

A SURVEY OF COMPUTER USES IN SCHOOLS:
WITHIN THE CURRICULUM & EXTRA-CURRICULAR,

MASTER'S PROJECT

Submitted to the School of Education
University of Dayton, in Partial Fulfillment
of the Requirements for the Degree
Master of Science of Education

by

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Dayton, Ohio

July, 1991

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TABLE OF CONTENTS

	PAGE
APPROVAL PAGE	11
LIST OF TABLES	iv
CHAPTER	
I. INTRODUCTION	1
II. REVIEW OF RELATED LITERATURE	5
III. RESEARCH PROCEDURES	9
IV. PRESENTATION AND ANALYSIS OF DATA.	11
V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS.	16
Appendix A - Survey Instrument	19
Appendix B - Survey Results	21
REFERENCES	28

LIST OF TABLES

TABLE	PAGE
1. COMPUTER APPLICATIONS BEING TAUGHT	12
2. COMPUTER LANGUAGES TAUGHT AT THE H.S. LEVEL	13
3. BREAKDOWN OF CONTENT AREAS WHICH USE THE COMPUTER TO SUPPLEMENT INSTRUCTION	13
4. STUDENT TO COMPUTER RATIO OF COMPUTER CLASSES LISTED IN THE COMPUTER CURRICULUM	14
5. ACTIVITIES AND SCHOOL PERSONNEL WHO HAVE ACCESS TO COMPUTERS FOR THEIR OWN USE	15

CHAPTER I

INTRODUCTION

Statement of the Problem

Computers are changing the world we live in and teachers should make use of these educational tools to enhance their teaching. Administrators and teachers must continue to explore the many possibilities which this technology has to offer.

At the present time there are large assortments of educational software available to educators. Computer hardware is also becoming more readily available to school systems. The problem for the majority of school districts involves keeping the computer equipment and its curriculum up-to-date with the ever changing technology.

Because the business department will be revising the computer curriculum in the fall of 1992, this writer wanted to survey other schools relative to its own size. The survey was used to investigate the use of the computers within their curriculum and also to get a general idea of their use outside the curriculum. Along with the curriculum revision we will recommend to the Board of Education a plan which would allow for computers and software to be updated on a regular basis.

Purpose

The main purpose of this study is that it will allow for our computer curriculum to be revised by using the results of the survey combined with findings from current literature on the subject. We will also get many new ideas, which we could incorporate into the school for other various uses of the computer.

Significance of Study Towards Education

This study will be of great significance in helping to make a curriculum especially for computer education. At the present time our curriculum is rather vague and does not have much structure for the educator to follow. The results of this survey will show what is being offered at other districts our size. Another part of the survey will indicate to us what type of hardware is being used as well as their plans for updating computer equipment. This type of information is useful for any type of proposal we may make to the Board of Education to update our computer hardware systems.

Definitions and Assumptions of the Study

A computer may be defined as a electronic machine with the capabilities to calculate and have some form of memory. There are several sizes of computers available for numerous uses. For the purpose of this study, the term computer will coincide with a

microcomputer. This size computer is fairly small in size and is self-contained. This computer can be used as a teaching tool or a device to supplement practically all content areas.

Other Definitions

1. BASIC - (Beginner's All-Purpose Symbolic Instruction Code) a programming language that is to be used with individual statements so the computer can execute as instructed by these statements. This language is simple to use and enables the programmer to make quick decisions and detect errors easily.

2. Computer assisted instruction - (CAI) use of the computer to aid both student and teacher as a tool in learning.

3. data base - Interrelated data records which are stored in such a structure that will allow for quick access for growth and change.

4. hardware - the physical components in the computer system. (printer, monitor, disk drive, terminal etc. . .)

5. LOGO - a language which allows one to learn by numerous means such as creativity and discovery. This computer language is easy to learn and also can be used for application programming.

6. PASCAL - a programming language which follows a structured concept so the program can follow precise instructions.

7. software - languages, programs or other routines the computer will use to solve any particular problem.

8. spreadsheet - an application program in which information is arranged in rows and columns.

9. word processing - a tool for writing which allows for corrections and revisions to be made easily.

Throughout the study the size of school districts will be mentioned. The school districts involved will be of similar size to that of Covington High School. All schools in the study were randomly selected according to its enrollment of the high school only (grades 9-12). Covington High School had approximately 245 students enrolled for the 1990-91 school year.

