

A MODEL FOR IMPLEMENTING MICROCOMPUTERS
INTO A BUSINESS EDUCATION PROGRAM

by

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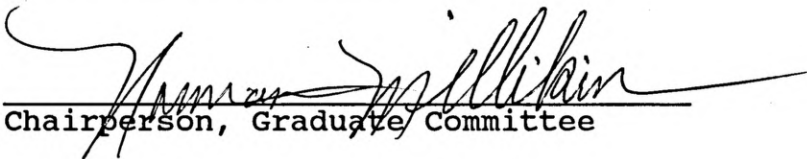
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**A MODEL FOR IMPLEMENTING MICROCOMPUTERS
INTO A BUSINESS EDUCATION PROGRAM**

CHAPTER I

INTRODUCTION

Today, many business educators are faced with the problem of implementing the microcomputer into their classrooms. The microcomputer provides business educators with an opportunity to provide their students with an opportunity for growth in the information technology age. Curriculum changes in business education departments have played a major role in using the microcomputer as a tool for new directions in teaching business education. Henry Kepner, in Computers in the Classroom, states :

No curriculum area is experiencing the effects of advancements in high technology equipment more than business education. In order to prepare their students well for jobs in the business world, business educators must therefore continue to question the relevance of the curriculum content and the equipment used in their classrooms. (Kepner, 1986:73)

The information processing age is here and the responsibility of providing students with current trends in the business world lies with business educators. Preparing students for the future is a challenge business educators face when implementing the microcomputer into their courses. The microcomputer age is here! Business education teachers are keenly aware of its impact in the home, in business and in education (Rauch, 1985:4). Students must be prepared to use the microcomputer. The ability to be able to process,

store and retrieve text can provide a student with tools that will be essential in working with a microcomputer. Students who enter the job market today will be at a disadvantage if they are not computer literate. As technological advancements of microcomputers become prevalent, advancements and changes in the business education curriculum are vital in preparing students for the business world.

Business educators have the opportunity to sell their programs with the use of the microcomputer. Students have a chance of becoming computer literate by enrolling in computer education programs. The fear of having to write computer programs when using the microcomputer can be overcome by using application programs in business education courses. Business education provides students with ways of using the microcomputer as a tool in relation to the business world. The term "user friendly" software can provide students with a learning experience that will help them become computer literate.

Business education can be more than just a prelude to secretarial school or a tune up for bookkeeping exams. To be sure today's students still need to know the basics of typing, bookkeeping and proofreading. But the proliferation of microcomputers has signaled a shift of emphasis in the business world of the eighties and some business education curriculums are shifting also. With microcomputers students now can learn how to gather, store, and manipulate data the way that the real world managers do. (Horowitz 1985:36).

STATEMENT OF THE PROBLEM

The purpose of this study was to develop a model for designing and implementing microcomputers into secondary business education programs in the public high schools in the state of Montana.

QUESTIONS TO BE ANSWERED

1. What types of hardware were being used in the business education departments of the public high schools in the state of Montana?
2. What types of software were available to students for use in business education programs?
3. How much time per day were business education students using microcomputers?
4. Were microcomputers used in all business courses?
5. Was necessary training provided to teachers for integrating the microcomputer into their subject areas?
6. What types of textbooks and simulations were being used in business education courses involving microcomputers?

NEED FOR STUDY

The consensus of most authors writing in current educational literature is that microcomputers should be included in the business education curriculum in secondary schools.

Ralph Ruby says:

Advocates of the computer tell us that computers are excellent learning tools. In some aspects high school business education is the answer to the computer advocate's prayer. Since on the secondary level business education deals in part with numbers, measurement, word processing, and transferring data by electronic means. (Ruby 1984:3).

Many school districts have purchased microcomputers without really designing a sound plan for use in their districts. Business educators have also purchased microcomputers for their programs without analyzing all of the options that are available with a microcomputer.

An enormous amount of literature is available for use of microcomputers in various curricula. However, less information is available on specific guidelines for implementing microcomputers into the business education curriculum.

Standards for selecting hardware, software, facility planning and teacher training could be beneficial to all persons involved in designing a microcomputer laboratory. Research into this area provides school boards, administrators, teachers and students with critical information for designing a microcomputer laboratory.

This study could be used by school districts who are planning and implementing microcomputers into their business education programs. The study could further answer questions that many business educators are asking today about the use of the microcomputer in their programs.

LIMITATIONS

This study considered the status of designing and implementing microcomputers only in the business education programs of the public high schools in Montana. No other areas of curricula were surveyed in designing and implementing microcomputers into their programs. Research data collected for this study was limited to published literature found in the Montana State University Library, Montana Tech Library and personal resources of the researcher.

DEFINITION OF TERMS

The following list of terms and definitions have been developed from the sources used by the researcher and are presented to assist the reader.

Application programs. A program designed for the business professional to perform a specific business function. (Zimmerman, 1986:327)

Bar. In a bar chart, a rectangular-shaped element representing a data point. (Witkin, 1988:391)

Business education. Is the development of skills, attitudes, and knowledge people need for gainful employment, that is, simply using their business training to earn a living. (Conover, 1978:8)

CAD. Computer Aided Design. Methods for designing products or structures through interaction with computers. (Daggett, 1985:301)

CAI. Computer Assisted Instruction. Educational methodology that supports individual learning through interaction with computers. (Daggett, 1985:301)

CAM. Computer Aided Manufacturing. Methods for the manufacturer of products under control of computers. (Daggett, 1985:301)

Class AA, A, B, C. Athletic classification on the basis of enrollment only is impractical. Geographic and competition factors will also be considered and exceptions made when these factors make a particular grouping desirable to any conference, division or district. (Freund 1988:34)

Computer Literacy. The ability to understand and discuss computers, computer functions and computer applications. (Daggett, 1985:302)

Courseware. Instructional software and its accompanying documentation. (Lathrop, 1983:viii)

Database. A storage method that permits writing and reading of data for multiple applications. Within a database, data elements can be found and used individually. (Daggett, 1985:303)

Documentation. Program support materials such as operating instructions, the program listings, and a teacher's guide that may include instructional objectives, suggested activities, worksheets, tests, etc. (Lathrop, 1983:viii)

Graphics. Pictorial representation of data. (Zimmerman, 1986: 330)

Hardware. The actual computer equipment including all peripherals. (Lathrop, 1983:vii)

Integrated software. Software packages that combine functions such as word processing, electronic spreadsheet, and graphics into a single easy-to-use program. (Shelly, 1986:123)

Measurement instrument. Is a device used to gather information concerning subjects. (Cates, 1985:122)

Microcomputer. A small versatile computer whose "intelligence" is a silicon chip. Micros usually accommodate one user at a time. They are the type commonly used in schools or as personal or home computers. (Dolan, 1983:121)

Modem. A device to connect the microcomputer to the telephone. It changes binary codes to sound for telephone transmission and then back again. (Zimmerman, 1986:332)

Network. A collection of computers and peripheral devices that are connected to each other and work as an integrated unit. (Daggett, 1985:308)

Peripheral. Equipment (hardware) other than the computer, such as disk drives, printers, cassette recorders, etc. (Lathrop, 1983:viii)

Population. A group of subjects who are considered as a group because of some criterion or set of criteria employed by the researcher. (Cates, 1985:3)

Public domain software. Free or inexpensive software. (Bitter, 1984:122)

Questionnaire. The instrument used to gather data for the follow-up study. (Cox, 1977:28)

Respondent. (Subject). The individuals involved in a study. (Cates, 1985:3)

Software. A computer program usually stored on diskette, tape or cartridge. The program can also be in the form of a computer paper printout called a listing. (Lathrop, 1983:viii)

Spreadsheet. A method for organizing, calculating, and presenting financial, statistical, and other business data for managerial decision making. (Zimmerman, 1986:333)

Stratified random sampling. This method is employed when the researcher wishes to insure that selected subgroups in the defined population will be represented in the sample in the same proportions as in the defined population. (Cates, 1985:58)

Survey. Seek to discover characteristics of a sample population. (Cates, 1985:96)

Word processing. Using a computer to enter, manipulate, edit and store data. (Dolan, 1983:12)

X-axis Y-axis. The horizontal and vertical fixed lines, respectively, in a line or bar chart. (Witkin, 1988:397)

SUMMARY

The purpose of this study was to develop a model for implementing the microcomputer into business education programs in the public high schools in the state of Montana.

Business education prepares students for the business world. The microcomputer establishes the skills students will need to have in order to be prepared for the work force. According to Bitter,

The school organization of seventh through twelfth grades is generally quite different from the self-contained elementary classroom. Classes are departmentalized, and the teacher meets with a new group of students every hour. The placement of microcomputers, then, can be a more substantial problem. There is, of course a need for microcomputers placed in a laboratory for computer programming instruction and training in word-processing and business related software. (Bitter:1984)

CHAPTER II

REVIEW OF LITERATURE

The purpose of this chapter was to review literature related to the use of microcomputers in business education programs. An ERIC search was done at the Montana State University Library for information on designing and implementing microcomputers into secondary school programs. The researcher examined literature available on this topic and significant findings and conclusions are presented in this chapter.

This chapter is divided into the following topics:

1. Hardware Selection
2. Software Selection
3. Computers in the Business Education Curriculum
4. Staff Development

HARDWARE SELECTION

The selection of a hardware system for a microcomputer laboratory involves students, teachers, administrators, advisory committee members and school boards. A joint effort by all members of a school district is essential in acquiring the hardware system that best meets the district needs.

There is a voluminous amount of literature available for choosing the right hardware for your classroom. Rich

Lindgren in his article, "Upgrading the Microcomputers," in the Spring 1987 issue of Database states:

The criteria for selecting new hardware is no different from the process used initially. The first question should not be "What hardware do we want to buy?" Rather, it should be "What do we want to teach on our microcomputers?" Only when the curricular goals have been established should the second question be asked, which is best phrased "What software programs will best meet our needs now and in the future?" The hardware question, then becomes the third question and is much easier to answer after the first two have been addressed. There is no single best hardware path, but the choice will become clear if the curricular and software issues are resolved first. (Lindgren 1987:5)

The researcher has had experience in selecting hardware systems for School District #1 Butte, Montana, for business education and computer science curricula. Various checklists for the selection of hardware have been designed and are available in professional journals, periodicals, and texts focusing on the use of the microcomputer. The following is from a microcomputer selection form prepared by Gary Bitter.

Criteria for evaluation have been grouped under five headings (1) Hardware Design Features (2) Peripherals (3) Manufacturers and Dealer Support (4) Other Considerations (5) Costs

Hardware Design Features

1. Screen Display Size. Microcomputers possess a number of differently sized screen displays. One common size is 40 characters per line, or 24 lines. Some inexpensive computers have displays that are only 22 characters across. This may be fine for some purposes, but for word processing or serious programming this can be a limitation. When the computer will be used mostly for word processing, a screen

display size allowing 60 or more characters per line is preferable.

2. Graphics capability. How important is graphics capability? Some computers possess limited capabilities in this regard: graphics can only be very crudely drawn. Certain brands of microcomputers have special graphics keys which can be used to create designs, drawn with typewriter keys. Other brands are capable of low-high resolution graphics which may provide clearer, more detailed designs.
3. Color capability. Some microcomputers do not possess color capability. For a course in word processing or BASIC programming, color would not be at all necessary. However, some computer-assisted instruction is improved by the use of color.
4. Portability. If the computer is to be moved from room to room or from school to school, portability would be an important factor. How easy is it to move the basic computer system?
5. Keyboard design. Most microcomputer keyboards are designed similarly to a typewriter. Others have flat, touch-sensitive surfaces, or calculator type of keys. When a great deal of typing must be done, a typewriter keyboard is preferable. A numeric keypad can be a helpful keyboard inclusion especially when there are a multitude of numbers or statistical entries necessary.
6. Editing features. Some microcomputers have especially convenient editing features for correcting programs. Insertions, deletions, and changes can be made easily.
7. Expansion ease. This criterion involves several aspects. First, can the memory of the computer be increased easily? Second, is the computer designed so that extra peripherals, such as printers, or modems can be added later? Third, is the microcomputer supported by numerous vendors who produce hardware for special needs?
8. Hardware reliability. Is the equipment reliable? Have schools owning that brand of microcomputer experienced a multitude of equipment breakdown problems? Are there any undue reliability or operating difficulties

associated with using the disk drive system, cassette recorder, or video display?

9. Durability. What kind of abuse can the computer take? Is it very delicate, or can it withstand fingers of curious users? How many users will there be?
10. Ease of operation. Is the operation of the microcomputer easy to learn? Are there any quirks that will frustrate intended users? This will be most important for younger students.
11. Sound. Microcomputers vary in the extent that sound and music can be programmed. Many applications do not require sound. Students using computer-assisted instruction may find the inclusion of sound and/or music motivating and entertaining.
12. Language availability. Most microcomputers come equipped with a programming language, BASIC. However, the existence of another language to be used with a particular brand of microcomputer may be necessary for programming classes in a high school. Logo or Pilot availability could also increase the desirability of a particular microcomputer.

Peripherals

1. Compatibility are printers available. When applications like word processing, programming, or computer-managed instruction requires that a printer be purchased, some attempt should be made to ascertain that one exists that will satisfy printing needs.
2. Networking available. Some microcomputers may be tied together in a network. A central microcomputer and controller can send software through the wiring to the networked microcomputers. It allows teachers to download computer-assisted instructions and to keep constant track of what each student is doing.
3. Voice generation available. If creating or using software accompanied by synthesized speech (the computer can talk!), then the availability of speech synthesizers will be of some importance.

4. Ability to interface with mainframe computers. Is the microcomputer supported by hardware and software that allows it to communicate with larger computers? The piece of hardware most needed in the process is the modem. Some microcomputers do not readily interface with large computers; others have been specifically designed for this purpose.
5. Other. There may be a peripheral requirement that needs to be added here.

Manufacturer and Dealer Support

1. Service contract. Is a service contract offered? How good are the terms? How dependable is the service?
2. Support of local dealer. Schools often depend upon local dealers to provide advice and repair of equipment quickly. If there is no local dealer, or the computer stores nearby do not wish to work with school hardware repairs, or do not promise quick service, then the district may experience "computer headaches."
3. Teacher training. Do national or local offices of the manufacturer offer teacher training on their equipment? Does the company demonstrate interest in the needs of education? What other kind of help is available?
4. Quality documentation for hardware. Are the manuals and other materials accompanying the hardware clearly written, indexed, and helpful? In general, does the company have the reputation of providing good documentation.
5. Utility programs provided. Sometimes manufacturers or local dealers provide a certain amount of software which can help to run computers more efficiently, allow blank disks to be formatted (that is prepare disks for use on a particular computer), so on.

