" for over-burdened employees (State of Hawaii, 1988).

The bottom line is that making the decision to automate may, in retrospect, has been the easiest part of the decision, while the hardest part ultimately becomes the

selection of the right personnel and the provision of effective training for the new technology (Matherly & Matherly, 1985). But, more importantly, the acceptance of the technology by the administrator may be only the switch that turns on the potential for usage. The major effort in the new frontier, now that the technology exists, could well be the search for capable managerial personnel who are willing to accept the responsibility of becoming computer literate. In the end, only if both administrators and support personnel buy-in to the technology will it become an effective tool for information management. The microcomputer, as the pencil, is only as good as its facilitator.

> Management consists of the activities carried out by managers. They plan, organize and control the major activities of the organization and initiate actions. The practice of management consists of the artful application of scientific principles to problem solving in order to select courses of action that optimize the utilization of scarce resources in achieving the desired objective. Because decision making plays such a major role in all of the functions of management, the MIS (Management Information Systems) becomes a facilitating system for developing decisions in planning, organizing, controlling and initiating courses of action. This yields the purpose of the MIS (Dembowski, 1986, p. 207).

Computers in Education

At a time when educational leaders should be actively preparing their organizations for entry into the next century, many school employees are finding themselves

becoming slaves to a deteriorating technological infrastructure (State of Hawaii, 1988). As noted earlier, in the business world, successful organizations have aggressively sought to find developing strategic opportunities and, along with careful planning, to proceed boldly to address emerging needs (La Plante, 1989). Schools, on the other hand, may have failed both in seeking and in developing such opportunities as have been provided through technology.

The introduction of computer technology into the school has been found to require much more than simply selecting, purchasing, and installing hardware and a variety of software. Personnel must be trained in the use of the technology if it is to be used in an effective manner (McKee, Braverman, & Castle, 1986; Mitchell, 1987).

School districts faced with maintaining educational excellence in the face of increasingly complex administrative tasks turned to computers for assistance in handling management tasks (Kimsey, 1989). In fact, it was Dembowski's (1986) opinion that the microcomputer had the potential to revolutionize the way school administrators did their job. While the major impact of computer use was just starting to be felt, Dembowski asserted that the next several years should bring about different administrative duties, responsibilities and functions. He predicted that many of the daily time-consuming tasks of school

administration will be computerized which in turn should greatly reduce the time administrators spend doing traditional management tasks. The daily administrative tasks common to the operation of public school institutions were found to lend themselves to being more quickly and efficiently performed through the use of a microcomputer and a tailored general application software program.

General applications software, such as those used in schools, have been assigned to three specific design categories: word processing, data base management, and spreadsheets (Konoruchuck & Monahan, 1986). Word processing is similar in operation to the typewriter. But, instead of typing on paper, the words appear on the computer screen and are stored in the computer's memory. Mistakes can easily be corrected without having to retype an entire page. Many tasks that would be difficult on a typewriter can be done with a few keystrokes on a word processor. These include centering lines, indenting paragraphs, underlining, super- and subscripts, page numbering, creating headers and footers, aligning decimals in tables, and making multiple copies of documents (Page, 1985).

A data base management system is recommended about as frequently by school administrators as is software designed specifically for accomplishing tasks (Crawford, 1987). A data base is simply an electronic file (Page, 1985). To visualize how a data base is organized, think of the data

base files as file cabinets, the records as manila folders, and the fields as the sheets of paper inside the folders. The most remarkable thing about a data base is that once the information is entered into it, users are able to search and sort by many different criteria (Hunter, 1985). The final type of general application software, the electronic spreadsheet, is essentially a matrix of cells, arranged in rows and columns, in each of which one can enter a value, a title, or a formula for further calculation. The electronic spreadsheet handles the kind of quantitative data and information which would normally be put in a table with rows and columns and their respective headings.

Nineteen areas of school administrative responsibilities have been identified (Gorton, 1983; Crawford, 1987). Each of the common tasks selected for examination by this study are normal educational management responsibilities that have, in the past, been handled manually. Those areas identified are: (1) athletics; (2) attendance accounting; (3) budgeting; (4) financial accounting; (5) food service; (6) grade analysis and reporting; (7) guidance; (8) information from databanks; (9) instructional management; (10) inventory and property records; (11) library/media center; (12) planning and statistical forecasting; (13) scheduling; (14) school calendar; (15) staff/personnel records and supervision; (16) teacher negotiations and conflict management; (17) student

records; (18) student transportation; and, (19) word processing. All of these tasks lend themselves to a more timely and efficient management through the use of computer software.

Athletic software programs are designed to analyze competitive team statistics for both the home and the opposing teams (McKeown, 1987). Features of this type of software should include the capability of analyzing sport teams' offensive and defensive tendencies. Individual player statistical categories can also be analyzed (Crawford, 1987). Student eligibility information can be handled with the grade analysis and reporting software. If it is necessary to maintain miscellaneous information on individual student athletes, any good data base management software will work (Hunter, 1985).

Attendance accounting software meets the needs for daily absence and tardy information. Characteristics of a good attendance software program would include a capability for the comprehensive recording of by-period or by-course attendance reports (Gilman, 1984). Other capabilities could include weekly, daily, and period reports of absentees, attendance exceptions, and attendance profiles; production of lists of parents' names with telephone numbers for absentees in categories specified by the administrator; generation of form letters addressed to parents after a specified number of absences of certain types; automatic

dialing of home telephone numbers during school as well as evening hours to give a recorded message to parents and with a provision for parent responses; transfer of attendance data to grade reports; and the use optical mark scanners or card readers for speed and accuracy of data entry (Crawford, 1987).

Software programs designed to handle the financial matters should include capabilities for fund, function, object, and program budgeting as well as cost center budgetary control (Crawford, 1987). Financial accounting of activity and club funds as well as student billing and accounts receivable are other viable functions (Gorton, 1983). Budgeting and financial accounting can often be performed on a microcomputer with the same type of general application spreadsheet software that could be used in the athletic statistical analyses. Budgeting and financial tasks most often involve a rows-and-columns table of numbers. Such calculations can often best be performed with a spreadsheet or the spreadsheet part of an integrated system (Bialaszewshi, Kocakulah, & Bialaszewshi, 1986). Once the report format has been developed, the program may be used time after time for the same application by simply inserting the updated data (Dembowski, 1986; Evans & Barnett 1986). As new data are entered, the new figures are recalculated automatically and the reports are updated with the current information. This almost instant manipulation

and updating of numbers makes it easy for administrators to create "what if" reports (Kehoe, 1986; Page 1985).

Food service software may include features such as cost analyses, food sales revenue accounting, nutrition analyses, participation accounting, and inventory control (Pannell, 1986). Because of the type of tasks performed (i.e., manipulation of rows and columns of numbers) a spreadsheet system may again be ideal for this job.

According to Farnsworth and Wilkinson (1987), there are many good electronic grade books and report card programs available on the market. Grade analysis and reporting software performs tasks which vary from compiling and printing student grade reports to producing final transcripts, grade point averages, and class rankings. Software functions can include application of grading scales using letters or numbers from 0 to 100; capacity to handle all grading periods in a school year; inclusion on the report cards of absence data and prepared statements; determination of grade point averages, athletic eligibility, and credit requirements; selection of honor roll students based upon the school's course- and grade-related qualifications; printing of student failure and incomplete lists; counselors' reports based upon grade-related search criteria defined by the school's counselors; and analysis of grade distributions for individual teachers, subjects, departments, grade levels, or any other group selected

(Riegel, 1987). As in other software programs, the ability of the software program to use a card reader or an optical mark scanner could further enhance the speed and accuracy of data entry (Atwood, 1986). By networking, individual teacher grade computations could be accessed from a central location. The use of this type of software program could be integrated throughout the entire school system, thus contributing significantly to the goal of reducing teacher paperwork and administrative time used in gathering grade information (Hill, 1987).

Guidance software provides information necessary for career decision-making. Users are questioned in areas such as work activities, interests, abilities, values, perceptions, preferences, and plans (Crawford, 1987). These database-type program allows individuals to access data they need to make decisions on their future careers.

Information from databanks is often made available by connecting a microcomputer to another microcomputer, or larger computer, containing a variety of source information. This can be done through the use of a telecommunication software program and a modem. Two databanks of special interest to school administrators are the American Association of School Administrators' (AASA) Actionline and the National School Public Relations Association's (NSPRA) ED-LINE (Crawford, 1987).

As mass storage has become affordable, another area

receiving increased attention is that of classroom instructional management (Source guide, 1987). Instructional management ranges from monitoring student progress in a classroom on computer assisted instruction (CAI) courseware (McKeown, 1987) to monitoring student progress for a whole school district on specified curriculum goals, objectives, and skills (Hill, 1987). The instructional data base can also contain testing data files to provide test items for each of the required skill objectives; resource files containing textbook titles, films, reader series programs, computer-aided instruction programs, and other materials supplementary to the curriculum; and teacher-created tests to supplement the curriculum materials and standardized tests required by the district, state, and/or federal government (Kimsey, 1989).

Since the passage of PL 94-142, educators have found that many database management programs are applicable for use with special education programs (Kondruchuck & Monahan, 1986), while other, more specifically focused software is designed especially for individual education plans (IEP) (Bennett, 1986; Ryan & Rucker, 1986).