CHAPTER II

REVIEW OF RELATED LITERATURE

There has been much written about the use of computers in aiding both the student and educator. Computers have become a part of life and all students should be made to feel comfortable in their use. This review of literature is to inform the reader of research which will support the use of computers in education.

Numerous articles are available on this particular subject area. The use of computers in education has been debated at great length in recent years. Current literature available on this subject suggests that teachers do not have to take their curriculum and change it because they have decided to implement the use of the computer in their classroom (Turner and Land, 1988). This is one of the main reasons why teachers who have little or no experience with computers have doubt in their minds whether to use the computer in their classes or not.

Teachers have three main choices on how a computer-integrated curriculum will be used in their class. The current curriculum must be reviewed and then the teacher must decide which of these following elements will best meet each individual objective. As

cited by Turner and Land (1988, p. 4) in Tools for Schools, the teacher must decide upon one of the following ways which a computer can be used in their classroom:

1. As a supplemental tool.
2. As a tutor. (use of software)
3. As a tutee. (programming)

Most recently as the prices of computers have become more reasonable, schools have used the computer as a tool for learning. What this means is that the computer allows for a more efficient means of doing many of the things taught in our classrooms. For example, the word processing feature allows the student to prepare reports, compositions and other projects in a more efficient manner. Secondly the computer may be used as a tutor, which means that applications' software will guide students through exercises in their content area. Drill & practice exercises and simulation are examples of how a computer may be used in a tutoring situation.

Finally, the computer can be programmed in a specific language in which it understands. This type of use is known as a tutee. Some of the various languages being offered are basic, pascal, cobal and fortran (Turner and Land, 1988).

Planning

School districts are not planning for the use of computer technology as needed (Sununu, 1987). Proper planning on how computers are to be used is seen as very important before any purchases are actually made. One study found that while ninety-six percent of U.S. school districts were using computer technology to improve instruction, only fourteen percent had developed policies about how they planned to use the technology (Sununu).

Teacher In-service

Teacher training is another essential in order for computers to be used to their fullest capabilities in education. Schools need to help teachers become more comfortable with computers just as students are expected to do. One of the main problems with teachers becoming familiar with computers is that often the only computers available in the school are in the computer lab. Teachers need to have computers readily available and then must be required to make use of them after sufficient in-service has been provided.

Instructional workshops do increase teacher knowledge of computers. Teachers need to preview and evaluate software in order to integrate it into their curriculums (Marshall, 1987).

Schools must make a commitment to a computer integrated system. They must allow for updates in equipment on a regular basis as technology has been pushing our options farther and farther. School districts must set up a planned budget in order for these updates to take place as to keep up with changing technology as best they can. Teachers should be provided with a training program by the district so that he/she will feel more comfortable in using the computer as a teaching method or tool (Ellis, 1986).

Summary of Related Literature

Research points toward the fact that computers should be integrated into the classroom. Computers can motivate students to learn as they with the aid of the teacher can provide a new creative way to learn. Planning by the individual teacher and also the school district itself are very important if educators wish to make full use of what this technology has to offer. Inservice must be offered to teachers so they feel totally comfortable in the use of the computer as a tool to aid instruction.

CHAPTER III

RESEARCH PROCEDURES

Restatement of the Problem

This writer was interested in researching the ways in which other schools relative to its size were currently using the computer. The information collected from this study will be used in revising the computer curriculum at Covington High School.

Method

A survey was sent to 70 high schools which have an enrollment similar to that of our own. In 1990-91 Covington High School had approximately 245 students enrolled in grades 9-12. The sample was selected from high schools (grades 9-12) with an enrollment of 150-500 students. In Ohio there are approximately 275 public high schools with such an enrollment.

The 70 school districts which were randomly selected were then mailed a survey addressed to the principal of the high school (see Appendix). The surveys were mailed during the second week of April, 1991. Included with the survey was a self-addressed stamped envelope which was to be returned to the writer. The surveys were to be returned by May 8, 1991. A reminder notice was sent to any school which

had not responded by May 13, 1991. Also, the results of the survey were offered to any school wishing to see them and these will be sent out during the first week the 1991-92 school year. This writer's goal was to have 60 percent of the surveys returned completed.

The results of the survey were compiled as the surveys came back to the writer in order for further analysis. The data of this survey has been compiled and will be presented in the next chapter.