Other Considerations

1. Flexibility. Can this microcomputer be used for a great variety of applications?
2. Compatibility. Is the microcomputer the same as others possessed by the district?

Cost

1. Microcomputer costs. The price of the keyboard-microprocessor unit should be entered as well as the amount of memory desired, for example 48K. Possible video displays, which are usually televisions or monitors, can be priced as well as disk drive and cassette recorder cost. Similarly, if other peripherals may be purchased, information about cost and capabilities can be written. Brochures, advertisements, and hardware reviews form magazines can be included. (Bitter 1983: 181-187)

The hardware selection process should not just consist of using checklists. It should also consist of using the system for a period of time, reviewing literature about the system and attending demonstrations by vendors on microcomputers. The consensus of writers on the subject of microcomputer system selection is that potential buyers should move slowly, planning and doing extensive research. (Aldana 1983: 21)

SOFTWARE SELECTION

Software is referred to as a set of instructions or programs. Computer software is the key product in the selection of hardware systems. With the correct software, a microcomputer can become a very valuable tool in the business education curriculum.

There are an enormous number of software programs available to business educators. The software package can consist of a single application or integrated applications. Some of the more common single application packages are Word Perfect as a word processor, DBase III as a data base and Supercalc as a spreadsheet. Common integrated packages are also available in today's market. Some of the best sellers are Appleworks, Electric Desk, Symphony, Enable and Framework.

The variety of software programs that are available continue to grow as rapidly as the microcomputer is enhanced. There are several advantages and disadvantages for selecting certain types of software. As a result, many guidelines have been published in various professional journals, and periodicals for selecting software. The researcher has studied various checklists and guidelines and has discovered a guideline for evaluating business application software. According to Lambrecht, evaluation of specific business application packages can start with identification of the packages most commonly used in business offices. When students are being prepared for employment, this match between in-school instruction and office use is an important consideration. However, even within a given community several packages may be used to meet different office requirements, and choices must be made for instruction. The following questions are suggested as guides in selecting these packages:

1. What are the fundamental concepts within business applications that students need to know? The software purchased should contain these functions and be a good representative of what is actually used in business.
2. Should more than one package of a given application be taught? Experience in school with the negative transfer of using different software (and computers) could be helpful to students who will be faced with different software to learn when they are on the job. Student background and the amount of instructional time available will affect this decision as will the cost of supporting several versions of the same application.
3. What background do students already have with a given application? How can the business department build on this knowledge and present a program to students that appears (and is) different from what they have already learned?
4. How much instructional time is available? Business applications can be purchased that are too complex to be taught within the time available, and less functional and less expensive packages may serve the purpose as well.
5. Will enough computers be available to support the amount of instructional time needed to teach given business applications? Limited numbers of computers mean students may need to work in pairs or teams; or, if computers cannot be shared, students may have short computer sessions. If a laboratory of computers is not available, some applications will not be taught. For example, computers cannot easily be shared to learn word processing any more than typewriters can be shared to learn typewriting.
6. What is the quality of the users manual for the potential software purchase? Few users manuals can stand alone for school instruction, but the explanations in the manual of the software functions should be clear to students. Teachers should not have to rewrite the users manual.

7. What instructional materials are available to support the users manual? Generally, additional application exercises are necessary to provide students with the practice that most users manuals do not include.
8. If instructional materials can be purchased, are they software specific, or can they be used with several brands of the same application? The latter would be preferred if several brands of an application are to be used.
9. What does the software cost? This includes more than the educational cost of a single package. Are quantity discounts or site licenses available? Will the software run on a network if one is available or being considered? What is the cost of backup copies and upgrades to new versions? Does software require hardware, such as expanded memory, graphics capability, or a restricted selection of printers?
10. What is the cost of training teachers to use the package? Can training be obtained at local universities or through local workshops? Will the school support inservice training? Will teachers need to learn "on their own," and, if so, are the users manuals adequate for this experience. (Lambrecht 1987:113-114)

The process of evaluating software may become tedious but the efforts will pay off as results become evident through student achievement. Educators must make judgments for what is best for their individual classes. Business educators must be willing to devote time and research into the selection process of software in order to make wise decisions.

COMPUTERS IN THE BUSINESS EDUCATION CURRICULUM

Implementation of the microcomputer into the business education curriculum prepares students for business applications that will be necessary for work in the job

market today. Business education programs provide students with background information in the use of the word processors, databases, and spreadsheets. Students will be able to use the microcomputer as a vehicle in preparing business reports, financial statements, and many other applications that are common today with the use of microcomputers.

The basic philosophy of vocational education is to prepare students for employment, without the need for immediate further education and/or training. This philosophy charges vocational education teachers at all levels with the responsibility to develop curricula and use modern equipment and technology that allows students to develop the skills, attitudes, and techniques necessary in future employment. As a key technology the computer must be integrated into all vocational classes as a teaching, classroom management, and working tool, as well as the subject of instruction. Students also should use the computer to develop employment skills, awareness, and concepts. (Dolan, 1983:88)

Ways of integrating the computer in business education programs can be very similar to integrating computer applications into any curriculum. The way a computer is used in a class depends on hardware and software available as well as the purpose of the material to be covered. A few techniques are appropriate to most computer education programs:

1. A computer may be used to supplement a regular classroom program with enrichment or remedial work. When the computer is used for this purpose the teacher first presents the material to the entire class. Both those students who need extra help and those who have mastered the material are then assigned to the computer with programs that fit their

achievement levels. The teacher may then spend some time working with other students in the class.

2. The computer may be used for demonstration or class discussion of a particular topic. Used as a supplement to the standard presentation, this method allows the introduction of special topics or gives the teacher the ability to control the input in a demonstration in order to achieve an objective. It is best to have one large monitor or several monitors wired in parallel so that students can see without great difficulty.
3. Computers also may be used as an integral part of daily classroom presentations. For example, the instruction for the day may include the use of a particular computer program by the students. Although the actual use of a program will vary each instructional activity should have some educational goal. Depending on the program, a number of students may cooperate in the decision-making process or there may be competition between groups of students or between one student and another. Some programs may be drill and practice programs that are best used on an individual basis for the remedial or enrichment work desired.
4. One way to integrate computers into the classroom is to assign a computer program that supplements or provides reinforcement of a topic covered in class. This method requires certain software and enough machines so that all students are able to interact with the computer either in a group or as individuals.

Thus, business educators must become involved in promoting computer applications in their courses. The business curriculum should prepare students to be ready to adjust to the changes of the work place so that they will change, grow, and remain employable as job requirements change with the age of the microcomputer. There are many jobs available to high school graduates with some computer

knowledge and preparing students in business education courses can only increase students awareness of these opportunities.

STAFF DEVELOPMENT

Business educators must be prepared to teach microcomputer applications. Many business teachers must attend seminars, workshops and classes to keep up with the current trends in using the microcomputer. The responsibility of being prepared for the new information age is one a business educator must not overlook.

Teachers and administrators must allocate inservice training time for business teachers to become familiar with trends in microcomputers. This training must be on going during the school year. A well trained staff in the area of microcomputers can provide beneficial results to a school district's computer education program. Instructional time in preparing teachers for implementing the microcomputer into curricula is a vital ingredient for success in a program.

Computer phobia can be overcome by experienced teachers helping teachers who are timid of the microcomputer. Teachers can share ideas that they have been using when implementing the microcomputer into their curriculum.

It will be mandatory for nearly all teachers who expect to continue working in education to develop computer literacy. For most teachers, this will mean some type of inservice training, which should come from the area of education. Professors with computer knowledge at the

university level will have to work with elementary and secondary teachers to determine their classroom needs and the best training for these needs. There are many definitions for computer literacy, but basically it means the knowledge a person needs to have about computers in order to function well in his/her job or personal life. For most public school teachers at any grade level, this means knowing something about computer impact, programs and equipment available for their particular needs, and simple working knowledge of some programming language. Several approaches are available for inservice training.

In order for these training programs to be successful, there must be a commitment of support from the school administration. Several states have already developed state policies concerning computer education. These states are placing a priority on teacher training, and many are offering workshops for teachers during the summer months. One of the main areas of concern for state administrators should be to provide unified school systems in the areas of teacher training, computer hardware acquisition, and computer software evaluation and acquisition. Too many local systems are trying to do these things on their own and are finding out too late that they are making the same mistakes that have been made before. Many of these mistakes could have been avoided if a central state agency had been available to lend direction. (Hunter, 1984:45)

The ability to provide inservice workshops will depend upon administrators and financial resources that are available for this type of training. Teachers attitudes will play the major role in the success of inservice training and workshops. Information obtained from these workshops can provide teachers with the lift they need to be prepared for teaching business applications on the microcomputer. Therefore, business educators must continue to promote the importance of preparing students for the business world with the use of the microcomputer.

SUMMARY

Developing a curriculum for incorporating microcomputers into business education programs is a task that will require time and patience. Often educators hurry in making decisions regarding purchases of hardware and software for their courses. A key issue that will be beneficial to the selection process is the evaluation of hardware systems and software packages that are available in today's market. The time and effort of the evaluation process will bring favorable results to implementing the microcomputer into business education programs. In the March, 1988, issue of the Business Education Forum, an article titled, "Computer Proliferation and the Changing Curriculum", states that, business education teachers need to update curriculum on a continuing basis. Using model curriculum guides as reference data is one of the best ways to ensure that curriculum is kept relevant and significant. (Stocker 1988:22)

CHAPTER III

METHODOLOGY

The purpose of this study was to develop a model for designing and implementing microcomputers into secondary business education programs in the public high schools in the state of Montana. To accomplish this objective, a survey was conducted of the business education departments in the public high schools in the state of Montana.

This chapter is written to.

1. Describe sources of data.
2. Explain the construction of the survey instrument to collect the data.
3. Explain the administration of the survey instrument.
4. Describe the data analysis procedure.

SOURCES OF DATA

Information was gathered from business education instructors of public high schools in the state of Montana. The 1987-1988 list of secondary instructors in business and office education for the state of Montana was obtained from Marion Reed, Business and Office Education Specialist from the Office of Public Instruction, Helena, Montana. Mailing labels of business education instructors in the state were obtained from Linda Kojetin of the Montana Business Education Association.

CONSTRUCTION OF THE SURVEY INSTRUMENT

A survey instrument was constructed based on the review of literature, personal interviews, and other questionnaires which identified elements considered important to be included in the survey. The survey was given to the researcher's colleagues at Butte High School for review. It was then reviewed by the researcher's advisor, Dr. Norm Millikin, College of Business, Montana State University. Revisions and clarification in the survey instrument were made at this time in order to obtain desired information. The revised instrument was then prepared for mailing to the participants in the survey.

ADMINISTRATION OF THE SURVEY INSTRUMENT

On May 10, 1988, the questionnaire (Appendix A) and a cover letter explaining the purpose of the study (Appendix B) were sent to 133 public high school business education instructors in the state of Montana. Instructors were asked to:

1. Check the business education courses where microcomputers were being used.
2. Check the types of hardware available to the business education department.
3. Check the number of hours business education students used the microcomputers per day.
4. State the year microcomputers were first purchased for the business education department.
5. Check the various software packages that were being used in their departments.

6. Check how teacher's preparation for using microcomputers was obtained.
7. Check whether maintenance service contracts were available or not available for repairs.
8. List the textbooks and simulations that were being used with the microcomputer in their programs.

A stratified random sample of business education instructors were selected by using every third participant of the mailing labels provided by the Montana Business Education Association. There were 453 on the list and this generated the sample size of 133.

By June 5, 1988, a total of 101 teachers or (75.9%) included in the administration of the instrument had responded, Table A p. 27, and 88 questionnaires (87.1 percent) were usable, Table B p. 27.

ANALYSIS OF DATA

A questionnaire was used to collect data in this study. The data were reported by listing the total number responding to each question and percentages of totals in each question. Some of the tables in the study allowed the respondents to select more than one choice. Total numbers and percentages were reported again by the total number responding and percentages of totals in questions that allowed more than one choice. Tables A and B show the number and percentage of return.