The filing, sorting, and reporting of inventory and property records are tasks which data management systems perform well (Crawford, 1987). Some administrators are using spreadsheet application programs designed to maintain an inventory of items in their schools' media centers to

keep track of and develop amortization tables for all of the schools' equipment and property (Evans & Barnett, 1986). Consideration should be given to defining an individualized database management system for each particular school situation. The reports generated by most inventory and property software packages can be achieved with any good data base management program.

Among the many library/media center tasks that are easily handled by application software are control of all aspects of item circulation, bibliographic lists, production of in-house publications of inventory, online catalogs, printing of catalog cards, inventory control, purchasing, and budget expenditures. According to Crawford (1987), there are over 300 specialized commercial software packages currently on the market that perform one of more of the aforementioned media center tasks. Local area networking with other schools and information banks from around the world are becoming more popular as well as more affordable (Sequin, 1988).

For planning, a variety of software exists that combine word processing, data management, and outlining, frequently also including calendar programs for scheduling activities and spreadsheet programs for providing a framework for financial, student, and staff projections (Ebner, 1987). For the administrator, forecasting through the use of simulation (Findley, 1986) is of interest for the projection

of possible future trends and in predicting the shape of things to come that will affect the classroom, curriculum, and school direction (McMeen, 1987). Various traditional forecasting models are presently available. However, the more dynamic predictive models involve the use of computer analysis. Project management software using the Critical Path Method (CPM) or Program Evaluation Review Technique (PERT) are becoming more popular in school business environments (Richards, 1988).

Course cheduling software programs will perform tasks ranging from student locator to master schedule generator (Ebner, 1987). Software application features allow for the matching of student course requests with available courses and section offerings while also allowing for alternative course choices if conflicts occur (Gilman, 1984).

A calendar software program enables a search for events based on dates, places, or people; the printing of a daily, weekly, monthly, or even annual calendar of meetings or events; viewing the next or previous day's or week's calendar of events; copying or moving of events from one calendar to another; looking at all the calendars at the same time to schedule meetings and events; and the merging of event notices with documents using the Word Processor (International Business Machines, 1989).

The primary requirements for the handling of staff records call for software that performs the tasks of filing,

sorting, and reporting data such as names, addresses, and telephone numbers; individual demographic data; and leave and/or benefit data. These are tasks that can be handled well by data management software. Another area of personnel administration that makes the laptop computer applicable is the administrative task of teacher observation and evaluation (Kuralt, 1987). Along with the laptop computer, other electronic devices such as optical scanners and electronic clipboards can further minimize the time necessary for the gathering of observational data (Atwood, 1986).

The main role of the administrator in teacher negotiations and conflict management is that of provider and facilitator of information (Jones & Baldwin, 1987). Skillful management of the information system can enable the administrator to quickly supply accurate data to all interested parties. In crisis situations where both sides are at a stalemate, computer generation of graphics and report information can sometimes prove helpful in reopening lines of communication. The technique of sharing information through the use of computer graphics can occasionally help both sides see the variable and limitations that planning decisions must address (McInerney & Bennett, 1987).

A student records system will store and retrieve basic information on each student. Commonly found fields of data

include first, middle, and last name; gender; ethnic group; birthdate; student identification number; social security number; parents' or guardians' names, address(es), and telephone number(s); emergency contact(s) and telephone number(s); homeroom; locker number; school lunch status; and immunization status. A well-designed student records system will permit the insertion of additional data fields unique to a individual school's requirements (Crawford, 1987).

Student transportation is a centralized operation in most school districts. Therefore, administrators can make use of a good student records' software system in keeping track of bus numbers, routes, and times. With the advent of PL 94-142, the microcomputer has been of tremendous help in determining and meeting the transportation requirements of handicapped students (Becker & Schur, 1986). Fleet maintenance records and requirements can also be handled efficiently by computer application (Anthony & Inman, 1986).

Word processing software allows an individual to create, revise, save, and print a wide variety of documents (i.e., letters, memos, financial tables, and reports). Word processing programs operate much like a typewriter, but with many enhancements (International Business Machines, 1989).

Summary

The evolutionary development of the modern day computer is a process that may have begun over 3,000 years ago. With

the invention of computational tools from the abacus to Babbage's "engine" and from adding machines to punch-card processing equipment, these mechanical devices led to the electronic computer. The electronic computer can be traced through four distinct phases of development with a fifth phase now emerging. Electronic computer technology has advanced so rapidly that less than 25 years ago, when many of today's top-level administrators were students in secondary school, adding machines had a hand crank and the slide rule was the instrument of choice for difficult calculations.

Managers, whether in business, government, or education, have always used information in the performance of their tasks, so the subject of management of information is not a new concept. The innovation that makes information management a current issue of efficiency and accountability is the electronic microcomputer.

In analyzing management tasks performed by educational administrators, review of pertinent literature revealed 19 tasks, common to public secondary schools which are associated with the manipulation and storage of data. They thus lend themselves to being performed more quickly and efficiently with the use of a microcomputer and a tailored general application software program.

CHAPTER III

RESEARCH METHOD

The purpose of this study was to determine the extent of integration of the microcomputer into the daily administrative task management process of secondary schools in Oklahoma independent school districts. The research questions were designed to: (1) gather demographic and general information for comparison to an earlier study by McLean (1986); (2) identify administrative management tasks conducted within each building and compare manual and computerized facilitation of these tasks; (3) gain information concerning the brands of equipment integrated into the secondary schools' management processes; and (4) survey the principals' perceptions of microcomputer usage within the school management processes. The study was both descriptive and comparative in nature.

Population and Sample

The population for this study consisted of the building site administrators (principals) of secondary schools who were employed by ındependent school districts in the State of Oklahoma during the 1989-90 school year. A random sample

of 200 (27.9%) of the 716 Oklahoma secondary school principals was selected from the appropriate mailing list of the Oklahoma Public School Research Council. After selecting the 200 subjects, each principal's name was verified from the Oklahoma Educational Directory 1989-90 published by the Oklahoma State Department of Education.

Instrument

An instrument was created specifically for this study. The purpose of the instrument was to determine the extent of integration of the microcomputer as an administrative management tool in the independent secondary schools of Oklahoma. The questionnaire consisted of fill-in and multiple choice questions for the demographic and general information and equipment sections, while the section on integration was designed in a combination checklist and fill-in format (see Appendix A). The questionnaire was developed in early September of 1989 and was reviewed by a panel of experts, including professors from the Educational Administration and Higher Education Department and the Curriculum and Instruction in Education Department of the College of Education along with professors from the Management Department of the College of Business Administration, all at Oklahoma State University. The revised instrument was then field tested with school administrators enrolled in evening classes at Oklahoma State

University and with secondary principals from the Stillwater, Oklahoma, public schools.

Section 1 of the instrument was designed to collect demographic and general information (i.e., school size and grade configuration, district enrollment, number of microcomputers in each school and their uses). Section 2 of the instrument was focused on the 19 management tasks which were previously identified through the review of literature. The surveyed principals, both microcomputer users and nonusers, were asked to identify the listed tasks that were being conducted in their individual schools. Principals were also asked to supply the title of the person responsible for managing each task and the type of computer and software which was used, as appropriate, in each part of the management process. Section 3 of the instrument was used to determine the brand names, models, and number of microcomputers being used for management tasks at the school site. Background information on the individual completing the questionnaire was collected in Section 4, while section 5 dealt with the principals' perceptions of how the microcomputer had affected their management environments.

Data Collection

The instrument packet was sent to each of the 200 secondary school principals who constituted the random sample. Included in each packet were a cover letter and a

copy of the instrument (see Appendix A), as well as a self-addressed, stamped envelope for return of the completed instrument. Each instrument contained a numerical coding to be used for identification of the school from which the response was received. The purposes of this identification were to guide followup efforts and to also enable the conduct of future studies of the same sample, if desired.

The initial mailing was done on September 29, 1989, with a suggested due date of October 23, 1989. On October 25, 1989, a second mailing to those principals who had not responded and a second suggested due date of November 11, 1989, was noted. The second packet consisted of a cover letter (Appendix B) asking the principal to supply the earlier requested information and a duplicate questionnaire. The first mailing resulted in the return of 82 instruments while the second mailing produced 33 additional respondents. After receiving a total response of 115 schools (57.5%), the decision was made to not engage in additional follow-up efforts.

The respondents were considered to be representative of the population of secondary school principals because of the random selection of the total sample and the demographic similarity of this respondent group with that of McLean's 1986 study, particularly the size of school and the age of the administrators. In addition, the respondents were similar in demographic features to the total population as

described by various data from the Oklahoma State Department of Education. While it might appear that microcomputer users would be more apt to complete and return the instrument, the instrument was designed, in fact, to allow nonusers to easily and quickly check their status and thus to bypass the detailed questions.

Analysis of Data

The statistical procedures used in analyzing the collected data were both descriptive and comparative in nature. Findings for each of the research questions are presented in Chapter IV with the determination of central tendencies and percentage distributions as well as probabilities of relationship, which were computed with the Pearson Chi-Square.

Since the analysis of the data involved numerous comparisons with the findings of McLean (1986), it is important to note the manner in which McLean identified the population and sample for his study. All of the 625 individual secondary school principals who had been identified by the Oklahoma State Department of Education were included in his data collection efforts. This group did not include principals of middle schools. Of the 625 members of the population, responses were received from 466 for a response rate of 74.6%.

Throughout Chapters III and IV, the graphs and tables

show a variance in total number of respondents. While 115 questionnaires were returned, one was completely blank and several others were not completely filled out. Therefore, the results of each question are a reflection of only those respondents who actually answered the particular question being analyzed.