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

Findings

Of the 70 surveys mailed to the high schools, 47 (67%) of the questionnaires were completed and returned. Ten of the forty-seven were returned after having been sent the reminder notice because they were past the deadline given on the survey. The letter which was sent along with the survey gave the principal the option of completing the questionnaire or passing it on to the most qualified teacher. Twenty-five percent of the principals completed the surveys, 36 percent were filled out by business teachers. The remaining 39 percent were completed by a combination of the following: media specialists (2%), math teachers (12%), full-time computer teachers (21%) and computer coordinators (4%). Ninety-eight percent of the surveys returned indicated that their high school offers computer classes in grades 9-12.

The enrollment of the high schools surveyed are similar in size to that of Covington High School. Covington's enrollment for 1990-91 was approximately 245 students. From the 47 surveys which were received 16% of those had had enrollment of 1-200, 57% had

201-300 students, 25% had 301-400 students and 2% had over 400 students.

The survey indicates that Apple microcomputers are still the most popular as 81% of the high schools reported using this brand. The IBM microcomputer is used in 43% of the schools questioned. Many of the schools use a combination of these two as the IBM computer has become more capatable for educators in recent years. Other types of computers were also in use but to a much lesser degree.

Sixty-percent of the schools surveyed indicated that they offer computer keyboarding as a pre-requisite to computer classes. The survey points to the fact that computers are being used as a tool as students are being taught how to use word processing, spreadsheets and databases in most cases. Another fact the survey points out is that computer languages are not being taught as much as the above applications. Table number 1 (next page) will illustrate the percentages from which the following applications are offered from those schools returning their questionnaires.

TABLE 1

COMPUTER APPLICATIONS BEING TAUGHT
AT THE HIGH SCHOOL LEVEL

Database	Yes <u>89%</u>	No <u>11%</u>	Unsure <u>0%</u>
Spreadsheet	Yes <u>92%</u>	No <u>6%</u>	Unsure <u>2%</u>
Word processing	Yes <u>98%</u>	No <u>2%</u>	Unsure <u>0%</u>

Table number 2 compares the various languages which are taught at the high school level.

TABLE 2

COMPUTER LANGUAGES TAUGHT AT THE HIGH SCHOOL LEVEL

Basic	Yes <u>61%</u>	No <u>17%</u>	Unsure <u>2%</u>
Pascal	Yes <u>23%</u>	No <u>72%</u>	Unsure <u>4%</u>
Logo	Yes <u>17%</u>	No <u>83%</u>	Unsure <u>0%</u>

Table number 3 illustrates the breakdown of the individual content areas which use the computer in any form as a supplement to instruction.

TABLE 3

BREAKDOWN OF CONTENT AREAS WHICH USE
THE COMPUTER TO SUPPLEMENT INSTRUCTION

Art	<u>19%</u>	Band	<u>19%</u>	Business	<u>76%</u>
Driver's Ed.	<u>0%</u>	English	<u>53%</u>	For. Language	<u>6%</u>
Health	<u>4%</u>	Math	<u>66%</u>	Physical Ed.	<u>2%</u>
Reading	<u>21%</u>	Science	<u>60%</u>	Social St.	<u>11%</u>
*Other	<u>13%</u>				

*The subjects included from the category other are the following: Special Education, Economics, Industrial Technology, Home Economics, and Vocational Agriculture.

This writer feels that schools are definitely discovering the importance of computers as 55% of the schools surveyed report that a separate lab is available for the above content areas. The questionnaire also showed that 76% of the schools have a board adopted computer curriculum. Thirty-four percent of the schools have an annual budget which is for computer related purchases and updating equipment. Fifteen percent of the schools reported that they have a long range budget (3+ years) for computer related purchases. The survey showed that 55% of the schools have some form of workshop which provides teachers a way of becoming comfortable with computers.

The student to computer ratio of the classes listed in the computer curriculum (if available) is shown in table 4.

TABLE 4

STUDENT TO COMPUTER RATIO OF
COMPUTER CLASSES LISTED IN COMPUTER CURRICULUM

1:1	<u>60%</u>	2:1	<u>36%</u>	3:1	<u>4%</u>	4+:1	<u>0%</u>
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One-hundred percent of the schools surveyed think that microcomputers will continue to be used as an educational tool in the next five years.

Extra-Curricular Findings

Another part of the survey which was of interest to this writer was to see how computers are being used by extra-curricular activities as well as by other school personnel. Table 5 illustrates how computers are being used outside of the normal computer curriculum.