TABLE A
NUMBER OF SURVEYS RETURNED

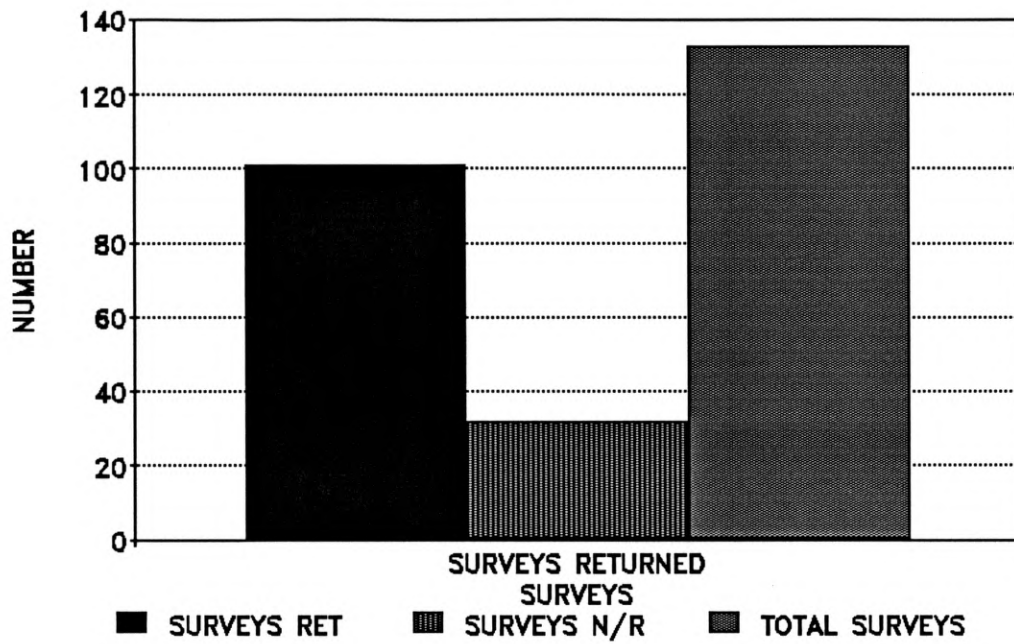
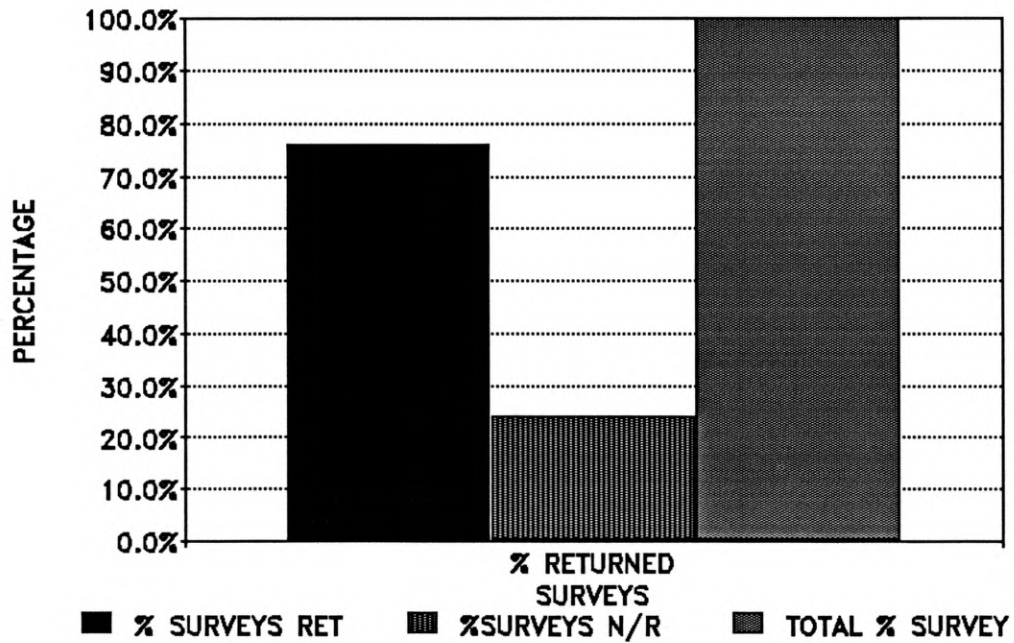


TABLE B
PERCENTAGE OF SURVEYS RETURNED



CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

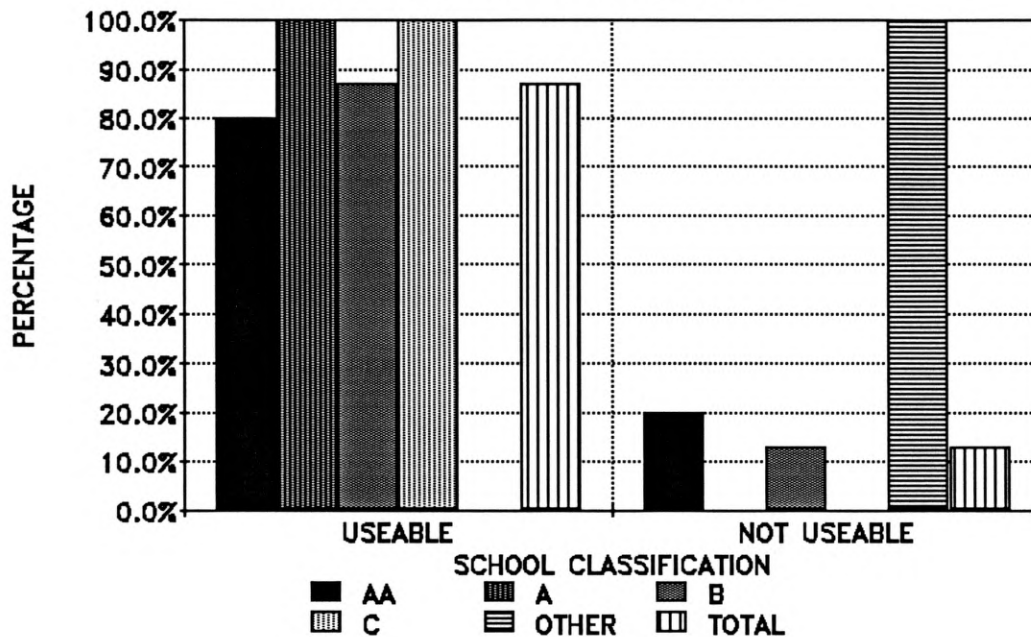
Presentation of the findings developed from the questionnaire (Appendix A) are presented in this chapter. The findings represent the respondents answers to the questionnaire. Some questions allowed respondents to choose more than one answer and these questions will be identified by the researcher in the tables.

The major areas of the questionnaire were related to the use of the microcomputer in business education programs of the public high schools of the state of Montana. These areas included (1) hardware types (2) software packages (3) hours per day business education students were using microcomputers (4) microcomputers in the business education curriculum (5) training of the professional staff and (6) simulations and textbooks involving microcomputers that were used in the business education departments.

The questionnaires were mailed to 133 teachers representing the four classifications of the public high schools of the state of Montana. These classifications are Class AA, Class A, Class B, and Class C. Respondents were asked to identify their school classification. The respondents answers to the survey instrument are identified by the four major classifications. Totals of the responses to the questionnaire are also broken down into percentages.

If the percentages do not add to 100% it is due to rounding or omission of miscellaneous responses.

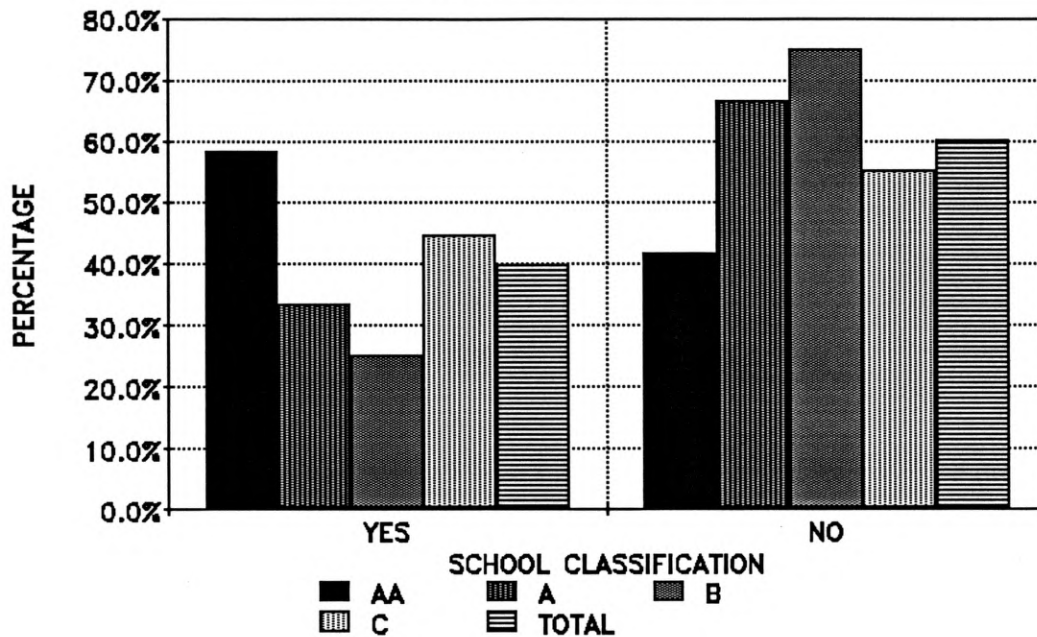
TABLE 1
PERCENTAGE OF RESPONDENTS



Question 1: Designate the classification of your school.

Percentages of useable and not useable questionnaires are indicated in Table 1. The table indicates that (80%) of questionnaires from Class AA high schools were useable and (20%) were not useable. One hundred percent of the Class A questionnaires returned were useable. Respondents of Class B questionnaires indicate that (88%) were useable and (13%) were not useable and (100%) of the Class C questionnaires returned were useable. The other column represents that (100%) of the questionnaires returned were not useable since they involved post secondary institutions.

TABLE 2
USING MICROS TO TEACH KEYBOARDING

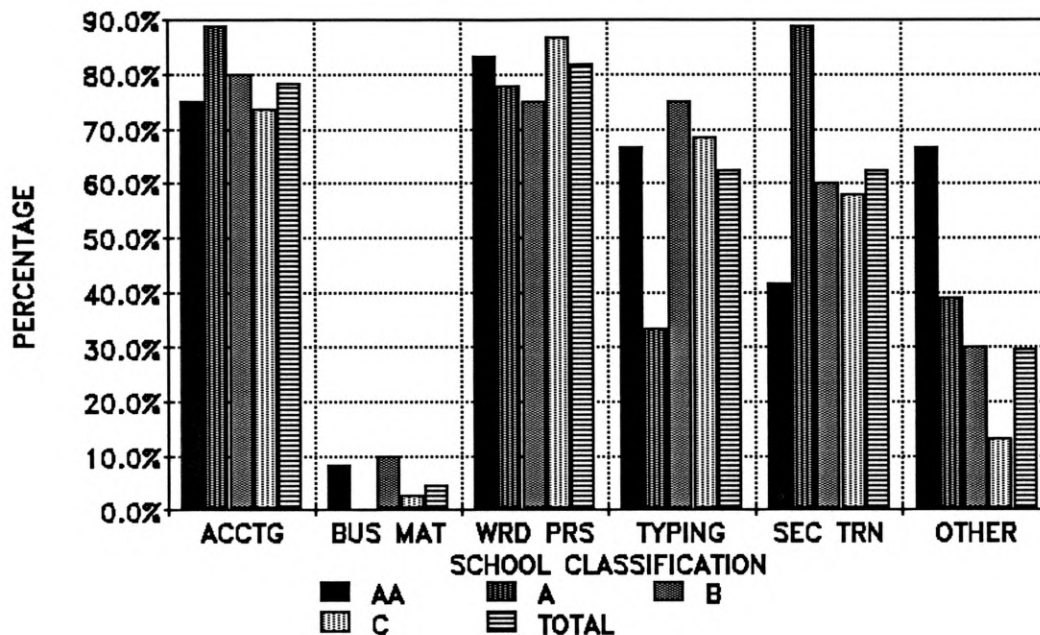


Question 2: Do you use a microcomputer to teach keyboarding skills.

Use of the microcomputer to teach keyboarding skills was used primarily for reinforcement and improvement skills according to the respondents. Seven or (58.3%) of Class AA high schools used the microcomputer to teach keyboarding skills and 5 or (41.7%) did not use the microcomputer to teach keyboarding skills. Six or (33.3%) of the Class A respondents used the microcomputer to teach keyboarding skills and 12 or (66.7%) did not use the microcomputer. Five or (25%) of the Class B respondents used the microcomputer to teach keyboarding skills and 15 or (75%) did not. Seventeen or (44.7%) Class C respondents used the microcomputer to teach keyboarding skills and 21 or (55.3%)

did not. In all classifications of the public high schools of the state of Montana 35 or (39.8%) used the micro to teach keyboarding skills and 53 or (60.2%) did not. It is clear that many schools still use the typewriter to teach keyboarding skills.

TABLE 3
MICROS IN BUED CLASSES



Question 4: In what classes in your business education department are microcomputers being used?

The above percentages in Table 3 represent respondents who marked more than one choice. Microcomputers were being used in accounting classes of the respondents respective school classification. Class AA 9 or (75%), Class A 16 or (88.9%), Class B 16 or (73.7%), and Class C 28 or (73.7%). The total of all classifications was 69 or (78.4%). These responses indicated how many schools were implementing the microcomputer into accounting classes.

The microcomputer was being utilized in business math classes in the public high schools of the state of Montana in the respective divisions as follows. Class AA 1 or (8.3%), Class B 2 or (10%), and Class C 1 or (2.6%). The

total respondents who utilized the microcomputer in business math was 4 or (4.5%) of those respondents who were surveyed.

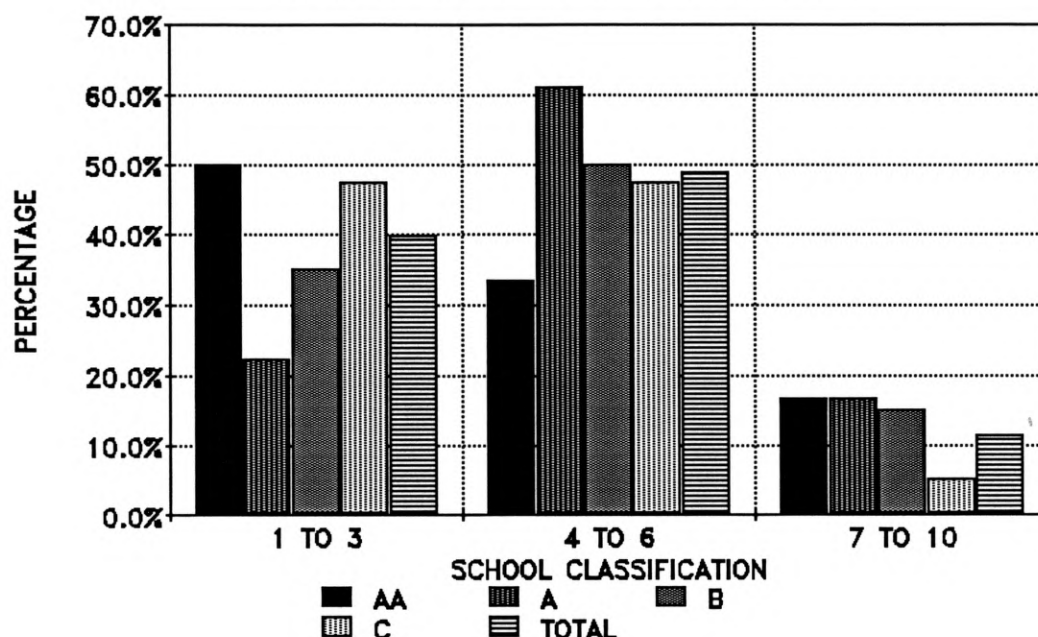
Respondents who used the microcomputer in word processing classes was broken down into the following numbers and percentages. Class AA 10 or (83.3%), Class A 14 or (77.8%), Class B 15 or (75%), Class C 33 or (86.8%). The total of all the classifications who used the microcomputer is word processing was 72 or (81.8%) of the respondents.