Demographics of the Respondents

The data in Figure 1 graphically display the five major categories of grade configuration making up the secondary schools where principals participated in the study. There were five major grade configurations reported by respondents: grades 7-12 (23.9%), 9-12 (22.1%), 6-8 (19.5%), 7-9 (9.7%), and 10-12 (8.8%). It was found that the schools of 18 respondents (16.0%) were organized in grade configurations other than the five major categories. The school configurations of these respondents included grades K-12 (3), 7-8 (3), 8-12 (3), 9-10 (3), 6-12 (2), 11-12 (2), 5-8 (1), and 8-9 (1). A secondary school was defined as having one or more levels from grades 7 to 12.

In McLean's 1986 study, grade configurations were found to fall into four main categories: the traditional junior high formation of grades 7-9; the grade configurations of 9 to 12 and 10 to 12 combining to form the senior high school subgroup; the K-12 subset; and the combination junior/senior high school structure of grades 7-12.

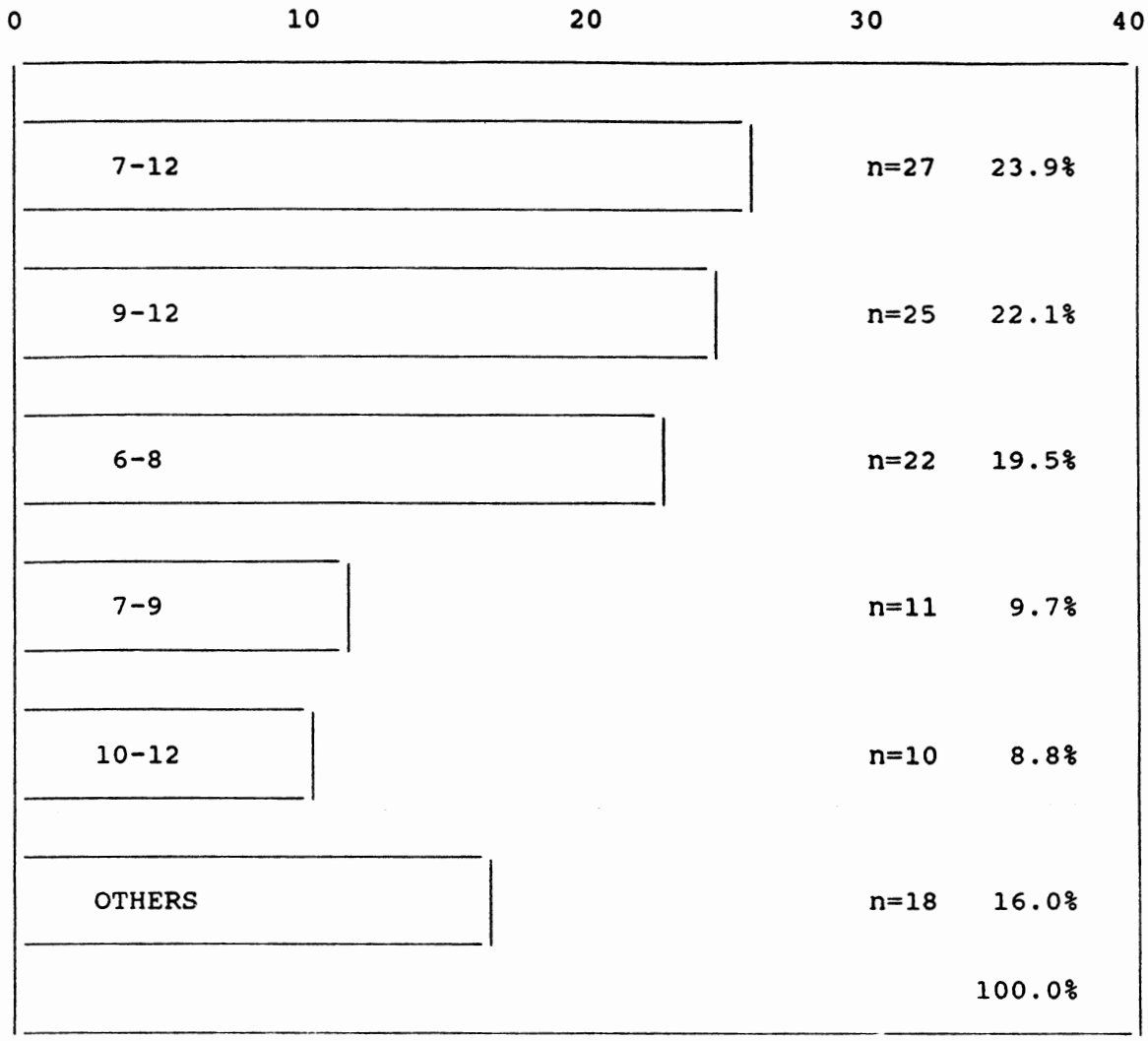

Figure 1. Distribution of respondents by grade configuration of schools (N=113)

In comparing this study with that of Mclean, a major difference was noted in the number of schools with the K-12 grade configuration. McLean received responses from 72 schools with the K-12 format, which accounted for 15.5% of the participating schools, while the current survey received responses from K-12 schools accounting for only 2.7% of the

total responses. Another notable difference appeared in the 7-9 grade category. In McLean's study, the junior high category accounted for 15.9% of the respondents while in the current study this format accounted for only 9.7% of the participation. A category that appeared in this study that was not reflected in McLean's survey is the 6-8 (middle school) configuration which accounted for 19.5% of the current respondents.

Figure II shows a graphic representation of the distribution of responding principals by age. The under 35 group declined by approximately 32% since 1986 (13.9% in McLean's study to 9.6% currently). In comparison with McLean's findings, the 36 to 45 age category remained virtually the same (0.4% increase in 1989). The 46 to 55 age group showed an 18.0% increase from 1986 to 1989 while the over-56 age group showed a decline of approximately 30.0%. In McLean's study, over half of the respondents were 45 years of age or younger. In the current study the mean age was 44 years.

Figure III graphically depicts the distribution of respondents by number of years of administrative experience. Those principals with 5 or less years of experience increased by 17.0% from McLean's study to this study. The group of respondents having 6 to 10 years experience decreased by approximately 7.0% as did the 11 to 15 year group with a 18.0% decline (McLean's 23.0%; current 18.8%).

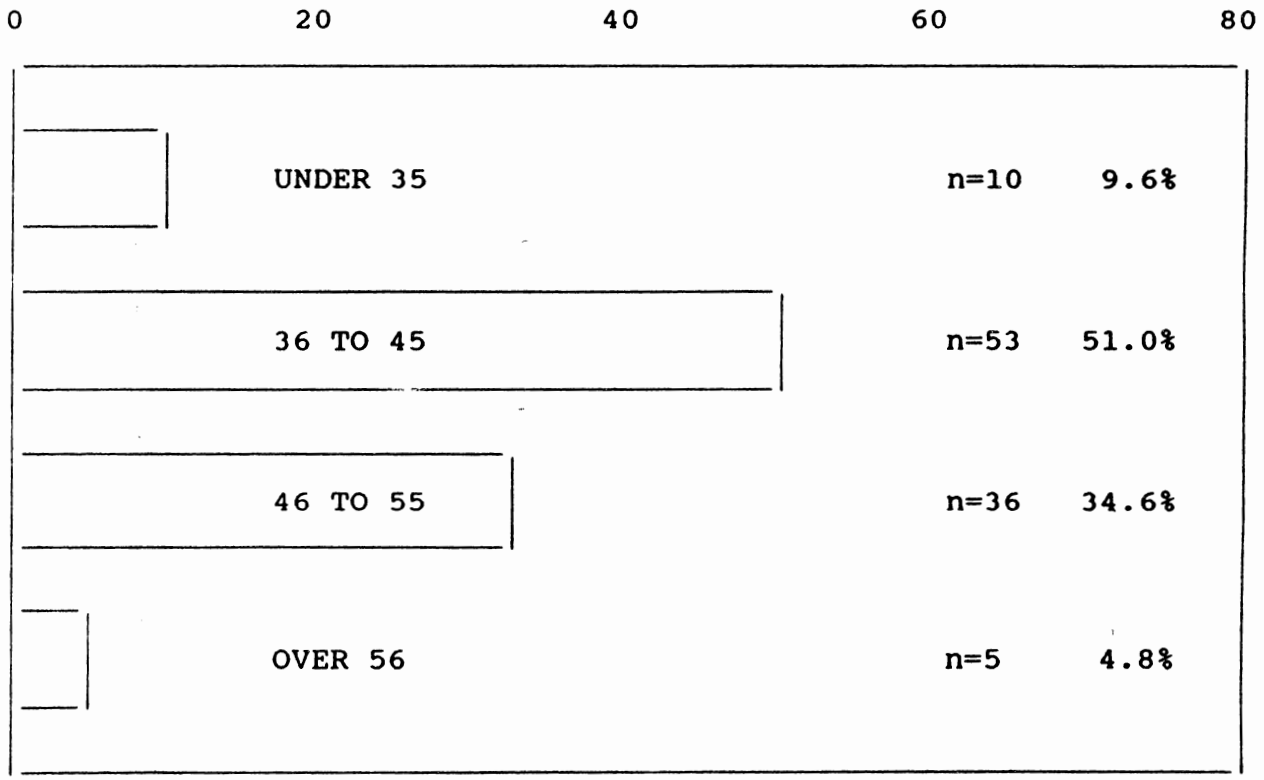

Figure 2. Distribution of respondents by age
(N=104)