TABLE 5

ACTIVITIES AND SCHOOL PERSONNEL WHICH HAVE ACCESS
TO COMPUTERS FOR THEIR OWN USE

Attendance Office	<u>66%</u>	Athletic Dept.	<u>32%</u>
School Newspaper	<u>38%</u>	School Secretary	<u>68%</u>
School Yearbook	<u>42%</u>	Principal	<u>45%</u>
Media Center	<u>58%</u>	Lunchroom	<u>2%</u>
Teacher Workroom	<u>25%</u>	Guidance Office	<u>42%</u>

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary and Conclusions

This study of computers has reinforced the belief this writer previously had in that computers are and will remain a big part of education. Schools which responded to the survey obviously think computers are important as 76% of them have school board adopted computer curriculums. The importance of computers in education is backed up again by 100% of the schools responding they think the microcomputer will continue to be used an educational tool in the future. This writer believes that computers are here to stay and teachers must make use of what it has to offer.

After reading the related literature on this subject, this writer believes computers must be an integral part of the classroom. Three of the keys to implementing the computer in the classroom are curriculum planning, teacher workshops, and budget planning. This writer believes that computers will not and cannot take the place of a teacher. All the microcomputer can do is provide a tool which will allow more time for the teacher to give individualized help to students.

In summary, this writer believes this study helped illustrate what computer courses other schools our size have to offer. This study will help the business department at Covington High School in revising our own computer curriculum. Also, the study will provide us with some ideas as to how the computer can be used by extra-curricular activities as well. The results of this study show the importance of planning a budget as computer technology changes at such a pace that equipment must be updated in order to keep up with these changes. Teachers need training provided by the school district in order for them to become comfortable with computers in their classroom.

Recommendations

The microcomputer is causing a technological revolution in education because of its wide use in almost every part of the business world. Therefore, teachers must learn about the features the microcomputer has to offer and then make use of it as a teaching tool to aid instruction.

This writer offers the following recommendations to all schools districts based on this study and the related research done on this subject.

- (1) Each school district make a formal study of its computer curriculum and see to it that the computer is utilized to its fullest capabilities.

- (2) Implement an inservice training program for teachers, administrators, and all support staff to feel comfortable with the use of the computer.
- (3) Administrators and computer teachers plan both long range budget (3+ years) and an annual budget for computer related purchases.
- (4) Each school district have a separate computer lab available for use by classes of other content areas outside of the computer curriculum. (for Art, English, Math, Reading, Science etc. . .)

APPENDIX A

SURVEY
OF COMPUTER USES IN EDUCATION
(CURRICULAR & EXTRA-CURRICULAR ACTIVITIES)

1. WHO IS FILLING OUT THE SURVEY? ___ PRINC. ___ BUS. TEACHER ___ OTHER
SPECIFY _____

2. WHAT IS YOUR HIGH SCHOOL'S ENROLLMENT (9-12)?
___ 1-200 ___ 201-300 ___ 301-400 ___ 401+

3. ARE COMPUTER CLASSES OFFERRED IN THE HIGH SCHOOL? ___ YES ___ NO

4. WHICH OF THE FOLLOWING CONTENT AREAS USE THE COMPUTER IN ANY FORM AS A
SUPPLEMENTAL TO CLASSROOM INSTRUCTION?

ART _____	BAND _____	BUSINESS _____
DRIVER'S ED. _____	ENGLISH _____	FOR. LANG. _____
HEALTH _____	MATH _____	PHYS. ED. _____
READING _____	SCIENCE _____	SOC. STUD. _____
		OTHER _____

5. WHICH OF THE FOLLOWING BRAND(S) OF COMPUTERS IS YOUR DISTRICT CURRENTLY USING?

APPLE _____
 COMMODORE _____
 IBM _____
 TANDY _____
 OTHER (SPECIFY) _____

6. IS THERE A SEPARATE COMPUTER LAB AVAILABLE FOR USE BY CLASSES OF OTHER CONTENT AREAS
OUTSIDE OF THE COMPUTER CURRICULUM?