Microcomputers were being used in typing classes in the following manner. Class AA 8 or (66.7%), Class A 6 or (77.8%), Class B 15 or (75%), Class C 26 or (68.4%). All of the classifications added together who utilized the microcomputer in typing classes was 55 or (62.5%).

Implementing the microcomputer into the secretarial training curriculum in the state of Montana's public high schools was analyzed by the researcher and the results are Class AA 5 or (41.7%), Class A 16 or (88.9%), Class B 12 or (60%), and Class C 22 or (57.9%). Totals of all classifications were 55 or (62.5%).

Microcomputers were being implemented in other courses as well as those listed on the survey instrument. The other classes listed by the respondents included general business, business communications, journalism, office education, computer literacy, data processing, shorthand and speedwriting.

TABLE 4
NUMBER OF YEARS MICROS HAVE BEEN USED



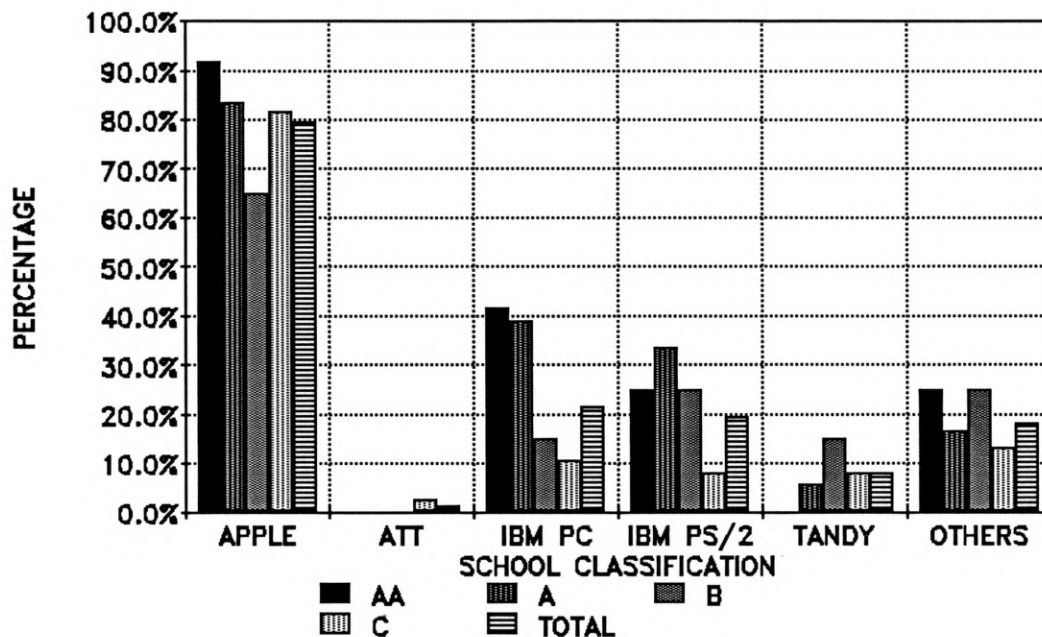
Question 5: How many years have microcomputers been used in business education programs?

As indicated in Table 4 microcomputers have been used in business education programs for a period of 1 to 3 years in Class AA by 6 or (50%), Class A 4 or (22.2%), Class B 7 or (35.0%) and Class C 18 or (47.4%), for a total of 35 or (39.8%), of the respondents. Microcomputers have been used in business education programs for a period of 4 to 6 years in Class AA 4 or (33.3%), Class A 11 or (61.1%), Class B 10 or (50%) and Class C 18 or (47.4%). Totals for all schools were 43 or (48.9%). Microcomputers that have been used in business education programs for a period of 7 to 10 years were Class AA 2 or (16%), Class A 3 or (16.7%) Class A 3

(16.7%), Class B 3 or (15%) and Class C 2 or (5.3%) for a total of 10 or (11.4%) of the respondents.

The data shows that while computers have been used for a number of years, they are being purchased more often and integrated into various business education courses.

TABLE 5
TYPES OF HARDWARE AVAILABLE



Question 6: What types of hardware are available in your business education department.?

Above percentages represent respondents who marked more than one choice. Table 5 indicates the various type of hardware available in the public high schools business education programs in the state of Montana.

The Apple family of microcomputers that were available in the business education department of Montana's four major classifications of schools were Class AA 11 or (91.7%), Class A 15 or (83.3%), Class B 13 or (65.0%) and Class C 31 or (81.6%). The total for Apple computers was 70 or (79.5%).

The ATT microcomputer was available to only 1 one Class C school.

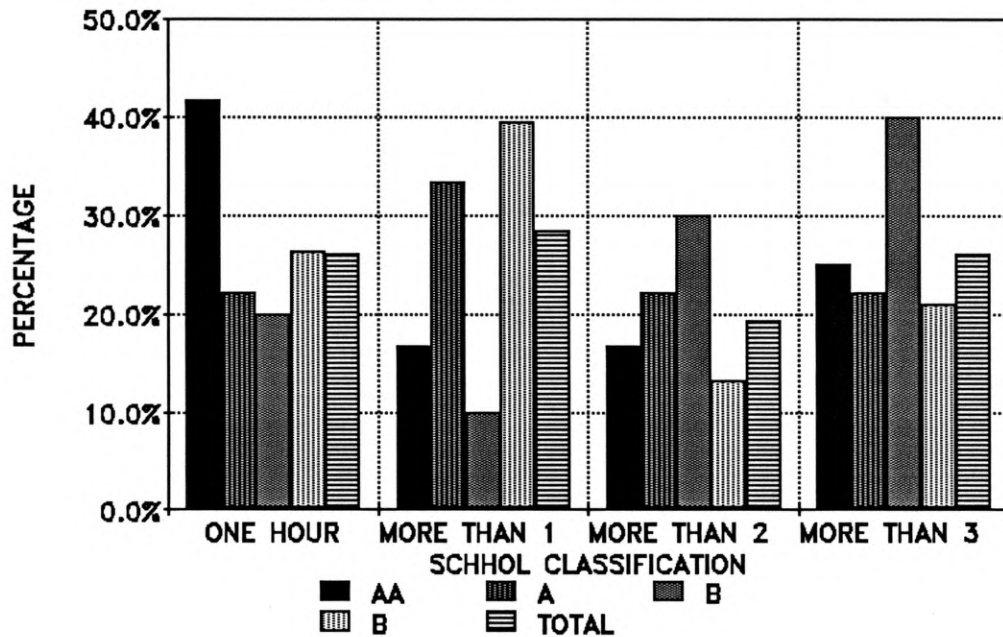
The IBM PC models available to respondents were Class AA 5 or (41.7%), Class A 7 or (38.9%), Class B 3 or (15%) and Class C 4 or (10.5%) for a total of 19 or (21.6%).

The IBM PS/2 family was Class AA 3 or (25%), Class A 6 or (33.3%), Class B 5 or (25%) and Class C 3 or (7.9%) for a total of 17 or (19.3%).

Respondents naming the Tandy 1000 were Class A 1 or (5.6%), Class B 3 or (15%) and Class C 3 or (7.9%) for a total of 7 or (8%).

Other types of microcomputer hardware systems available were Class AA 3 or (25%), Class A 3 or (16.7%), Class B 5 or (25%) and Class C 5 or (8%), for a total of 16 or (18.2%). Respondents listed the following types of hardware that were not listed in the questionnaire Radio Shack Models 3&4, Commodore 64, Leading Edge, Laser, Epson, Techmate, Morrow, Toshiba, and Victor MS-DOS.

TABLE 6
TIME PER DAY BUED STUDENTS USE MICROS



Question 7: Please estimate how much time per day business education students use microcomputers.

Respondents of students who used microcomputers for one hour per day were Class AA 5 or (41.7%), Class A 4 or (22.2%), Class B 4 or (20%) and Class C 10 or (26.3%) for a total of 23 or (26.1%).

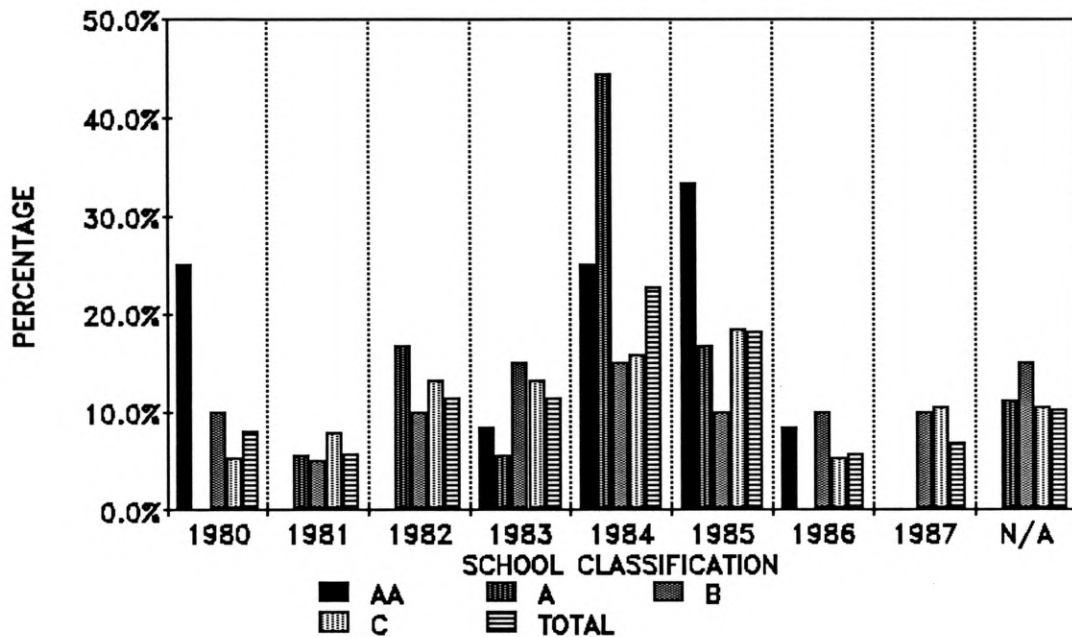
Respondents whose students used microcomputers for more than one hour per day were Class AA 2 or (16.7%), Class A 6 or (33.3%), Class B 2 or (10%) and Class C 15 or (39.5%) for a total of 25 or (28.4%).

Students of the respondents who used the microcomputer more than two hours a day were Class AA 2 or ((16.7%), Class A 4 or (22.2%), Class B 6 or (30%) and Class C 5 or (13.2%), for a total of 17 or (19.3%).

Students who used the microcomputer for more than three hours per day were Class AA 3 or (25%), Class A 4 or (22.2%), Class B 8 or (40%) and Class C 8 or (21.1%) for a total of 23 or (26.1%).

Students in business education programs in the public high schools of the state of Montana were using microcomputers for an average during the day of approximately one hour.

TABLE 7
YEAR MICROS WERE FIRST PURCHASED



Question 8: When were microcomputers first purchased for your department?

Table 7 indicates the first year that microcomputers were purchased for use in business education programs and the range of years was from 1980-1987. In 1980 3 or (25%) in Class AA, 2 or (10%) in Class B and 2 or (5.3%) in Class C, for a total of 7 or (8%) microcomputers were purchased.

In 1981 1 or (5.6%) Class A, 1 or (5%) in Class B, and 3 or (7.9%) in Class C for a total of 5 or (5.7%).

In 1982 3 or (16.7%) in Class A, 2 or (10%) in Class B, 5 or (7.9%) in Class C for a total of 10 or (11.4%) were purchased. The year 1983 microcomputers were purchased and the results were 1 or (8.3%) Class AA, 1 or (5.6%) Class A, 3 or (15%) Class B and 5 or (13.2%) in Class C for a total of 10 or (11.4%).

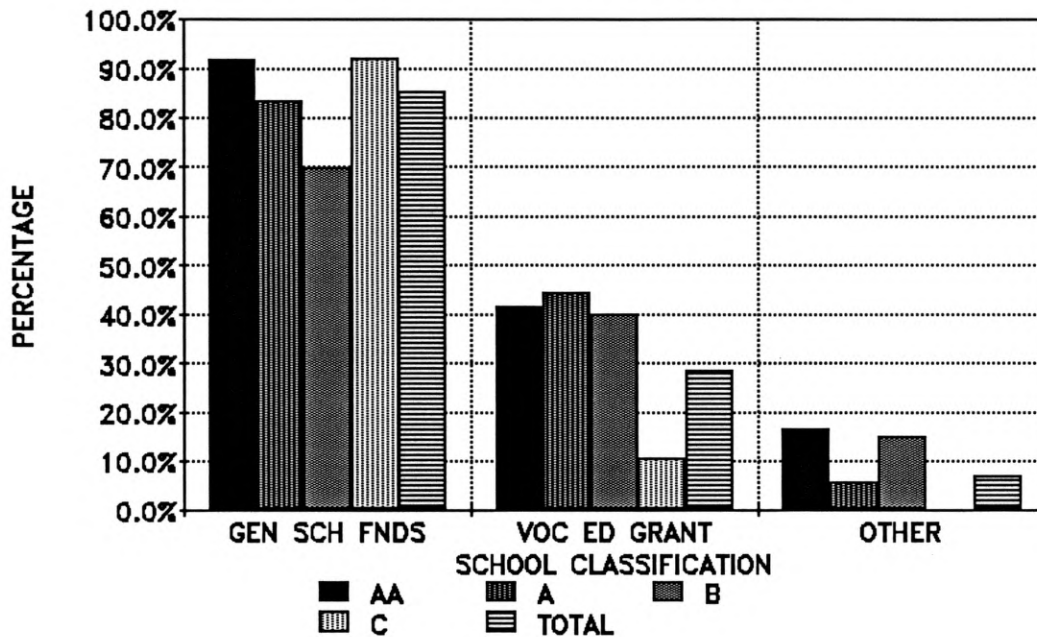
The largest acquisition year for microcomputers was 1984 for the business education programs of the public high schools of the state of Montana. The results were Class AA 3 or (25%), Class A 8 or (44.4%), Class B 3 or (15%) and Class C 6 or (15.8%) for a total of 20 or (22.7%).