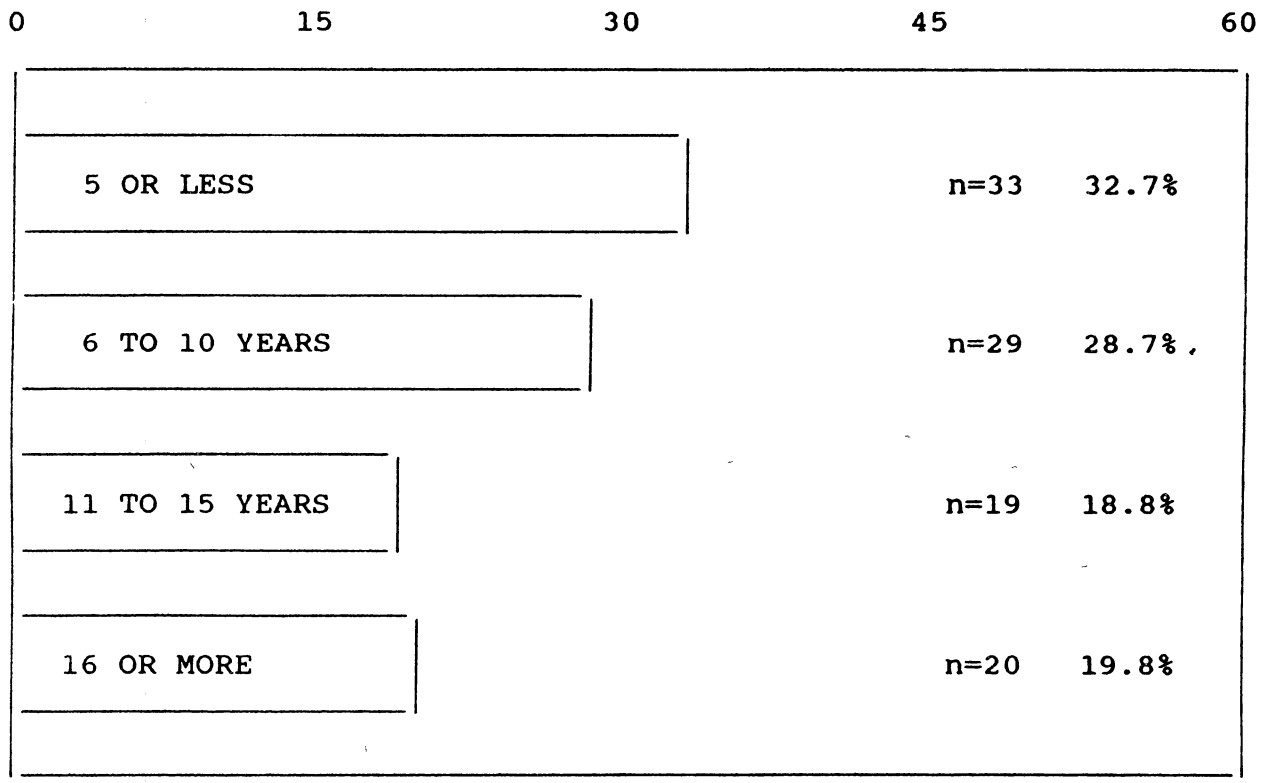

Figure 3. Distribution of respondents by number of years administrative experience (n=101)

The group with 16 or more years of experience showed a slight (4.0%) increase from the earlier study.

Summary

The population for this study consisted of a random sample of 200 (27.9) of the 716 Oklahoma secondary school principals. An instrument was created specifically for this study to determine the extent of integration of the microcomputer as an administrative management tool in the independent secondary schools of Oklahoma. The questionnaire consisted of fill-in and multiple choice questions for the demographic and general information and equipment sections, while the section on integration was designed in a combination checklist and fill-in format. A total of 115 questionnaires were returned. The statistical procedures used in analyzing the collected data were both descriptive and comparative in nature.

Demographic information gathered concerning the grade configuration of surveyed schools showed the five major formations, in order of popularity, were grades 7-12, 9-12, 6-8, 7-9, and 10-12. The demographic results concerning age of principals showed that 51% were in the 36 to 45 age category and that the mean age of the respondents was 44. The distribution of respondents by the number of years of administrative experience showed 32.7% with 5 years or less, 28.7% with 6 to 10 years, and 38.6% with more than 10 years.

CHAPTER IV

RESEARCH FINDINGS

This chapter contains the analysis and discussion of the results of the research survey. The research questions presented in Chapter I were designed to identify the manner and degree to which microcomputers were used in the administration of secondary schools in Oklahoma. The presentation of results of the first five questions closely follows the format used by McLean in his 1986 study and in many cases shows comparisons with his findings. The second segment provides the findings relative to principals' perceptions of the manner in which microcomputers had been integrated into the performance of management tasks. The final section of the chapter contains the findings relative to the other portions of the instrument and thus presents related findings of general interest.

Research Question One

The first question was designed to determine if Oklahoma secondary school principals used microcomputers as an administrative tool. As shown in Table I, 91 (82%) of the principals indicated that microcomputers were used in

TABLE I

MICROCOMPUTER USE AS A SECONDARY SCHOOL TASK MANAGEMENT TOOL

Study	Use Microcomputers?	
	Yes	No
1986 McLean Study	50.0%	50.0%
(N=466)	233	233
Current Study	82.0%	18.0%
(N=111)	91	20

their schools for task management processes, while 20 (18%) of the principals indicated that they were not used. In contrast, McLean (1986) found that microcomputers were used for management processes in only 50% of the respondents' schools.

Research Question Two

Demographic factors can sometimes be used as predictor keys for determining why individuals make certain decisions. Question two examined the demographic variables of principals' age, education, and administrative experience to see if any of these were determining factors for the use of microcomputers.

In examining the relationship of the principal's age to microcomputer usage, the principals where placed into the four age categories used by McLean (1986): 35 years or younger, 36-45 years of age, 46-55 years of age, and 56 years of age or older. Table II shows there was not a correlation between the administrator's age and microcomputer usage (P > .05). This finding was consistent with McLean's 1986 results.

TABLE II

RELATIONSHIP BETWEEN THE PRINCIPAL'S AGE AND THE USE OF MICROCOMPUTERS IN THE SCHOOL'S MANAGEMENT PROCESS

Age	Administrative Use of Microcomputers					
	yes		no		Total	
	n	%	n	%	n	%
Under 35	8	80.0	2	20.0	10	9.8
36 to 45	42	82.4	9	17.6	51	50.0
46 to 55	28	77.8	8	22.2	36	35.3
Over 55	5	100.0	0	0.0	5	4.9
Totals	83		19		102	100.0

Pearson Chi-Square 1.496 P 0.683 Rho -.0070

The analysis of the relationship between level of education and microcomputer usage was also performed in the same manner as in McLean's (1986) study. The principals were divided into four education categories by the most recent degree received, bachelors, masters, specialist, or doctorate. Table III shows that the majority (81.4%) of the principals fell into the masters degree sub-group. No positive statistical correlation ($P > .05$) was identified between the level of education and microcomputer usage. While McLean (1986) maintained that principals holding higher degrees tended to be microcomputer users because of their association with larger schools, this study did not find that correlation. A majority (60.0%) of the administrators with a doctoral degree were located in the middle enrollment category of schools (251-500) while all individuals with specialist degrees were located in the middle or lower enrollment categories. In analyzing the relationship between level of education and district enrollment, it was found that all principals with doctoral degrees were in districts with enrollment of more than 1,000 students, while two thirds of the principals with specialist degrees were associated with the middle or lower size categories.

The relationship between time since completion of the last degree program and the use of microcomputers proved to be negative ($P > .05$).

TABLE III

RELATIONSHIP BETWEEN THE PRINCIPAL'S LEVEL OF EDUCATION AND THE USE OF MICROCOMPUTERS IN THE SCHOOL'S MANAGEMENT PROCESS

Highest Degree Earned	Administrative Use of Microcomputers					
	yes		no		Total	
	n	%	n	%	n	%
Bachelors	1	100.0	0	0.0	1	1.0
Masters	65	78.3	18	21.7	83	81.4
Specialist	12	92.3	1	7.7	13	12.7
Doctorate	5	100.0	0	0.0	5	4.9
Totals	83		19		102	100.0

Pearson Chi-Square 2.972 P .396 Rho -.1456

The demographic variable of length of administrative experience was also examined. Principals were asked to indicate the number of years in which they had been an administrator. The responses were grouped into five categories: 5 years or less, 6-10 years, 11-15 years, 16-20 years, and more than 20 years. As can be seen in Table IV, the majority (65.0%) of the respondents had been in administrative positions for less than 10 years. This compares with McLean's (1986) study which showed a lessor

majority (58.0%) with that range of experience. Of the principals with less than 10 years of experience, 78% used microcomputers in their schools. This compares with only 47% in McLean's (1986) survey. The 35% of administrators who had more than 10 years of experience showed a 90% rate of microcomputer usage. This contrasts with the 55% usage rate found by McLean. This high percentage of use in the schools of the more experienced principals is apparently due to the fact that those administrators were associated with larger enrollment schools and school districts ($P < .04$ and $P < .05$ respectively).

The total length of experience in education was also analyzed. There was no positive relationship ($P > .05$) found between total experience and microcomputer usage. The range of total experience varied from 5 to 47 years. The principals' average length of educational experience was 21 years, with 75% reporting between 10 and 30 years of experience.