YES ___ NO ___

7. WHICH OF THE FOLLOWING LOCATIONS HAS ACCESS TO A COMPUTER FOR THEIR OWN USE?

ATTENDANCE OFFICE _____	ATHLETIC DEPT. _____
SCHOOL NEWSPAPER _____	SCHOOL SECRETARY _____
SCHOOL YEARBOOK _____	PRINCIPAL _____
MEDIA CENTER _____	LUNCHROOM _____
TEACHER WORKROOM _____	
OTHER (SPECIFY) _____	

8. DOES YOUR SCHOOL DISTRICT OFFER COMPUTER KEYBOARDING AS A PRE-REQUISITE TO COMPUTER
CLASSES?

YES ___ NO ___ IF YES, AT WHAT GRADE LEVEL? _____

9. WHICH OF THE FOLLOWING ARE OFFERRED AT THE HIGH SCHOOL?

BASIC	YES ___	NO ___	UNSURE ___
PASCAL	YES ___	NO ___	UNSURE ___
LOGO	YES ___	NO ___	UNSURE ___

(OVER)

10. ARE STUDENTS OFFERED THE FOLLOWING?

DATABASE	YES	NO	UNSURE
SPREADSHEET	YES	NO	UNSURE
WORDPROCESSING	YES	NO	UNSURE

11. WHAT IS THE APPROXIMATE STUDENT TO COMPUTER RATIO WITHIN THE CLASSES LISTED IN THE COMPUTER CURRICULUM?

1:1 _____ 2:1 _____ 3:1 _____ 4:1 _____ OTHER _____

12. DOES YOUR DISTRICT HAVE A SCHOOL BOARD ADOPTED COMPUTER CURRICULUM?

YES _____ NO _____ UNSURE _____

13. DOES YOUR DISTRICT HAVE AN ANNUAL BUDGET FOR COMPUTER RELATED PURCHASES?

YES _____ NO _____ UNSURE _____

14. DOES YOUR DISTRICT HAVE A LONG RANGE BUDGET (3+ YRS) FOR COMPUTER RELATED PURCHASES?

YES _____ NO _____ UNSURE _____

15. DOES YOUR DISTRICT OFFER ANY COMPUTER TRAINING OR WORKSHOPS FOR THE TEACHING STAFF?

YES _____ NO _____ UNSURE _____

16. DO YOU THINK THE MICROCOMPUTER WILL CONTINUE TO BE USED AS AN EDUCATIONAL TOOL IN THE NEXT FIVE YEARS?

YES _____ NO _____ UNSURE _____

17. IS YOUR SCHOOL ABLE TO TAKE ADVANTAGE OF DISCOUNTED SOFTWARE FROM SOITA OR ANY OTHER SIMILAR BUSINESSES?

YES _____ NO _____ UNSURE _____

18. WOULD YOU LIKE THE RESULTS OF THIS SURVEY?

YES _____ NO _____

PLEASE PROVIDE YOUR MAILING ADDRESS IF YOU WOULD LIKE THE RESULTS SENT.

*AGAIN PLEASE RETURN THE SURVEY BY MAY 8, 1991. THANK YOU FOR YOUR TIME.

APPENDIX B

RESULTS-SURVEY
OF COMPUTER USES IN EDUCATION
(CURRICULAR & EXTRA-CURRICULAR ACTIVITIES)

1. WHO IS FILLING OUT THE SURVEY? 25% PRINC. 36% BUS. TEACHER 39% OTHER
SPECIFY _____
2. WHAT IS YOUR HIGH SCHOOL'S ENROLLMENT (9-12)?
16% 1-200 57% 201-300 25% 301-400 2% 401+
3. ARE COMPUTER CLASSES OFFERED IN THE HIGH SCHOOL? 98% YES 2% NO
4. WHICH OF THE FOLLOWING CONTENT AREAS USE THE COMPUTER IN ANY FORM AS A SUPPLEMENTAL TO CLASSROOM INSTRUCTION?

ART	<u>19%</u>	BAND	<u>19%</u>	BUSINESS	<u>76%</u>
DRIVER'S ED.	<u>0%</u>	ENGLISH	<u>53%</u>	FOR. LANG.	<u>6%</u>
HEALTH	<u>4%</u>	MATH	<u>66%</u>	PHYS. ED.	<u>2%</u>
READING	<u>21%</u>	SCIENCE	<u>60%</u>	SOC. STUD.	<u>11%</u>
				OTHER	<u>13%</u>

5. WHICH OF THE FOLLOWING BRAND(S) OF COMPUTERS IS YOUR DISTRICT CURRENTLY USING?

APPLE	_____	<u>81%</u>	*23% of the districts use a combination of these
COMMODORE	_____	<u>4%</u>	
IBM	_____	<u>43%</u>	
TANDY	_____	<u>4%</u>	
OTHER (SPECIFY)	_____	<u>4%</u> (Epson & TRS-80)	

6. IS THERE A SEPARATE COMPUTER LAB AVAILABLE FOR USE BY CLASSES OF OTHER CONTENT AREAS OUTSIDE OF THE COMPUTER CURRICULUM?