Class AA and Class C schools biggest purchases were in 1985. Class AA 4 or (33.3%), Class A 3 or (16.7%), Class B 2 or (10.0%) and Class C 7 or (18.4%) for a total of 16 or (18.2%).

In 1986 1 or (8.3%) Class AA, 2 or (10%) Class B and 2 or (5.3%) Class C, for a total of 5 or (5.7%) microcomputers purchased. In 1987 2 or (10%), Class B, 4 or (10.5%) for Class C. This totals 6 or (6.8%) microcomputers purchased.

Respondents who were not able to identify the first year purchase of microcomputers were identified in Table 7 column (N/A) not available and the outcome was 2 or (11.1%) of Class A, 3 or (15%) Class B, and 4 or (10.5%) Class C, for a total of 9 or (10.2%) of the respondents surveyed.

TABLE 8
SOURCE OF FUNDS TO PURCHASE MICROS



Question 9: What has been the primary source of funds to purchase your microcomputers?

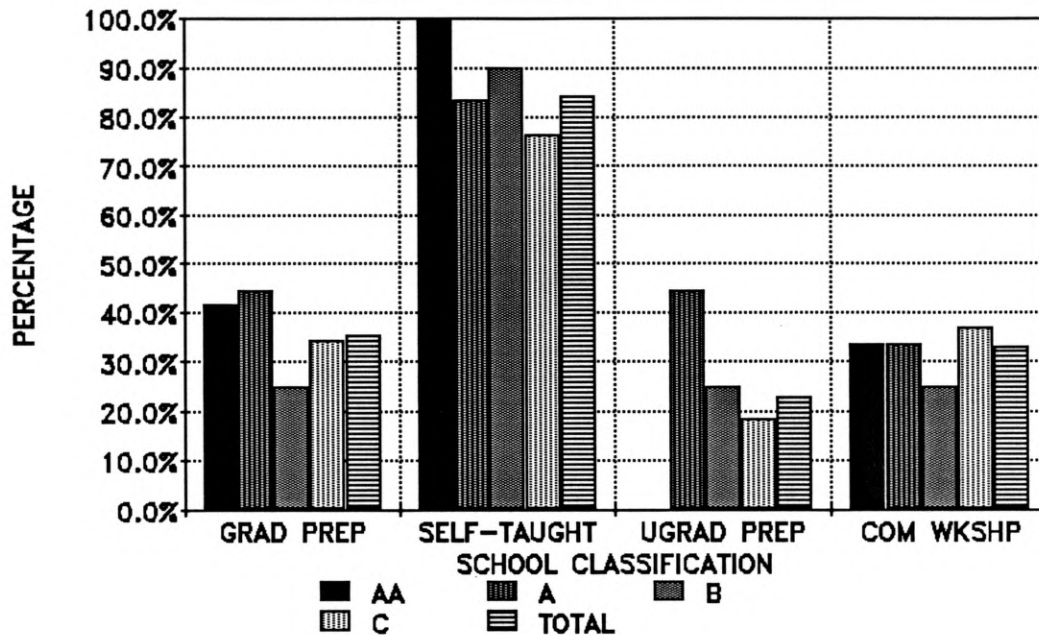
The above percentages represent respondents who marked more than one choice. The researcher was interested in learning of ways to fund purchases of microcomputers other than general school funds. The results were indicated in Table 8.

Schools who purchased microcomputers with general school funds were Class AA 11 or (91.7%), Class A 15 or (83.3%), Class B 14 or (70%) and Class C 35 or (92.1%) for a total of 75 or (85.2%).

Respondents who used vocational education grant money to obtain microcomputers were 5 or (41.7%), Class AA, 8 or (44.4%) Class A, 8 or (40%) Class B and 4 or (10.5%) Class C for a total of 25 or (28.4%). Approximately 6 or (6.8%) of schools purchased microcomputers with block grants, or bond money for a new school, or department equipment replacement, mining impact fund, and vocational reimbursement.

It seems clear that there were two major sources for acquisition, general school funds and vocational education grants.

TABLE 9
TEACHER PREPARATION OF MICROS



Question 10: How was the teacher's professional preparation for microcomputers obtained?

Table 9 describes the different ways teachers prepared themselves for microcomputers. To no surprise most of the training was self-taught.

Respondents who received microcomputer training in graduate preparation were 5 or (41.7%) Class AA, 8 or (44.4%) Class A, 5 or (25%) Class B and 13 or (34.2%) Class C for a total of 31 or (35.2%) of all respondents.

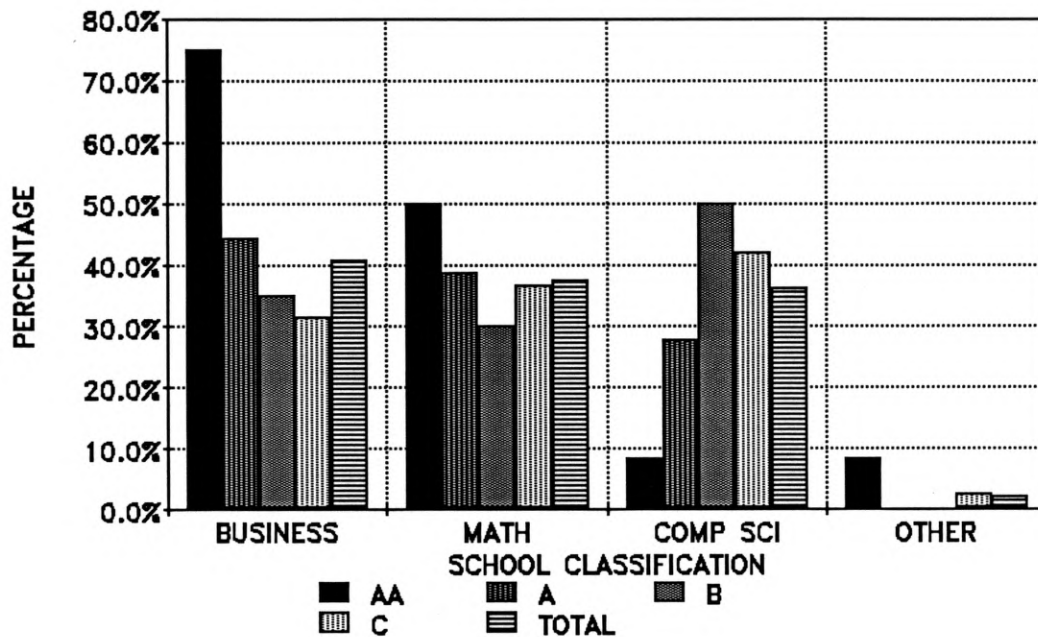
Self-taught preparation of microcomputer results are 12 or (100%) Class AA, 15 or (83.3%) Class A, 18 or (90%) Class B, and 29 or (76.3%) Class C, for a total of 74 or (84.1%).

Undergraduate preparation of microcomputers resulted in Class AA respondents having no preparation at this level. Other outcomes were 8 or (44.4%) Class A, 5 or (25%) Class B and 7 or (18.4%) Class C for a total of 20 or 22.7% of the respondents.

Commercial workshop attendance results of microcomputer preparation were 4 or (33.3%) Class AA, 6 or (33.3%) Class A, 5 or (25%) Class B and 14 or (36.8%) Class C, for a total of 29 or (33%) of the respondents.

Major professional preparation of microcomputer education for respondents were self-taught or were received at commercial workshops.

TABLE 10
COMPUTER LITERACY DEPARTMENT



Question 11: What department was primarily responsible for teaching computer literacy?

The above percentages may represent responses of more than one choice. The current era is often called the Information Age. Therefore, as America moves towards an information society, students may actually need to go beyond computer literacy skills and demonstrate information literacy. Information literacy may be defined as the ability to manage the effective use of information technology and information resources, rather than merely an understanding of computer hardware and software. (Neal 1987:14-15).

Business departments involved in teaching computer literacy were 9 or (75%), Class AA, 8 or (44.7%) Class A, 7 or (35%) Class B and 12 or (31.6%) Class C. This totals 36 or (40.9%) of the respondents.

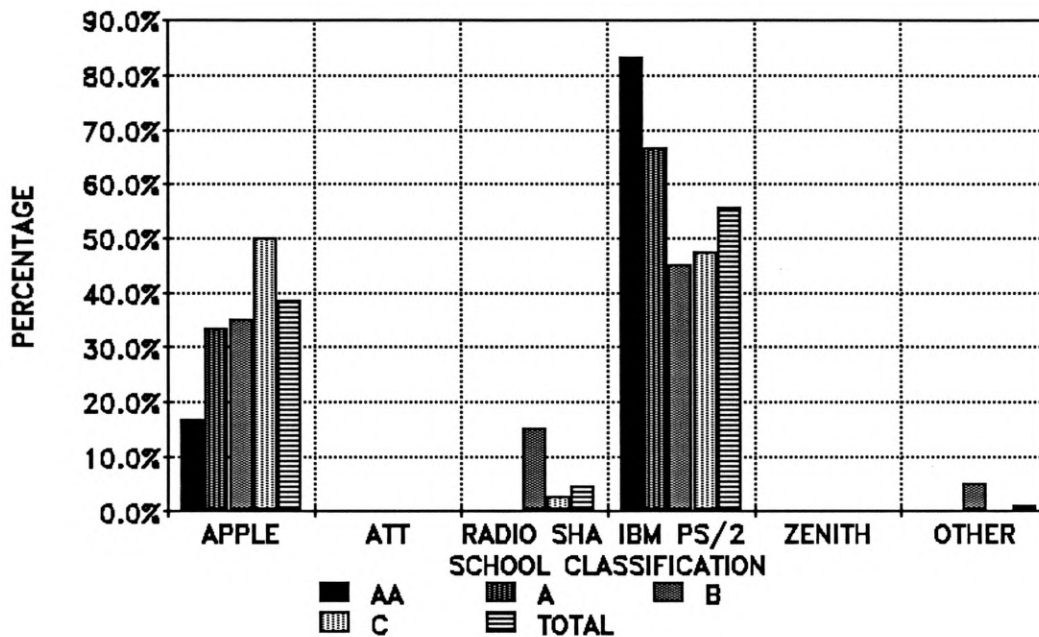
Math departments involved in teaching computer literacy were 6 or (50%) Class AA, 7 or (38.9%) Class A, 6 or (30%) Class B and 14 or (36.8%) Class C for a total of 33 or (37.5%).

Computer science departments who taught computer literacy consisted of 1 or (8.3%) Class AA, 5 or (27.8%) Class A, 10 or (50%) Class B and 16 or (42.1%) Class C, for a total of 32 or (36.4%).

English was another department that taught computer literacy and was comprised of 1 or (8.3%) of Class AA, and 1 or (2.6%) Class C respondents for a total of 2 or (7.5%).

The business department was primarily responsible for teaching computer literacy in the Class AA and Class A schools of the respondents of this survey. Computer science and math were primarily responsible for Class B and Class C schools.

TABLE 11
CHOICE OF NEW MICROS



Question 12: If you were buying new microcomputers for your classroom which brand would be your choice?

Today educators seem to fall into two categories (1) Apple users who look at volumes of existing software readily available to educators and (2) advocates of IBM personal computers or look-alikes that uses software already adopted by businesses. Increasing numbers of departments are looking more seriously at the second option, but also recognize the financial commitment required by that choice. (Campbell 1988:4)

Respondents of the public high schools business education programs in the state of Montana choose the IBM PS/2 family as their choice of hardware.

Table 11 indicates the types of hardware that respondents of this survey would select. The Apple families were selected by 2 or (16.7%) Class AA, 6 or (33.3%) Class A, 7 or (35%) Class B and 19 or (15%) Class C, for a total of 19 or (38.6%) of the respondents.

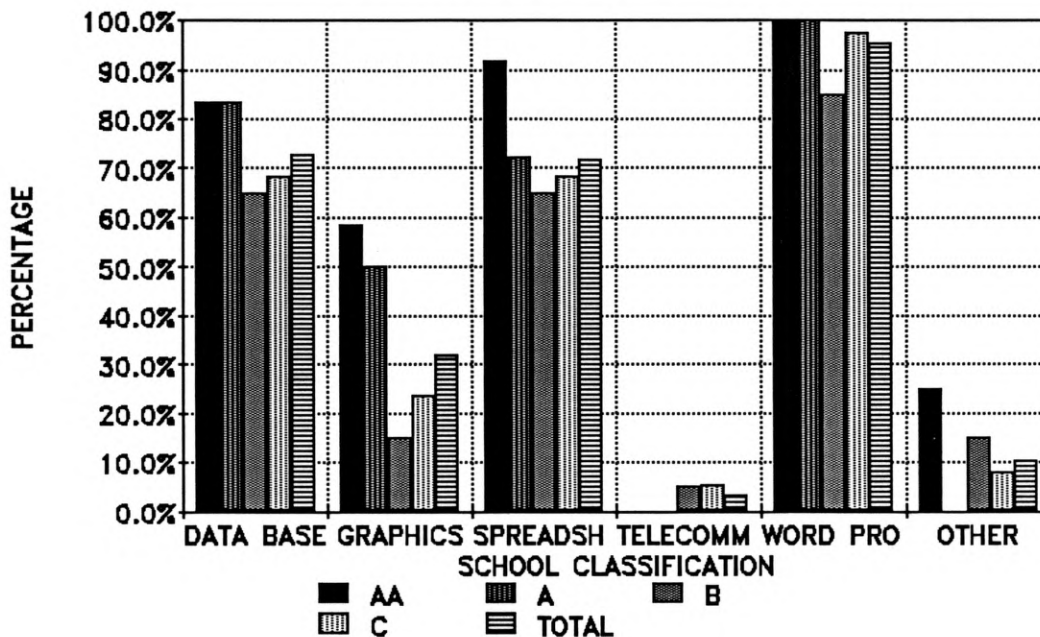
Radio Shack microcomputers were chosen by 3 or (15%) Class B and 1 or (2.6%) Class C, respondents for a total of 4 or (4.5%). Respondents in Class AA or Class A did not select the Radio Shack hardware.

The IBM PS/2 models were selected by 10 or (83.3%) Class AA, 12 or (66.7%) Class A, 9 or (45%) Class B and 18 or (47.9%) Class C, for a total of 49 or (55.7%) of the business education respondents.

The only other selection of microcomputer hardware was Leading Edge with 1 or (1.1%) of the respondents.