The comparison for a relationship between the use of a microcomputer at school and the administrator's personal use of a microcomputer at home showed no positive correlation ($P > .05$).

TABLE IV

RELATIONSHIP BETWEEN THE PRINCIPAL'S LENGTH OF ADMINISTRATIVE EXPERIENCE AND THE USE OF MICROCOMPUTERS IN THE SCHOOL'S MANAGEMENT PROCESS

Years of Administrative Experience	Administrative Use of Microcomputers					
	yes		no		Total	
	n	%	n	%	n	%
less- 5	26	83.9	5	16.1	31	31.3
6-10	19	65.5	10	34.5	29	29.3
11-15	17	89.5	2	10.5	2	19.2
16-19	6	75.0	2	25.0	8	8.1
20-plus	12	100.0	0	0.0	12	12.1
Totals	80		19		99	100.0

Pearson Chi-Square 6.569 P .087 Rho -.0847

Research Question Three

The third research question asked in this study was designed to determine how and for what purpose secondary school principals in Oklahoma were using microcomputer technology. The next two tables provide data indicating the rank order of frequency in which the management tasks listed

on the instrument were actually performed in the respondents' schools.

In Table V, the tabulation results show that the three management tasks most frequently performed in all of the respondents' schools were those associated with scheduling (80.6%), attendance accounting (77.7%), and student records (71.3%). The management tasks performed least often in the surveyed schools were teacher negotiations and conflict

TABLE V

SCHOOL MANAGEMENT TASKS AS IDENTIFIED BY ALL SURVEY RESPONDENTS

School Management Tasks	n=108	Percent
Scheduling	87	80.6
Attendance Accounting	83	77.7
Student Records	77	71.3
Grade Analysis and Reporting	74	68.5
Library/Media Center	72	66.7
Word Processing	62	57.4
Athletics	60	56.2
School Calendar	55	51.0
Guidance	53	49.1
Financial Accounting	52	48.2
Inventory and Property Records	52	48.2
Budgeting	51	47.2
Staff/Personnel Records and Supervision	46	42.6
Food Service	40	37.0
Student Transportation	34	31.5
Instructional Management	32	29.6
Information from Databanks	22	20.4
Planning and Statistical Forecasting	13	12.0
Teacher Negotiations/Conflict Management	8	7.4

management (7.4%), planning and statistical forecasting (12.0%), and gathering information from databanks (20.4%).

For the analysis shown in Table VI, microcomputer users were separated from nonuser respondents. The tabulation was then made to determine the rank order of management tasks for which microcomputers were used. It is of great interest to note that, while 82% of the respondents' schools contained microcomputers available for microcomputers, among the users there was no management task for which more than half were using those microcomputers. The results showed that scheduling (48.9%), word processing (47.8%), and attendance accounting (46.7%) were the three management tasks in which microcomputer technology was most frequently used. The tasks for which microcomputers were used least were those involving instructional management (12.2%), food service management (12.2%), planning and statistical forecasting (4.4%), and teacher negotiations and conflict management (1.1%).

While the overall percentage of use has increased since McLean did his 1986 study, the rank order of the top five management tasks associated with microcomputer use remained the same. These tasks were scheduling, word processing, attendance accounting, grade analysis and reporting, and student records. None of these, however, has become commonly associated with microcomputers in a majority of the user schools, much less in a majority of all schools.

TABLE VI

MICROCOMPUTER USE FOR SCHOOL MANAGEMENT TASKS, AS IDENTIFIED IN USER SCHOOLS

School Management Tasks	N=90	Percent
Scheduling	44	48.9
Word Processing	43	47.8
Attendance Accounting	42	46.7
Grade Analysis and Reporting	36	40.0
Student Records	34	37.8
Library/Media Center	32	35.6
Financial Accounting	26	28.9
School Calendar	22	24.4
Athletics	22	24.4
Budgeting	20	22.2
Staff/Personnel Records and Supervision	20	22.2
Inventory and Property Records	18	20.0
Guidance	15	16.7
Information from Databanks	13	14.4
Student Transportation	13	14.4
Instructional Management	11	12.2
Food Service	11	12.2
Planning and Statistical Forecasting	4	4.4
Teacher Negotiations/Conflict Management	1	1.1

Research Question Four

The fourth question to be analyzed had to do with the relationship between size of enrollment and the use of microcomputers in the administrative task management process of the school. McLean's (1986) findings indicated that as school or district enrollment increased, so did the use of microcomputers.

Table VII clearly shows increases in microcomputer usage were related to increases in school enrollment ($P < .03$). Use of the microcomputer increased from 54% in schools with less that 100 enrollment to 100% in schools with more than 1000 students. Table VII also illustrates how close these research results compare with McLean's (1986) findings.

Table VIII illustrates a continued positive correlation (P .003) between district enrollment and microcomputer usage. As with school enrollment, the smallest districts show the least use (55.0%) while the largest districts show the greatest use (93.3%). In McLean's 1986 study, the slight decline in microcomputer use in those districts with over 5,000 students was attributed to the greater use of mainframe computers in those largest districts. In the current study, the data do not indicate that explanation to still be true.

In examining the relationship between the grade configuration of schools and the use of microcomputers for task management, no significant correlation was found. As shown in Table IX, the three grade configurations (7-12, 9-12, and 6-8) which represented over two thirds of all of the respondents' schools each showed use of microcomputers to exceed the 80% level.

In addition to examining microcomputer use in relationship to enrollment, an effort was made to determine

TABLE VII

RELATIONSHIP BETWEEN MANAGEMENT USE OF MICROCOMPUTERS AND SCHOOL ENROLLMENT

School Size	Percentage of Administrative Use of Microcomputers: yes	no	Totals
Current Study:			
100 or less	54.5	45.5	10.0
101 - 250	76.0	23.9	41.8
251 - 500	89.6	10.3	26.3
501 - 1,000	94.4	5.5	16.3
1,000 +	100.0	0.0	5.4
Totals	81.8	18.2	100.0
Pearson Chi-Square 10.975	P 0.027	Rho -.3039	
McLean Study:			
100 or less	36.0	64.0	10.7
101 - 250	40.8	59.2	36.3
251 - 500	53.0	47.0	28.8
501 - 1,000	65.6	35.4	17.6
1,000 +	71.0	29.0	6.7
Totals	50.0	50.0	100.0
Chi-Square -22.55	P < .0002	Rho -.22	

TABLE VIII

RELATIONSHIP BETWEEN MANAGEMENT USE OF MICROCOMPUTERS AND DISTRICT ENROLLMENT

	Percentage of Administrative Use of Microcomputers		
District Size	yes	no	Totals
Current Study:			
300 or less	55.0	45.0	18.8
301 - 500	93.3	6.6	14.1
501 - 1,000	73.1	26.9	24.5
1,001 - 5,000	93.3	6.6	28.3
5,001 +	93.3	6.6	14.1
Totals	81.1	18.9	100.0
Pearson Chi-Square 15.859	P 0.003	Rho -.2878	
McLean Study:			
300 or less	36.0	64.0	18.5
301 - 500	36/8	63.2	20.4
501 - 1,000	46.4	53.6	24.0
1,001 - 5,000	68.0	32.0	27.5
5,001 +	62.2	37.8	9.7
Totals	50.0	50.0	100.0
Chi-Square 33.07	P < .0001	Rho -.25	

TABLE IX

RELATIONSHIP BETWEEN SCHOOL GRADE CONFIGURATION AND THE USAGE OF MICROCOMPUTERS FOR MANAGEMENT TASKS

N=110

Grade Configuration	Use of Microcomputers					
	yes		no		Totals	
	n	%	n	%	n	%
7-12	22	84.6	4	15.4	26	23.6
9-12	22	88.0	3	12.0	25	22.7
6-8	18	81.8	4	18.2	22	20.0
7-9	6	60.0	4	40.0	10	9.0
10-12	9	100.0	0	0.0	9	8.2
K-12	2	66.7	1	33.3	3	2.7
7-8	2	66.7	1	33.3	3	2.7
8-12	1	33.3	2	66.7	3	2.7
9-10	3	100.0	0	0.0	3	2.7
6-12	2	100.0	0	0.0	2	1.8
11-12	2	100.0	0	0.0	2	1.8
5-8	1	100.0	0	0.0	1	0.9
8-9	1	100.0	0	0.0	1	0.9
Totals	91	82.7	19	17.2	110	100.0

Pearson Chi-Square 14.142 P 0.292 Rho .0135

the number of microcomputers which were designated for task management usage in each school. The results of this question, illustrated in Table X, clearly show that, as size of school enrollment increased, so did the number of microcomputers used. Schools with enrollments of less than 100 indicated having the use of one (1.1) microcomputer while those in the largest category of over 1000 enrollment showed an average of six (5.9) microcomputers each.

In Table XI, which provides a comparison between the number of microcomputers used for management and district enrollment, increases were progressively registered from the smallest category up to the category of 1000 students.

TABLE X

RELATIONSHIP BETWEEN NUMBER OF MICROCOMPUTERS USED FOR TASK MANAGEMENT AND THE STUDENT ENROLLMENT OF THE SCHOOL

School Enrollment	Average Number of Microcomputers
100 or Less	1.1
101-250	2.9
251-500	3.3
501-1000	5.7
1001 Plus	6.2

Pearson Chi-Square 74.523 P 0.008 Rho .4338

TABLE XI

RELATIONSHIP BETWEEN NUMBER OF MICROCOMPUTERS USED FOR TASK MANAGEMENT AT THE SCHOOL SITE AND DISTRICT ENROLLMENT

District Enrollment	Average Number of Microcomputers
300 or Less	1.5
301-500	2.8
501-1000	3.0
1001-5000	5.0
5001 Plus	4.9

Pearson Chi-Square 57.967 P 0.154 Rho .4525

After reaching 1000 students, there was no additional increase in the number of microcomputers. Possibly, as McLean (1986) suggested, the districts with enrollments of more than 5000 students are relying more heavily on mainframe use to supplement their task management.