YES 55% NO 45%

7. WHICH OF THE FOLLOWING LOCATIONS HAS ACCESS TO A COMPUTER FOR THEIR OWN USE?

ATTENDANCE OFFICE	_____	<u>66%</u>	ATHLETIC DEPT.	_____	<u>32%</u>
SCHOOL NEWSPAPER	_____	<u>38%</u>	SCHOOL SECRETARY	_____	<u>68%</u>
SCHOOL YEARBOOK	_____	<u>42%</u>	PRINCIPAL	_____	<u>45%</u>
MEDIA CENTER	_____	<u>58%</u>	LUNCHROOM	_____	<u>2%</u>
TEACHER WORKROOM	_____	<u>25%</u>			
OTHER (SPECIFY)	_____	<u>15%</u> (GUIDANCE OFFICE)			

8. DOES YOUR SCHOOL DISTRICT OFFER COMPUTER KEYBOARDING AS A PRE-REQUISITE TO COMPUTER CLASSES?

THIRD-2%

SEVENTH-18%

YES 60% NO 40% IF YES, AT WHAT GRADE LEVEL? EIGHTH-21%
NINTH & TENTH-25%

9. WHICH OF THE FOLLOWING ARE OFFERED AT THE HIGH SCHOOL?

BASIC	YES <u>81%</u>	NO <u>17%</u>	UNSURE <u>2%</u>
PASCAL	YES <u>23%</u>	NO <u>72%</u>	UNSURE <u>4%</u>
LOGO	YES <u>17%</u>	NO <u>83%</u>	UNSURE <u>0%</u>

(OVER)

10. ARE STUDENTS OFFERED THE FOLLOWING?

DATABASE	YES <u>89%</u>	NO <u>11%</u>	UNSURE <u>0%</u>
SPREADSHEET	YES <u>95%</u>	NO <u>6%</u>	UNSURE <u>0%</u>
WORDPROCESSING	YES <u>98%</u>	NO <u>2%</u>	UNSURE <u>0%</u>

11. WHAT IS THE APPROXIMATE STUDENT TO COMPUTER RATIO WITHIN THE CLASSES LISTED IN THE COMPUTER CURRICULUM?

1:1 60% 2:1 36% 3:1 4% 4:1 0 OTHER 0

12. DOES YOUR DISTRICT HAVE A SCHOOL BOARD ADOPTED COMPUTER CURRICULUM?

YES 76% NO 17% UNSURE 6%

13. DOES YOUR DISTRICT HAVE AN ANNUAL BUDGET FOR COMPUTER RELATED PURCHASES?

YES 34% NO 55% UNSURE 11%

14. DOES YOUR DISTRICT HAVE A LONG RANGE BUDGET (3+ YRS) FOR COMPUTER RELATED PURCHASES?

YES 15% NO 66% UNSURE 19%

15. DOES YOUR DISTRICT OFFER ANY COMPUTER TRAINING OR WORKSHOPS FOR THE TEACHING STAFF?

YES 55% NO 45% UNSURE 0%

16. DO YOU THINK THE MICROCOMPUTER WILL CONTINUE TO BE USED AS AN EDUCATIONAL TOOL IN THE NEXT FIVE YEARS?

YES 100% NO 0% UNSURE 0%

17. IS YOUR SCHOOL ABLE TO TAKE ADVANTAGE OF DISCOUNTED SOFTWARE FROM SOITA OR ANY OTHER SIMILAR BUSINESSES?

YES 62% NO 28% UNSURE 10%

18. WOULD YOU LIKE THE RESULTS OF THIS SURVEY?

YES 64% NO 36%

PLEASE PROVIDE YOUR MAILING ADDRESS IF YOU WOULD LIKE THE RESULTS SENT.

*AGAIN PLEASE RETURN THE SURVEY BY MAY 8, 1991. THANK YOU FOR YOUR TIME.

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