Zenith and ATT hardware were not selected by any of the respondents of this survey.

TABLE 12
SOFTWARE USED IN BUED DEPTS.



Question 12B: What types of software are used in your business education department?

The above percentages represent respondents who marked more than one choice. Data Base packages were selected by 10 or (83.3%) Class AA, 15 or (83.3%) Class A, 13 or (65.9%) Class B and 16 or (68.4%) Class C for a total of 64 or (72.7%).

Graphics were chosen by 7 or (58.3%) Class AA, 9 or (50%) Class A, 3 or (15%) Class B and 9 or (23.7%) Class C, for a total of 28 or (31.8%).

Spreadsheets were selected by 11 or (91.7%) Class AA, 13 or (72.2%) Class A, 13 or (65%) Class B and, 26 or (68.4%) Class C for a total of 63 or (71.6%) for the business education respondents.

Telecommunications were being used in only two of Montana's four classifications. These were 1 or (5.0%) Class B, and 2 or (5.3%) Class C.

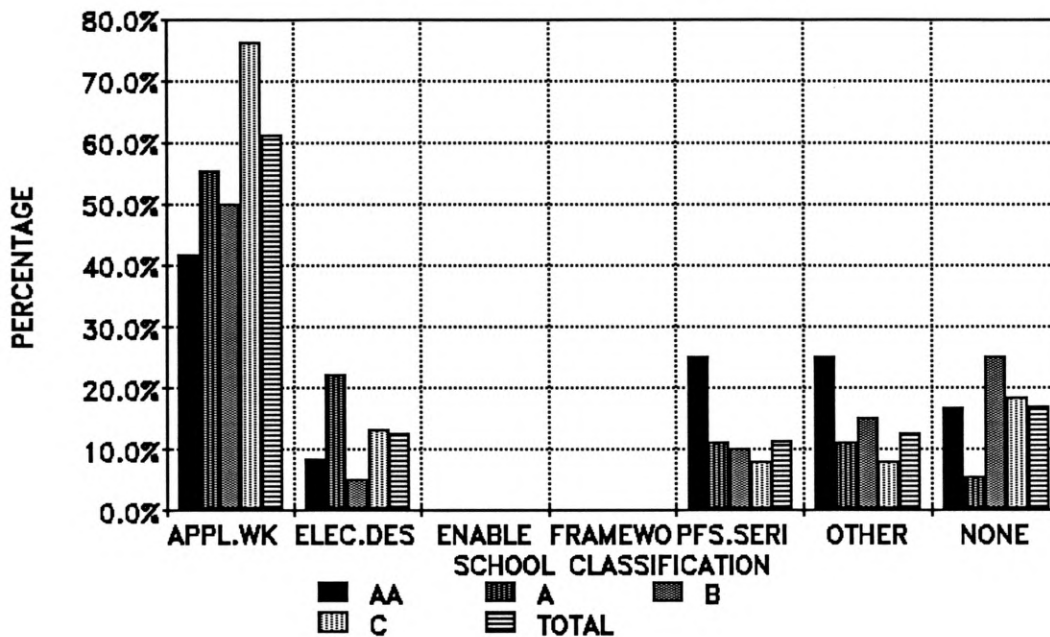
Word processing was the software package used the most in Montana's business education departments that were surveyed. Word processing packages were used in 12 or (100%) Class AA, 18 or (100%) Class A, 17 or (85%) Class B and 37 or (97.4%) Class C, for a total of 84 or (95.5%).

Other types of software available in Montana's business education programs included 3 or (25%) Class AA, 3 or (15%) Class B and 3 or (7.9%) Class C for a total of 9 or (10.2%). Software packages listed by respondents consisted of Desktop Publishing, CAI, accounting general ledger, and data entry.

To serve as models of current trends in business applications software usage, the software taught in microcomputer applications should include spreadsheets, data base, graphics, word processing, communications and data integration. (Klemin, Harsha 1988:25)

Some of the general comments by respondents about selecting software types included, programs most often used in business, enhances course content, available in district, market needs, easy to learn, access to public domain software, free with purchase, provides a variety of applications, current trends and is being used in the community businesses.

TABLE 13
INTEGRATED SOFTWARE PACKAGES



Question 13: Do you use any of the following integrated packages?

Table 14 indicates the types of integrated software packages that respondents were using in their curriculum. Appleworks was being used by 5 or (41.7%) Class AA, 10 or (55.6%) Class A, 10 or (50%) Class B and 29 or (76.3%) Class C for a total of 29 or (61.4%).

Appleworks was the major integrated package being used in the business education departments, in the public high schools of the state of Montana who were surveyed.

Electric Desk's integrated package was being used by 1 or (8.3%) Class AA, 4 or (22.2%) Class A, 1 or (5%) Class B and 5 or (13.2%) Class C for a total of 11 or (12.5%) respondents.

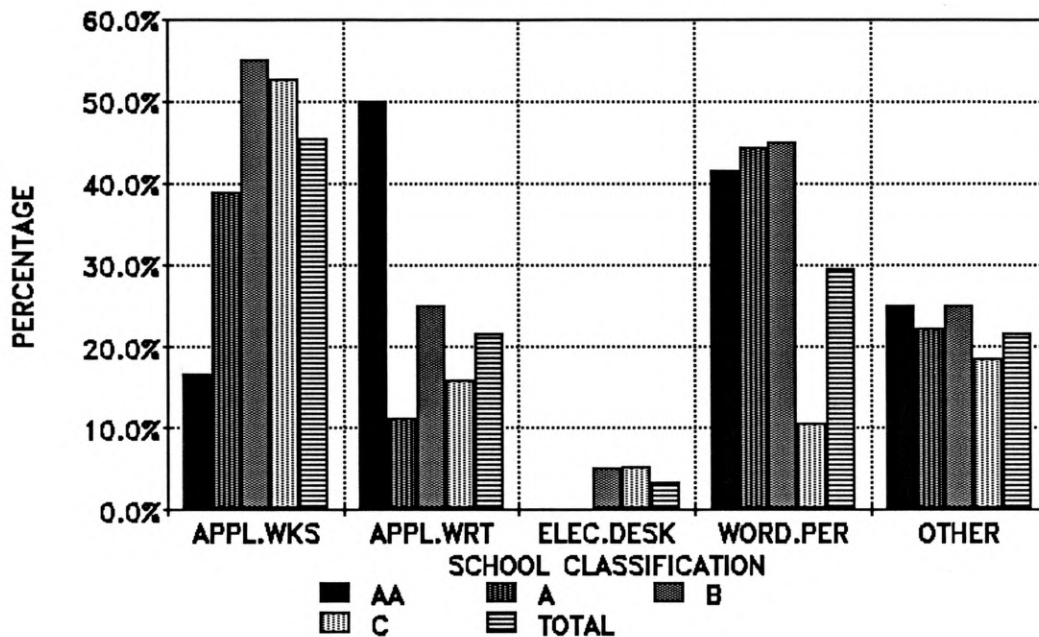
The integrated packages Enable and Framework were not being used by any of the respondents who were surveyed.

PFS: Series integrated package was being used by 3 or (25%) Class AA 2 or (11.1%) Class A 3 or (15%) Class B and 3 or (7.9%) Class C for a total of (11.4%).

Other microcomputer integrated packages being used were 3 or (25%) Class AA, 2 or (11.1%) Class A, 3 or (25%) Class B and 3 or (7.9%) Class C, for a total of 11 or (12.5%). Respondents listed the following integrated packages being used in their departments IBM First Choice, McGraw-Hill Integrated, Lotus, Electric Pencil, Deskmate, Homeword, Microsoft Works, and Magic Window.

Respondents who were not using integrated packages were 2 or (16.7%) Class AA, 1 or (5.6%) Class A, 5 or (25%) Class B and 7 or (18.4%) Class C for a total of 15 or (17%).

TABLE 14
MAJOR WORD PROCESSOR



Question 14: What is the major word processing package used in your department?

The above percentages represent respondents who marked more than one choice.

During the late 1970's word processing concepts were introduced and word processing courses were offered throughout the country in vocational schools, community colleges, and colleges and universities. Today word processing concepts and application courses are the cornerstones of many business education programs. (Oswalt 1988:20)

Respondents (Table 14) in business education programs used Appleworks as their major word processing package. Appleworks was used by 2 or (16.7%) Class AA, 7 or (38.9%) Class A, 11 or (55%) Class B and 20 or (52.6%) Class C, for a total of 40 or (45.5%).

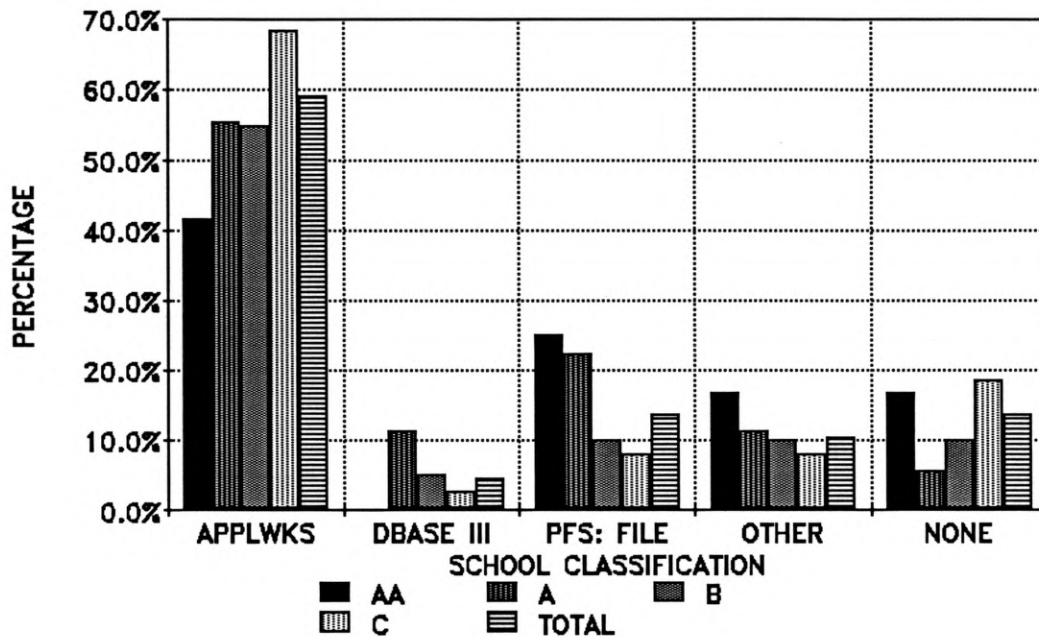
Applewriter was used by 6 or (50%) Class AA, 2 or (11%) Class A, 5 or (25%) Class B and 6 or (15.8%) Class C, and a total of 19 or (21.6%).

Electric Desk was used in two classifications Class B 1 or (5%) and Class C 2 or (5.3%) for a total of 3 or (3.4%).

Word Perfect was used by 5 or (41.7%) Class AA, 8 or (44.4%) Class A, 9 or (45%) Class B and 4 or (10.5%) Class C, for a total of 26 or (29.5%). The survey did not ask if the Word Perfect package was for the IBM or Apple.

Other word processing programs were 3 or (25%) Class AA, 4 or (22.2%) Class A, 5 or (25%) Class B and 7 or (18.4%) Class C, for a total of 19 or (21.6%). These word processing packages consisted of Ace Write, PFS:Write, Word Juggler, Homeword, Word Star, Trio, Electric Pencil, Easy Script, Superscripts, IBM First Choice and Mac Write.

TABLE 15
MAJOR DATA BASE PACKAGE



Question 15: What is the major data base package used in your department?

Appleworks was the major data base package used in the respondents school classification. It was used in 5 or (41.7%) Class AA, 10 or (55.6%) Class A, 11 or (55%) Class B and 26 or (68.4%) Class C and it was used in a total of 52 or (59.1%) of the respondents schools.

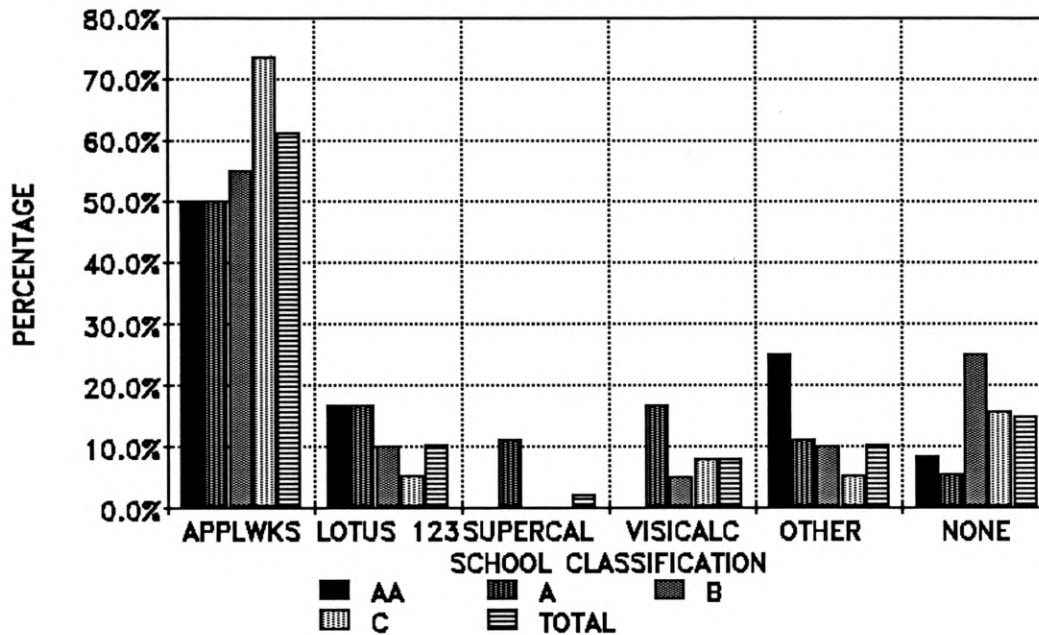
DBase III was used in 2 or (11.1%) Class A, 1 or (5%) Class B and 1 or (2.6%) Class C for a total of 4 or (4.5%) of the respondents schools.

PFS:File was used in 3 or (25%) Class AA, 4 or 22.2%) Class A, 2 or (10%) Class B and 3 or (7.9%) Class C, for a total of 9 or (10.2%).