Research Question Five

The fifth research question was used to identify the brand names of microcomputers used by secondary school principals for handling their management tasks. Table XII shows that the IBM, and the many clones made by other companies to be compatible with IBM, was the microcomputer

TABLE XII

MICROCOMPUTER USE BY BRAND NAME

Brand of Microcomputer	Number Used	Percent of Total Used
IBM	174	57.8
Apple	96	31.9
Tandy	30	10.0
Commodore	1	0.3
Totals	301	100.0

of choice for management tasks in secondary schools. The Apple family of microcomputers, including both Apple II McIntosh, came in second with 31.9%. In McLean's 1986 research, the rank order was entirely different than the current research results. Radio Shack (Tandy) dropped from a strong position (47.6%) in 1986 to a low showing (10.0%) in 1989. Apple was the 1986 leader (48.1%), followed closely by Radio Shack (47.6%), and Commodore (15.9%). In 1986, IBM held only a small (13.3%) share of the total market.

In Table XIII, a comparison is shown of school size (total student enrollment) and the brand of microcomputer

TABLE XIII

RELATIONSHIP BETWEEN SCHOOL SIZE AND BRAND OF MICROCOMPUTER USED BY THE SCHOOL

Student Enrollment	Brand of Microcomputer				
	IBM	Apple	Tandy	Commodore	Totals
	Percentage of Use				
100 or Less	66.7	33.3	0.0	0.0	100.0
101 - 250	34.0	45.5	20.5	0.0	100.0
251 - 500	68.4	19.0	11.4	1.2	100.0
501 - 1,000	50.0	39.0	2.0	0.0	100.0
1,001 or more	96.4	0.0	3.6	0.0	100.0
Totals	57.8	31.9	10.0	0.3	100.0

Pearson Chi-Square 57.929 P 0.000 Rho -.2983

used for management. IBM was the leading brand in all size categories except for school enrollment of 101-250 students. In that category, Apple took the lead. In McLean's 1986 comparison of school enrollment and microcomputer brand, IBM was strongest in categories of over 500 (54.8% of IBMs being used). His research also indicated that Apple and Radio Shack were most popular among schools with student populations of between 101 and 1000. This is still the area in which these two companies are making their best showing

(59.8% combined market share). Their (33.3%) share of the categories above 1000 showed a much weaker position.

Table XIV shows a comparison between district size (student enrollment) and microcomputer use by brand name. The results were similar to those for the comparison with school enrollment. IBM and compatibles (37.5%) were tied with Apple (37.5%) in districts with the smallest enrollments. In the category of 301-500 students, Apple (51.5%) led IBM (39.4%). In categories of 501 and above,

TABLE XIV

RELATIONSHIP BETWEEN DISTRICT SIZE AND BRAND OF MICROCOMPUTER USED BY THE SCHOOL

District Enrollment	Brand of Microcomputer				
	IBM	Apple	Tandy	Commodore	Totals
	Percentage of Use				
300 or Less	37.5	37.5	25.0	0.0	100.0
301 - 500	39.4	51.5	9.1	0.0	100.0
501 - 1,000	41.9	32.5	25.6	0.0	100.0
1,001 - 5,000	62.1	29.3	7.8	0.8	100.0
5,001 or move	72.9	25.7	1.4	0.0	100.0
Totals	57.6	32.0	10.1	0.3	100.0

Pearson Chi-Square 33.620 P 0.001 Rho -.2658

IBM was the clear choice (66.1% market share) for use in the management of administrative tasks.

Principals' Perceptions of Microcomputer Usage

Four separate questions were designed to produce data about principals' perceptions of microcomputer usage in their schools. Tables XV, XVI, XVII, and XVIII show the tabulation of how the principals responded to these questions.

When asked if microcomputers were used too much for the management tasks in their schools, 99 principals responded, with 55.6% indicating that they strongly disagreed with that statement and only 2.0% indicating strong agreement. In considering the effects of microcomputer use, 86.4% of the respondents agreed that the microcomputer had saved time or other resources. A total of 83.0% of those responding agreed with the statement that they would like to use microcomputers to a greater extent in their schools' management tasks.

The only item from this group that created a somewhat even range of responses dealt with the issue of whether the principals would have greater time for instructional leadership if microcomputers were used more extensively for management tasks in their schools. Of the 100 principals responding, 2.0% strongly disagreed, 10.0% disagreed, 28.0% were unsure, 28.0% agreed, and 32.0% strongly agreed.

TABLE XV

PRINCIPALS' PERCEPTIONS OF MICROCOMPUTER USE: MICROCOMPUTERS ARE USED TOO MUCH FOR MANAGEMENT TASKS

Strongly Disagree	Disagree	Neutral Not Sure	Agree	Strongly Agree	
		(ALL RESPONDENTS)			
55	37	5	0	2	N= 99
55.6%	37.4%	5.0%	0.0%	2.0%	100.0%
		(MICRO USERS)			
48	31	3	0	2	N= 84
57.0%	37.0%	3.6%	0.0%	2.4%	100.0%
		(NON-MICRO USERS)			
7	6	2	0	0	N= 15
46.6%	40.0%	13.3%	0.0%	0.0%	100.0%

Pearson Chi-Square 3.043 P 0.385 Rho .0895

TABLE XVI

PRINCIPALS' PERCEPTIONS OF MICROCOMPUTER USE:
MICROCOMPUTER USE SAVES TIME AND RESOURCES

Strongly Disagree	Disagree	Neutral Not Sure	Agree	Strongly Agree	
		(ALL RESPONDENTS)			
0	5	8	34	49	N= 96
0.0%	5.2%	8.3%	35.4%	51.0%	100.0%
		(MICRO USERS)			
0	3	2	32	46	N= 83
0.0%	3.6%	2.4%	38.6%	55.4%	100.0%
		(NON-MICRO USERS)			
0	2	6	2	3	N= 13
0.0%	15.4%	46.1%	15.4%	23.1%	100.0%

Pearson Chi-Square 32.806 P 0.000 Rho -.3520

TABLE XVII

PRINCIPALS' PERCEPTIONS OF MICROCOMPUTER USE:
MICROCOMPUTERS SHOULD BE USED TO
A GREATER EXTENT

Strongly Disagree	Disagree	Neutral Not Sure	Agree	Strongly Agree	
		(ALL RESPONDENTS)			
2	2	13	7	45	N= 99
2.0%	2.0%	13.1%	37.4%	45.6%	100.0%
		(MICRO USERS)			
0	2	12	27	42	N= 83
0.0%	2.4%	14.5%	32.5%	50.6%	100.0%
		(NON-MICRO USERS)			
2	0	1	10	3	N= 16
12.5%	0.0%	6.3%	62.5%	18.7%	100.0%

Pearson Chi-Square 17.667 P 0.001 Rho -.2029

TABLE XVIII

PRINCIPALS' PERCEPTIONS OF MICROCOMPUTER USE: MICROCOMPUTERS WOULD SAVE TIME FOR INSTRUCTIONAL LEADERSHIP

Strongly Disagree	Disagree	Neutral Not Sure	Agree	Strongly Agree	
		(ALL RESPONDENTS)			
2	10	28	28	32	N=100
2.0%	10.0%	28.0%	28.0%	32.0%	100.0%
		(MICRO USERS)			
0	10	23	22	29	N= 84
0.0%	11.9%	27.4%	26.2%	34.5%	100.0%
		(NON-MICRO USERS)			
2	0	5	6	3	N= 16
12.5%	0.0%	31.2%	37.5%	18.8%	100.0%

Pearson Chi-Square 14.136 P 0.0074 Rho -.0905

General Information Questions

The instrument also contained a series of questions which focused on other items of a general nature in identifying issues and data relative to microcomputer use in Oklahoma secondary schools. The first of these questions asked respondents to identify the number of teachers who were employed in their buildings. The 113 principals who responded to that item reported a total of 3,031 teachers. The range was from 7 teachers in the smallest school to 86 in the largest. The 91 schools of the principals who had indicated the use of microcomputers for administrative task management had a total of 2,699 teachers, while the 20 schools not using the technology for management tasks totaled 332 teachers. Only one school with more than 25 teachers was not using the technology.

In response to a question regarding the total number of computers used, 110 principals responded by listing a total of 3,093 computers. A total of 2,727 of these microcomputers were located in the 91 schools indicating use of the microcomputer in the management of administrative tasks, an average of 30 microcomputers per school. The remaining 346 microcomputers were in 20 nonusers' schools, which contained an average 17 per school.

The remaining general interest questions were to be answered only by those principals who had indicated microcomputer use in task management. The total number of

typewriters listed by those 95 respondents was 2,417.

Another question which was focused on the comparative use of the typewriter and the microcomputer in the generation of letters and memos received a very close tally. The typewriter was used slightly more (51.6%) than the microcomputer (48.4%) for those tasks in the secondary school offices.

The number of microcomputers identified as being used for administrative management tasks totaled 336 which accounts for 10.8% of the total number of microcomputers being used in the schools.

The total number of teachers with microcomputers in their classrooms was reported to be 503. This would mean that 16.3% of all classroom teachers in respondents' schools had direct access to the technology.

The 94 principals who responded to the question on electronic grade book use indicated that 494 teachers used that application of the technology. This number represents 15.9% of all the teachers surveyed.

In answer to a question regarding the scenario which most accurately described the situation prevalent at the time of microcomputer integration into the administrative management process, 55 of the 95 respondents indicated that management tasks were identified and then equipment was purchased. Twenty of the respondents indicated that existing equipment was converted for management tasks when

appropriate software was purchased. Equipment was acquired and then a use was identified in 14 of the schools.

Only 30% of the 80 principals responding to a question indicated that they had made the decision for microcomputer use in the management process. The remaining 70% thus indicated that someone else had made that decision.

Only 69.9% of 83 principals who had indicated that microcomputer technology was used in their schools' management process actually used the computer themselves. Within that same group of principals, only 34.9% of these principals indicated that they used a microcomputer at home. Surprisingly, of the principals that did not use the microcomputer in their school, 20.0% indicated such use in their homes.

Summary of Findings

The survey data indicated that microcomputers were being used in the administrative task management of 82.0% of the schools administered by the 111 respondent principals. There where no significant relationships between demographic variables of the principals and microcomputer usage.

The top three management tasks in which the microcomputers were used included scheduling, word processing, and attendance accounting. These results were the same as those found by McLean (1986). However, none of these tasks were being supported by microcomputers in more

than half of the user schools.

The environmental variables that most reflected microcomputer use in the management of administrative tasks were the enrollment level of the individual school and of the district. Schools and districts with larger enrollments tended to use the microcomputer technology more than did schools with lesser enrollments. These findings were also consistent with those of McLean (1986).

IBM and compatible microcomputers, along with the Apple II and McIntosh family of microcomputers, were the most popular with the respondent principals. These findings are different from those of McLean (1986), who determined that Apple and Radio Shack were the most popular brands. IBM was found more often in the larger schools, while Apple was more prevalent in the smaller schools.

CHAPTER V

SUMMARY, CONCLUSIONS, RECOMMENDATIONS, AND COMMENTARY

While schools are charged with the responsibility of reflecting the society they serve, they have traditionally been slow to respond to changes in that society. There are minimal existing data available to indicate the speed with which educators and educational administrators have accepted new technology. An earlier study by McLean (1986) on microcomputer use in the management process of secondary schools was focused only on whether the technology was being applied, not the extent of its integration.

This study was designed to not only determine the extent of microcomputer usage, but also to identify the current end-user integration within the management structure of public secondary schools. The primary purpose of this survey was to identify the extent of integration of the stand-alone microcomputer as an administrative task management tool in the secondary schools of the independent school districts in Oklahoma. The respondents in this study were members of a randomly selected sample representing 200 (27.9%) of the 716 secondary school building administrators

in the independent school districts in Oklahoma.

In order to assess and compare the use of microcomputers by current school administrators with the same use five years ago, this study repeated the five primary questions that were analyzed in McLean's 1986 study of secondary school principals.

1. Do Oklahoma's secondary school principals use microcomputers as an administrative tool?

2. What demographic characteristics are associated with the use of microcomputers as an administrative tool?

3. How and for what purpose(s) are secondary school principals in Oklahoma using microcomputer technology?

4. Does size of school or district have any relationship to administrative usage of a microcomputer?

5. What computer hardware do secondary school principals in Oklahoma use?

Additional sections of the research instrument were used to analyze the principals' perceptions of microcomputer use in their schools. Other general information questions were used to identify the number of teachers who had access to microcomputers in their classrooms and/or used electronic grade book software, the number of microcomputers owned by the school for both management and instructional uses, the number of typewriters owned by the school, whether typewriters or microcomputers were used most frequently for word processing tasks, the manner in which decisions had

been made relative to microcomputer use, and the degree to which principals personally used microcomputers, both at school and at home.

The study was designed to not only determine the current status of microcomputer use in quantitative terms, but to also identify specific uses of those microcomputers. This was accomplished by questioning the principals about the degree to which microcomputers were used in 19 management tasks which were found to be common to the operation of public school institutions. Each of the identified tasks lends itself to being performed more quickly and efficiently with the use of a microcomputer and a tailored general application software.

A sample of 200 Oklahoma secondary school principals was obtained by random selection from a list supplied by the Oklahoma Public School Research Council during September, 1989. The survey instrument was designed and field tested in September, 1989. The first mailing of the instrument was on September 29, 1989 (see Appendix A). The first mailing resulted in 82 questionnaires being returned by the October 23, 1989, due date. On October 25, 1989, a second letter of request was mailed (see Appendix B) which resulted in 33 additional surveys being returned by the November 11, 1989, due date.

Microcomputers were found to be used in 82.0% of the secondary schools administered by respondents. This study

did not find any positive correlation between the use of microcomputer technology and the demographic variables of principal's age, level of education, year in which highest degree was obtained, total experience in education, and administrative experience. These results differed from those of McLean (1986) who found a positive correlation between level of education and microcomputer use.

Environmental variables for which data were obtained from the survey included grade configuration, school size, and district size. As school and district enrollment increased, so did microcomputer use. There was no significant relationship found between grade configuration and microcomputer usage. These findings were consistent with McLean's 1986 research results. In McLean's study a positive correlation was identified between the two demographic variables of level of education and size of school. This study did not find that correlation to still exist.

The top two brands of microcomputers used by the secondary school were IBM and compatible microcomputers (57.8%) and Apple II and MacIntosh (31.9%). IBM was the most popular microcomputer in all schools except those in the smallest size category. In that category, Apple was used 25.0% more often than IBM.

Conclusions

1. This study has shown that microcomputer usage by Oklahoma school administrators is not only widespread but has increased appreciably (64.0%) over the last several years.

2. The data gathered show that with greater use of the microcomputer the distinction of users by demographics no longer exists. Specifically, the demographic variables of level of education and microcomputer literacy, identified by McLean (1986) as correlating factors, are no longer viable predictors in determining who will select to use the technology.

Recommendations

The following recommendations are suggested in light of the findings of this study.

1. The State Department of Education and/or institutions of higher education should require training in microcomputer task management as a prerequisite for educational administrator certification. While microcomputers are now available in most secondary school offices, the data indicate that they are not being used as widely as possible. For example, while 82% of the schools had such hardware, in only 47% of the schools were microcomputers being used for attendance accounting.

2. Professional organizations representing

administrators, and institutions of higher education, should do all they can to act as clearinghouses, providing information on available hardware and management software that will help principals make the best possible selection for their management requirements.

3. Further research should be done to determine if administrators are using the microcomputer technology in the most effective manner. The fact that a school has microcomputer technology does not necessarily mean that the principal is managing more effectively.

Commentary

School administrators are increasingly recognizing the advantage microcomputer technology can give them. However, the principal's personal use of a microcomputer at school or at home had no significant relationship to its use (or lack of use) in the school's task management process. Small school principals who operated the microcomputer for personal use did not necessarily use the same technology in their schools, while principals of larger schools who did not use microcomputers personally supported the use of the technology in their schools. Therefore the choice for microcomputer use seems to be the complexity of the situation, not a lack of microcomputer literacy. The day when the microcomputer is regarded as the undisputed answer for the timely and efficient management of school

information may be closer than some have thought.

It is this researcher's opinion that the need for microcomputer hardware literacy is rapidly becoming a moot question. As software is becoming more user friendly, the operation of the microcomputer is less difficult. Rather than being concerned with training people to manipulate the machinery, future literacy efforts should be directed to helping the user better understand how to select the best software for problem solving in a specific individual situation. It has become very apparent that the skill of the machine operator should no longer be the main concern. The skill of the administrator in selecting the appropriate software to run the hardware should be the more important objective. By understanding the structural design behind problem solving programs, users will be in a better position to make the best software selections for their particular need. As Turkle (1984) pointed out, "the essence of the machine is its software, but the essence of the software is its philosophy" (p. 64).

From the beginning, the intent of this study was to act as a basis for further research. Every manager aspires to develop an operational system for the most timely and efficient management of information. This study has identified the degree to which Oklahoma secondary school principals are accomplishing that goal. In other words, this survey gives a clear picture as to where Oklahoma

administrators are in their evolution of integrating microcomputer technology into the management processes of their schools.

With the confirmation of widespread microcomputer usage shown by this study, the quality of the usage must now become the focus. It is readily apparent that the vast majority of the school principals have accepted the fact that when the management of information becomes necessary, the microcomputer is the best available tool. Now, because of the already large percentage of microcomputer use, future researchers can go beyond the question of what causes administrators to use the technology and concentrate on the more important issue of what can be done to effect the most effective usage. Future efforts should be aimed at evaluating and developing the effectiveness of the principal in managing the new technology.

Now that the educational administrators are using the microcomputer technology, they must be given management training equivalent to that received by their business counterparts. Literacy in the sense of manipulation of the equipment is not the issue, understanding of system analysis and design is the current need. The ability to identify the procedures necessary in the handling of the task and the capability of logically designing a system structure to most efficiently handle that task are now the skills necessary for successful management of information by the educational

administrator. Mastery of these skills must be required in the future certification process of the school administrator. Administrators must have the knowledge that will allow them to choose a software package that will conform to all of their schools' needs. By understanding the principles of system analysis and design, school administrators will no longer have to be content in the use of software programs that require them to conform to a design structured for another school's needs. Instead, the administrator will be able to identify those microcomputer systems which will enable the technology to effectively and efficiently support virtually all aspects of school management.