The other types of data base packages being used in the state of Montana were 2 or (16.7%) Class AA, 2 or (11.1%) Class A, 2 or (10%) Class B and 3 or (7.9%) Class C and a total of 9 or (10.2%). Data Base packages that were used in the respondents respective classifications but were not listed in the survey instrument consisted of First Choice, Gregg McGraw-Hill Integrated, Electric Desk, Lotus, Quick File II and Trio.

Respondents who were not using a data base program were 2 or (16.7%) Class AA, 1 or (5.6%) Class A, 2 or (10%) Class B and 7 or (18.4%) Class C for a total of 12 or (13.6%).

TABLE 16
MAJOR SPREADSHEET PACKAGE



Question 16: The above percentages represent respondents who marked more than one choice. There are several reasons for using a spreadsheet program with your students (1) It encourages logical thinking, (2) it promotes organizational skills, (3) it enables students to view a problem in general as well as specific terms and (4) it familiarizes students with a real-life business tool. (Brown 1987:8)

The major spreadsheet package used was Appleworks, based on the responses of those surveyed. Appleworks was the major word processing, data base and spreadsheet package used in business education programs in the state of Montana.

Spreadsheet results (Table 16) of Appleworks were 6 or (50%) Class AA, 9 or (50%) Class A, 11 or (55%) Class B and 28 or (73.7%), Class C, for a total of 54 or (61.4%).

Lotus was used in 2 or (16.7%) Class AA, 3 or (16.7%) Class A, 2 or (10%) Class B, and 2 or (5.3%) Class C for a total of 9 or (10.2%).

Supercalc was used in only Class A which was 2 or (11%) for a total of 2 or (2.3%) of the respondents.

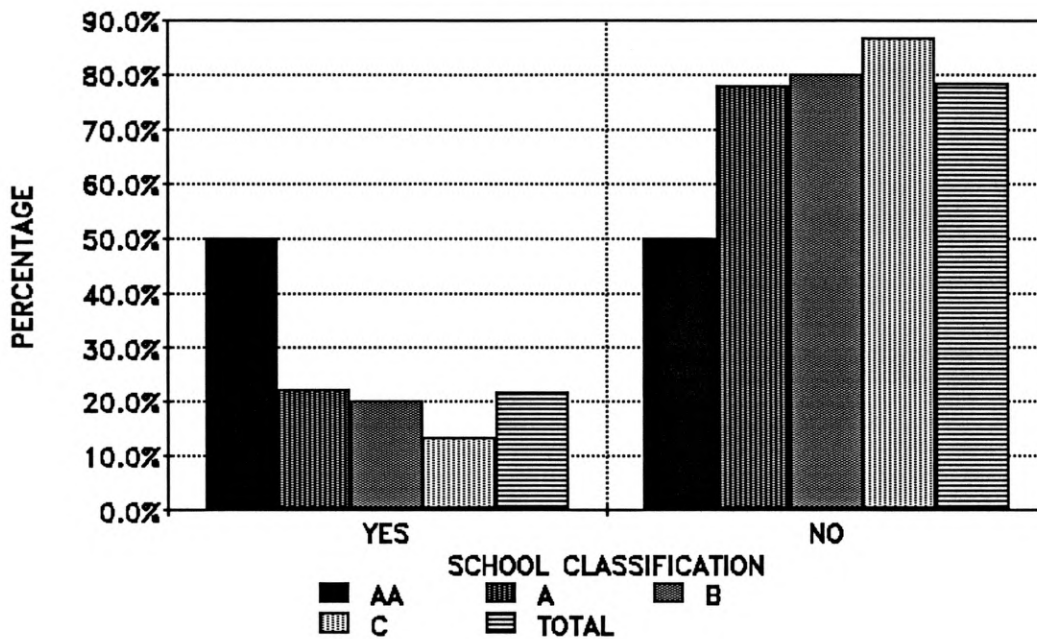
Visicalc was used in 3 or (16.7%) Class AA, 1 or (5%) Class A, 1 or (5%) Class B and 3 or (7.9%) Class C for a total of 7 or (8%).

Spreadsheet software has become an essential component of the 1980's business curriculum. (Groneman 1987:1)

Other types of spreadsheet packages used were 3 or (25%) Class AA, 2 or (11.1%) Class A, 5 or (10%) Class B and 6 or (5.3%) Class C, for a total of 13 or (10.2%). These packages consisted of Gregg McGraw-Hill Integrated, PFS:Plan, Electric Desk, Deskmate, Trio, Plan Perfect and As Easy.

Respondents who were not using software packages were 1 or (8.3%) Class AA, 1 or (5.6%) Class A, 5 or (25%) Class B and 6 or (15.8%) Class C for a total of 13 or (14.8%).

TABLE 17
MAINTENANCE CONTRACT



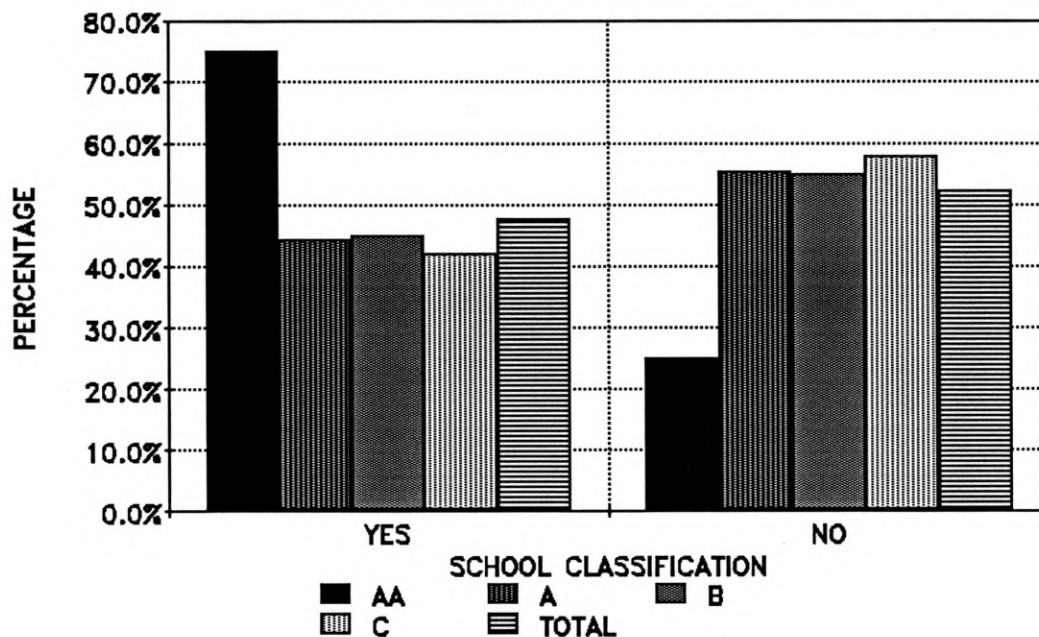
Question 17: Do you have a maintenance contract for repairs on your microcomputers?

Respondents answering yes were 6 or (50%) Class AA, 4 or (22.2%) Class A, 4 or (20%) Class B and 5 or (13.2%) Class C, for a total of 19 or (21.6%).

Respondents who answered no were 6 or (50%) Class AA, 14 or (77.8%) Class A, 16 or (80%) Class B and 33 or (86.8%) Class C for a total of 69 or (78.4%).

What is clear is that very few schools use maintenance contracts.

TABLE 18
INSERVICE TRAINING



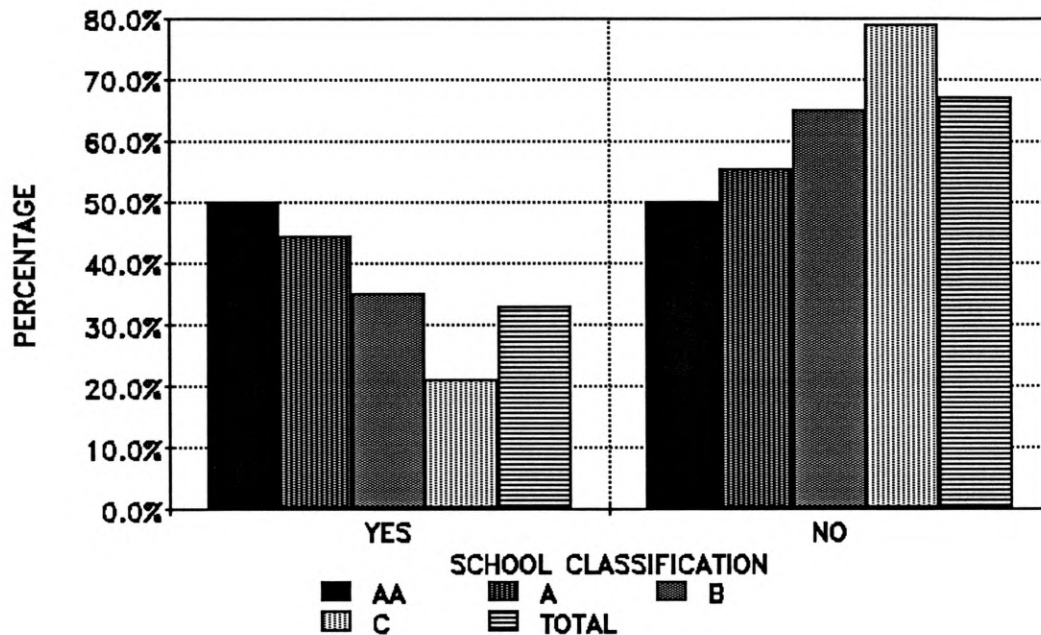
Question 18: Has an inservice training program in computer education been offered to you during inservice days?

In order to keep up with changing times, business educators need to constantly reevaluate their teaching methods, course content, and overall curriculum. They need to also manage the change necessary to keep the program current but on the leading edge of new thoughts. (Andera, Warner 1988:26)

Respondents who were allotted inservice training time for microcomputer education were 9 or (75%) Class AA, 8 or (44.4%) Class A, 9 or (45%) Class B and 16 or (42.1%) Class C for a total of 42 or (47.7%).

Respondents who were not given time for microcomputer education during inservice days were 3 or (25%) Class AA, 10 or (55.6%) Class A, 11 or (55%) Class B and 22 or (57.9%) Class C for a total of 46 or (52.3%).

TABLE 19
MICROS FOR RECORDING GRADES



Question 19: Do you use a microcomputer as a tool for recording grades?

Some software packages available to educators are especially designed to keep records of students grades. However, these packages are not always flexible enough for special needs situations and may be more expensive than basic spreadsheet packages. (Simon 1987:10)

Respondents who used the microcomputer to record grades were 6 or (50%) Class AA, 8 or (44.4%) Class A, 7 or (35%) Class B and 8 or (21.1%) Class C for a total of 29 or (33%).

Respondents who did not use the microcomputer for recording grades were 6 or (50%) Class AA, 10 or (55.6%) Class A, 13 or (65%) Class B and 30 or (78.9%) Class C for a total of 59 or (67%).

OTHER FINDINGS

The researcher also found the following: How many microcomputers does your business department have?

Respondents answers varied in the number of computers that were available in their business departments. Some of the respondents shared microcomputers with other departments in their schools.

Class AA respondents reported a range from a high of 83 to a low of 15 microcomputers for use in their business education curriculums. Five of the Class AA respondents had 20 or more microcomputers available, three respondents had 30 or more microcomputers and two respondents had 40 or more microcomputers.

Class A respondents reported a range from a high of 33 to a low of 1 for use in their schools. Seven respondents had at least one to eight microcomputers, six respondents had 10 or more microcomputers and four respondents had 20 or more microcomputers available for use.

Class B respondents reported a range from a high of 35 to a low of 1. Eleven respondents had at least one to eight microcomputers available and eight respondents had 10 to 16 microcomputers in their departments.

Class C respondents reported a range from a high of 13 to a low of 0. Thirty-three respondents had at least one to nine microcomputers and five respondents had 10 to 13 microcomputers for use. Two had none!

Please list the textbooks and materials that you find to be most beneficial in your microcomputer courses.

The general findings in this area included the following textbooks: (1) Word Perfect and Tutorial Applications, (2) DDC Skill Building Exercises consisting of word processing, data base, and spreadsheet exercises, (3) Ties (Minnesota School District Data Processing Exercises), (4) Appleworks Integrated Applications, (5) Apple Pascal, (6) Introduction to Applewriter, (7) Micropace (8) Applewriter by Curtis J. Tonneson, (9) Learning Basic Step By Step, (10) Data Base Applications, (11) Appleworks Using Computers in our Society, (12) Appleworks Made Easy, (13) Gregg McGraw-Hill 101 exercises for data base, spreadsheet, and word processing, and (14) Word Processor Applications Text Editor. The major publisher for most of the textbooks listed was South-Western.

Please list any simulations you use with your microcomputer?

The results of simulations used with microcomputers from the respondents who were surveyed consisted of the following: (1) BPI Accounting, (2) Automated Accounting, (3) Monkey Go Around, (4) Jean's Factory, (5) Palametto Insurance, (6) Greenery, (7) Gadgetronics, Sun Island Hotel, (8) Enterprise Sandwich Shop, (9) Video Gallery, (10) Raquetball Unlimited, Strategy, (11) Wheels for Rent, (12) Maxwell Jewelry, (13) G & H Hobby, (14) Safeco Insurance, (15) Billing Clerk, and (16) Scholastic PFS:Series.

Please list any suggestions or comments that may be helpful to others when they integrate microcomputers into a business education curriculum?

Comments varied in responses from respondents of all classifications of Montana public high schools who were surveyed. A list of suggestions paraphrased by the researcher consisted of the following: (1) Survey business world, (2) purchase business software, (3) test software, (4) be specific on equipment specifications if it must go out on bid, (5) provide ample opportunity for staff inservice, (6) have support of administration, (7) use color diskettes to identify class periods, (8) allow time to prepare diskettes, (9) keep current, get enough microcomputers for everyone if possible, (10) explore avenues for outside funding, (11) involve local businesses, (12) teach applications and discuss operating languages, (13) allow for expansion, (14) talk to other educators who have system you are interested in purchasing, (15) be patient, (16) plan for the required electrical outlets and surge protectors, (17) use microcomputer as a reinforcement tool, and (18) allow students to use it for other class assignments.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this project was to develop a model for designing and implementing microcomputers into secondary business education programs. Major areas of the study dealing with microcomputers were; microcomputers available in business education programs, classes where business education departments were using microcomputers, types of hardware available, hours per day business education students were using microcomputers, number of years microcomputers have been in business education programs, sources of funds to purchase microcomputers, teacher professional preparation, software available for use, maintenance contracts, inservice training, textbooks and simulations used in business education programs.

Review of literature was done by the researcher through the means of an ERIC search. Literature was available in many areas for use of the microcomputer in curricula. Periodicals, general microcomputer textbooks, and personal resources of the researcher were used in completing this study.

A questionnaire was developed from these major areas and sent to public high school business education teachers in the state of Montana. A 75.9% return was made after the first mailing. The return consisted of the business education teachers of the four major classifications in the state of Montana Class AA, Class A, Class B, and Class C. Tables and charts were used to report numbers and findings in each of the information areas.

The software program Works produced by Microsoft was used to compute percentages and totals of the raw data received. Charts were designed from the raw data to illustrate the respondents responses.

CONCLUSIONS

The following conclusions were drawn from this study.

1. The largest brand of microcomputers being used in business education programs in the state of Montana was Apple with IBM on the increase.
2. Microcomputers were being used in several of the classes in business education programs in the state of Montana.
3. Most microcomputers in business education were purchased through the general funds.
4. Most business teachers professional preparation for microcomputers was obtained through self-teaching.
5. Teachers tend to prefer the IBM PS/2 models for future purchases.
6. Software packages being used in business education departments consisted of data base, graphics, spreadsheets, and word processing applications.

7. Appleworks was the major integrated software package being used in business education departments.
8. Appleworks was also the leading data base, spreadsheet, and word processing package being used.
9. Schools were not providing enough time for teachers at inservice training programs in the state of Montana.
10. Microcomputers in the business education curriculum have created changes in teaching techniques and applications of class material.

RECOMMENDATIONS

The following are suggestions to enhance the use of microcomputers in the business education curriculum.

1. Evaluate and self-test software that will be adopted for the business education curriculum.
2. Select hardware that is capable of running software programs and allows for expansion.
3. Check with other school districts and business education teachers to see how they are using the microcomputer to enhance their curriculums.
4. Provide the school administration with pertinent data and the current developments of integrating microcomputer applications into the business education curriculum.
5. Teachers should continue to attend workshops and take courses to stay current with changing teaching techniques and methodologies.
6. School districts should have resource personnel to assist teachers incorporating computer applications into their regular classrooms.
7. School districts should provide inservice time to business education instructors on the current software and hardware available for business education.
8. Teachers should be willing to plan, organize, and implement the microcomputer into their courses.

The process of planning for change in business education requires that teachers take risks. A great deal of time and work are involved in the process of revising curriculum and obtaining financial support for new equipment and software. However, through persistence, patience, and positive attitudes about change, great strides can be made to strengthen support for the discipline. (Campbell, 1988:3)

MODEL PROGRAM

The researcher has designed the following model program based on the findings of this project.

Hardware. A microcomputer laboratory consisting of microcomputers linked to printers would provide business education programs with a variety of microcomputer applications. The hardware starter system should consist of at least 256K and if possible a hard drive on one or two microcomputers. Other peripherals could be added at a later date. Allowing for expansion and upgrading is a consideration that should be used in selecting the hardware.

Software. Programs that could be useful in the business education curriculum consist of word processing, data base, spreadsheet, graphics, and telecommunication applications. Integrated packages such as Appleworks, Electric Desk, PFS: Best Sellers, and Works could be used to involve these applications in business programs at the secondary level. Single software packages purchased could consist of Word Perfect, Applewriter, Lotus, DBase III, or

Fast Graph. Other considerations if a budget does not provide for software purchases could be use of public domain software such as Fredwriter, PC Write, and PC File.

Staffing. Teachers may have to jump right into teaching microcomputer applications. Other teachers with experience could serve as mentors to help introduce teachers who have had no experience with microcomputers to implement the use of the microcomputer into their courses.

Funding. The purchasing of microcomputers basically comes from the general funds of schools or from vocational education grants. An ideal way of purchasing microcomputers is to write a grant. Some high schools in the state have built their programs through successful grants.

Inservice. The area of retraining is essential for staff development. Teachers should be given time to analyze products which are current with today's technology in order to keep up-to-date with the use of microcomputers in today's business world. Inservice should be ongoing throughout the entire academic year.

Curriculum. Usage of the microcomputer in all business course offerings is a reality today with the software that is available by using drills and tutorials in typing, operation of business machines and using business procedures. Simulations could be used with actual business operations and procedures. Business application software including word processors, data base management systems, electronic spreadsheets, accounting and inventory packages could be integrated into the business education program.

Costs. The cost of acquiring microcomputers is an investment that must be made if it only means acquiring one microcomputer and one printer. The microcomputer laboratory is often something that will take time to complete. The cost of implementing microcomputers into the business education curriculum is advantageous to the success of the program. The microcomputer is the key tool in the information processing era.

Surveys of businesses and schools can provide schools with useful information on which to base decisions regarding equipment selection and replacement, software selection, needed revisions in current course offerings, the addition of courses in which technological skills and knowledges are included, course requirements, and choice of programming languages. (Chaney, Otto, 1988:24)

BIBLIOGRAPHY

- Adams, Dennis. Educational Computer Issues and Trends, Charles C. Thompson, Springfield, 1986.
- Aldana, Marilee. "Using Checklists to Evaluate Microcomputer Systems," Business Education Forum, December 1983.
- Andera, Frank, Warner, Virginia. "Managing Change in the Business Education Curriculum" Business Education Forum, May 1988
- Bitter, Gary Using a Microcomputer in the Classroom, Reston Publishing, Reston, 1984.
- Brown, Joan. "Spreadsheets in the Classroom," The Computing Teacher, ICCE, Eugene, December-January 1986-1987.
- Campbell, Gloria. "Computers Don't Grow on Trees: How To Build Political and Financial Support for Business Education," Business Education Forum, February 1988.
- Cates, Ward. A Practical Guide to Educational Research, Prentice-Hall, 1985.
- Chaney, Lillian, Otto, Joseph. "Are Schools Meeting Needs of the Business Community" Business Education Forum, February 1988.
- Coburn, Peter. Practical Guide to Computers in Education, Addison-Wesley, Menlo Park, 1985.
- Conover, Gary. Administration and Supervision in Business Education, NBEA, Reston, 1978.
- Cox, Jerry. "Conducting Follow-Up Studies of Business Teacher Graduates for Program Evaluation," Business Education World, May-June 1977.
- Daggett, Willard. Computers and Information Technology, South-Western, Cincinnati, 1985.
- Dolan, Dan. The Elements of Computer Education, Montana Office of Public Instruction, Helena, 1983.
- Freund, Dan. Montana High School Association Handbook, Board of Control Publishers, Helena, 1987.
- Groneman, Nancy. "Teaching Spreadsheets: Questions and Answers," Database, South-Western, Cincinnati, Fall 1987.

- Hawkridge, David. New Information Technology in Education, John Hopkins University, Baltimore, 1983.
- Horowitz, Pam. "Computers in the Curriculum," Electronic Learning, April 1985.
- Hunter, James. "Make Your Students Computer Literate," NBEA Yearbook, 1984.
- Kepner, Henry, Jr. Computers in the Classroom Second Edition, NEA, Washington, DC, 1986.
- Klemin, Wayne, Harsha, Ken. "Teaching Micro Applications: A Practical Approach," Business Education World, McGraw-Hill, New York, Spring 1988.
- Lambrecht, Judith. "Selecting and Utilizing Hardware and Software for the Classroom," NBEA Yearbook, 1987.
- Lathrop, Ann. Courseware in the Classroom, Addison-Wesley, Boston, 1983.
- Legget, Stanton, Microcomputers Go To School, Teach'em Inc. Chicago, 1984.
- Lindgren, Rick. "Upgrading Your Microcomputers," Database, South-Western Cincinnati, Spring 1987.
- Merriam. Webster's New Collegiate Dictionary, Text Edition, New York, 1975.
- Neal, William. "Beyond Computer Literacy: Information Literacy," Business Education Forum, December 1987.
- Nichols, Patsy. "From Typewriter Turf to Micro Maze," Business Education Forum, October 1987.
- Oswalt, Beverly. "Business Education Needs a Technology Lift," Balance Sheet, South-Western, Cincinnati, March-April 1988.
- Rauch, Verda. "Microcomputers in Business Education Today," Balance Sheet, March-April 1984.
- Regan-Goff, Susan. Training WP Professionals How Useful are Tutorials," Business Education Forum, December 1985.
- Ruby, Ralph, Jr. "What Do Micros Mean for Business Education?," Business Education Forum, April 1984.
- Shelly, Gary, Cashman, Thomas. Computer Fundamentals with Application Software, Boyd & Fraser, Boston, 1986.

- Simon, Judith, "How to Use a Spreadsheet to Keep Student Grade Records," Database, South-Western, Cincinnati, Fall 1987.
- Smith, Christopher. Microcomputers in Education, John Wiley and Sons, New York, 1982
- Stocker, Robert. "Computer Proliferation and the Changing Curriculum," Business Education Forum, March, 1988.
- Swartz, Theodore. Educator's Complete Guide To Computers, Parker, West Nyack, 1984.
- Thomas, James. Microcomputers in the Schools, Oryx Press, Phoenix, 1981.
- Witkin, Ruth. The Best Book of Microsoft Works for the PC, Howard W. Sams & Company, Indianapolis, 1988.
- Zimmerman, Steven. Understanding and Using Microcomputers, West Publishing, St. Paul, 1986.

APPENDIX A

4029 Western Blvd.
Butte, MT 59701
May 10, 1988

^<First Name> ^<Last Name>
^<School>
^<Address>
^<City> ^<State> ^<Zip>

Dear ^<First Name>:

The era of the microcomputer age is here! Business educators must begin to implement the microcomputer into the curriculum. I am interested in knowing how business teachers use the microcomputer in their programs.

Recently, a microcomputer lab was implemented into the business education department at Butte High School. Since I was responsible for this task, it gave me a great interest in the use of microcomputers. Therefore, I am conducting this survey to determine business teachers perceptions and feelings over microcomputer usage. This research project is part of the requirements for my Master's Degree in Business Education at Montana State University.

Please take about ten minutes to complete the enclosed questionnaire and return it to me by May 25, 1988. I will be most grateful for your cooperation.

Thank you very much.

Sincerely,



John Uggetti

Enclosures 2
Questionnaire
Envelope

79
QUESTIONNAIRE

DIRECTIONS

Please place a check mark(s) on the appropriate line(s) and answer all the questions which apply to your school.

1. Designate the classification of your school.

_____ VO-TECH	_____ B
_____ AA	_____ C
_____ A	
2. Do you use a microcomputer to teach keyboarding skills?

_____ Yes	_____ No
-----------	----------
3. How many microcomputers does your business department have?

4. In what classes in your business education department are microcomputers being used?

_____ A. Accounting	_____ D. Typing
_____ B. Business Math	_____ E. Other _____ (Please specify)
_____ C. Word Processing	_____ F. Secretarial Training
5. How many years have microcomputers been used in your business education programs?

_____ A. 1 to 3	_____ C. 7 to 10
_____ B. 4 to 6	_____ D. Other _____ (Please specify)
6. What types of hardware are available in your business education department?

_____ A. Apple _____	_____ D. IBM PS _____
_____ B. ATT	_____ E. Tandy 1000
_____ C. IBM PC	_____ F. Other _____ (Please specify)
7. Please estimate how much time per day business education students use microcomputers?

_____ A. One hour or less	_____ C. More than 2 hours
_____ B. More than 1 hour	_____ D. More than 3 hours
8. When were microcomputers first purchased for your department?
_____ Year

9. What has been the primary source of funds to purchase your microcomputers?
 _____ A. General School Funds _____ C. Other _____
 (Please specify)
 _____ B. Vocational Education Grant
10. How was the teacher's professional preparation of microcomputer's obtained?
 _____ A. Graduate preparation
 _____ B. Self-taught
 _____ C. Undergraduate preparation
 _____ D. Commercial workshop attendance
11. What department is primarily responsible for teaching computer literacy?
 _____ A. Business _____ C. Computer Science
 _____ B. Math _____ D. Other _____
 (Please specify)
12. If you were buying new computers for your classroom which brand would be your choice?
 _____ A. Apple _____ D. IBM PS/2 SYSTEM _____
 _____ B. ATT _____ E. Zenith
 _____ C. Radio Shack _____ F. Other _____
 (Please specify)

What types of software are used in your business education department?

- _____ A. Data Base _____ D. Telecommunications
 _____ B. Graphics _____ E. Word Processing
 _____ C. Spreadsheets _____ F. Other _____
 (Please specify)

Please state the reason(s) for your choice(s).

13. Do you use any of the following integrated software packages?
 _____ A. AppleWorks _____ D. Framework
 _____ B. Electric Desk _____ E. PFS: WorkMates
 _____ C. Enable _____ F. Other _____
 (Please specify)

14. What is the major word processing package used in your department?
- _____ A. AppleWorks _____ D. Word Perfect
_____ B. Applewriter _____ E. Other _____
_____ C. Electric Desk (Please specify)
15. What is the major data base package that is used in your department?
- _____ A. AppleWorks _____ C. PFS: File
_____ B. DBaseIII PLUS _____ D. Other _____
(Please specify)
16. What is the major spreadsheet package that is used in your department?
- _____ A. Appleworks _____ D. Visicalc
_____ B. Lotus 123 _____ E. Other _____
_____ C. Supercalc (Please specify)
17. Do you have a maintenance contract for repairs to your microcomputers?
- _____ Yes _____ No
18. Has an inservice training program in computer education been offered to you during inservice days?
- _____ Yes _____ No
19. Do you use the microcomputer as a tool for recording your grades?
- _____ Yes _____ No
20. Please list the textbooks and materials that you find to be most beneficial in your microcomputer courses.
- _____

21. Please list any simulations that you use with your microcomputers.
- _____

22. Please list any suggestions or comments that may be helpful to others when they integrate microcomputers into a business education curriculum.

If you would like a copy of the results of this study please list your name and address below:

Name

Address

City

 State

 Zip