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APPENDIXES

APPENDIX A

QUESTIONNAIRE

OKLAHOMA PUBLIC SCHOOL RESEARCH COUNCIL

AFFILIATED UNIVERSITIES
The University of Oklahoma
Oklahoma State University

OKLAHOMA STATE UNIVERSITY
Stillwater Oklahoma
74078

OFFICE OF THE EXECUTIVE SECRETARY
Gundersen Hall Room 309
Phone 624 7244

Dear Principal:

There is no area of our society that has not been touched by computer technology. While computer technology has had a profound influence on all our lives, it has, until recently, been a powerful abstraction to most of us. However, with the advent of microcomputer technology, the technological power has now been literally placed in the hands of everyone. I respectfully request that you help me determine to what extent this technology is being utilized in the educational management process of the secondary schools of Oklahoma.

This survey is being conducted through the use of random sampling. The questionnaire has been number coded so that the study director will be able to identify individuals for possible follow-up interviews. All information will be strictly confidential. The results of the survey will be reported in a manner that will not allow for identification of individual respondents The completed survey should be returned by October 21, 1989.

After completing the questionnaire, please return it in the self-addressed, stamped envelope provided in your packet. Thank you in advance for your valued participation in helping determine the extent of usage of this powerful educational management tool.

Yours truly,

William Glen Varnum
Doctoral Candidate

Dr. Kenneth St. Clair
Professor

SURVEY OF THE EXTENT OF INTEGRATION OF THE MICROCOMPUTER AS AN ADMINISTRATIVE MANAGEMENT TOOL IN THE SECONDARY SCHOOLS OF THE INDEPENDENT SCHOOL DISTRICTS IN OKLAHOMA

Section 1 — General Information

1 Grade level configuration at your building site? _____
2 Student enrollment at your building site? _____
3 Student enrollment of your district? _____
4 How many teachers at your building site? _____
5 Does your school have any microcomputers? [ ] yes [ ] no

IF RESPONSE TO QUESTION 5 IS NO, SKIP ITEMS 6-15

6 How many microcomputers are there at your building site? _____
7 Are any of your school's microcomputers used in the administrative management process? [ ] yes [ ] no

IF RESPONSE TO QUESTION 7 IS NO, SKIP ITEMS 8-15

8 If response to question 6 is yes, for how many years? _____
9 Which of the following scenarios most accurately describes the situation prevalent at the time of the microcomputer integration into the administration management process at your school?
[ ] Equipment was acquired and then a use was identified
[ ] A task was identified and the equipment was selected to accomplish that task
[ ] Existing equipment was used and additional software to meet management task needs was purchased
10 How many microcomputers in your school are being used for management tasks? _____
11 How many typewriters are there at your building site? _____
12 Which is used most often for wordprocessing (letters, memos, newsletters, etc)? [ ] Typewriter [ ] Microcomputer
13 How many teachers at your building site have one or more microcomputers in their room? _____
14 How many teachers at your building site use electronic grade book software? _____
15 Are any of the microcomputers in your building networked?
[ ] no
[ ] yes (If so, check all appropriate statements below)
[ ] to other microcomputers in-house
[ ] to other microcomputers within the district
[ ] to district's minicomputer or mainframe computer
[ ] to data bases outside of the district
[ ] other/specify _____

Section 2 — Integration

(1) From the list provided below, please select those administrative tasks that occur at your building site– (please place a check mark in the appropriate boxes)
(2) List the title of the person responsible for each task
(3) A — If a microcomputer is involved in handling the task, please list the name of the software program used for that task
B — If the task does not involve the use of a microcomputer but involves the use of a minicomputer or mainframe computer, please write "mini" or "mainframe" in the software space
C — If the task does not involve the use of any kind of a computer, please leave software space blank

	Administrative Tasks		Title of person responsible for management task	Name of Software
16	[ ] Athletics	(16)	_____	_____
17	[ ] Attendance Accounting	(17)	_____	_____
18	[ ] Budgeting	(18)	_____	_____
19	[ ] Financial Accounting	(19)	_____	_____
20	[ ] Food Service	(20)	_____	_____
21	[ ] Grade Analysis and Reporting	(21)	_____	_____
22	[ ] Guidance	(22)	_____	_____
23	[ ] Information from Databanks	(23)	_____	_____
24	[ ] Instructional Management	(24)	_____	_____
25	[ ] Inventory and Property Records	(25)	_____	_____
26	[ ] Library/Media Center	(26)	_____	_____
27	[ ] Planning and Statistical Forecasting	(27)	_____	_____
28	[ ] Scheduling	(28)	_____	_____
29	[ ] School Calendar	(29)	_____	_____
30	[ ] Staff/Personnel Records and Supervision	(30)	_____	_____
31	[ ] Teacher Negotiations and Conflict Management	(31)	_____	_____
32	[ ] Student Records	(32)	_____	_____
33	[ ] Student Transportation	(33)	_____	_____
34	[ ] Word Processing	(34)	_____	_____
35	[ ] Other/Specify _____	(35)	_____	_____

Section 3 — Equipment

36 List brand names of microcomputers being used for management tasks

Brand Name	Model	# of units	Brand Name	Model	# of units
Brand Name	Model	# of units	Brand Name	Model	# of units

(If more space is needed, use separate sheet.)

Section 4 — Building Principal Background Information

37 Age? _____ 38 Total years in education? _____

39 Number of years as an administrator? _____

40 Degrees? [ ] Bachelor [ ] Master [ ] Specialist [ ] Doctoral

41 What date was last degree earned (year)? _____

42 Was the decision to use microcomputers for management tasks yours alone? [ ] yes [ ] no

43 Do you personally use a microcomputer at school? [ ] yes [ ] no

44 Do you use a microcomputer at home? [ ] yes [ ] no

Section 5 — Principal's Opinion

45 Microcomputers are used too much for the management tasks in my school (Please check appropriate space on scale)

Strongly Disagree	Disagree	Neutral Not Sure	Agree	Strongly Agree

46 Microcomputer use has saved time or other resources in my school office

Strongly Disagree	Disagree	Neutral Not Sure	Agree	Strongly Agree

47 I would like to use microcomputers to a greater extent in my school's management tasks

Strongly Disagree	Disagree	Neutral Not Sure	Agree	Strongly Agree

48 I would have more time to engage in instructional leadership if microcomputers were used more extensively for management tasks in my school

Strongly Disagree	Disagree	Neutral Not Sure	Agree	Strongly Agree

Thank you for your participation.

[ ] Check here if you would like to receive the results of this survey

APPENDIX B

CORRESPONDENCE

OKLAHOMA PUBLIC SCHOOL RESEARCH COUNCIL

AFFILIATED UNIVERSITIES
The University of Oklahoma
Oklahoma State University

OKLAHOMA STATE UNIVERSITY
Stillwater Oklahoma
74078-0146

OFFICE OF THE EXECUTIVE SECRETARY
Gundersen Hall Room 309
Phone 624 7244

October 23, 1989

Dear Principal:

In early October you were mailed a research questionnaire by the Oklahoma Public School Research Council. This questionnaire was designed to determine the extent of microcomputer usage by secondary school principals in Oklahoma. As of this date, your response has not been received.

Because of the limited number of randomly selected principals being relied on to provide information for this study (i.e., approximately 30%), your participation is extremely important. I realize your busy schedule sometimes causes low priority tasks to be overlooked, however, to gain current data on the degree of microcomputer technology integration into the educational management process by secondary school principals in Oklahoma, we must have your help. Please take time to complete the questionnaire. As stated in the initial letter, total individual and school anonymity is guaranteed.

We look forward to the receipt of your questionnaire Please return the questionnaire in the stamped, self-addressed envelope by November 11, 1989. Thank you for your professionalism in the handling of this matter.

Sincerely,

William Glen Varnum
Doctoral Candidate

Dr. Kenneth St. Clair
Professor

VITA

William Glen Varnum

Candidate for the Degree of

Doctor of Education

Thesis: MICROCOMPUTER INTEGRATION IN THE MANAGEMENT PROCESS OF OKLAHOMA SECONDARY SCHOOLS

Major Field: Educational Administration

Biographical:

Personal Data: Born in Oklahoma City, Oklahoma, May 6, 1937, the son of Glen M. and Elsie E.Varnum. Married to Judie Kay Daugherty on June 7, 1958.

Education: Graduated from Stillwater High School, Stillwater, Oklahoma, in May, 1955; received Bachelor of Music Education degree from Oklahoma State University in July, 1959; received Master of Science degree from Oklahoma State University in August, 1962; completed requirements for the Doctor of Education degree at Oklahoma State University in December, 1990.

Professional Experience: Band Director, Stillwater Junior High School, Stillwater, Oklahoma, July, 1958 to July, 1964; Band Director, Perry Public Schools, Perry, Oklahoma, July, 1964 to July, 1967; Sales Manager, Chenoweth & Green Music Company, Enid, Oklahoma, July, 1967 to July, 1969; Vice-President, Chenoweth & Green Music Company, Stillwater, Oklahoma, July, 1969 to January, 1984; President, Ban-Kor Company, Stillwater, Oklahoma, July, 1980 to January, 1988; President, Chenoweth & Green Music Company, Stillwater, Oklahoma, January, 1984 to January, 1988; Operations Administrator, Office of Business Services, State Department of Education, Honolulu, Hawaii, September, 1989 to Present.