THE DEVELOPMENT AND EVALUATION OF
A CURRICULUM GUIDE
FOR
SEVENTH GRADE COMPUTER SCIENCE

Submitted to the Department of Teacher Education
University of Dayton, in Partial Fulfillment
of requirements for the Degree
Masters of Science in Education

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CHAPTER I
INTRODUCTION TO THE PROBLEM

Purpose for the Study

A commitment to increased technology use in the school setting has given our school, Weisenborn Middle School in the Huber Heights City School District the opportunity to offer computer classes and educational experiences with the computer. The school administration decided that one opportunity for students to use computers would be a nine week Computer Science course for seventh grade students. This class was designated as an exploratory class.

Thirty IBM computers were donated by Wright Patterson Airforce Base to Weisenborn School. A teacher was hired in mid-August to teach the class. The first day of school the class consisted of a teacher and students. The computers were delivered, set into the classroom, properly plugged into electrical outlets for power, and programmed for classroom operation in the middle of October. We had successfully gotten the "cart before the horse." We had a teacher, students, and hardware, but no plan of how to use this course to benefit the students' academic needs. There was no course of study, no student oriented goals, no student oriented objectives, and no software.

This brief history is given to provide the reader with the setting and circumstances which required that a curriculum guide be developed to benefit students at Weisenborn Middle School. The fact was that the great potential apparent in this course that enabled students at Weisenborn to meet more academic success while using the computer as an educational tool was far more important than the unusual development and start of the class. From hence forth there is no griping about the past, but instead striving for a productive future for the students.
There were several experiences that helped in understanding the task at hand. Such experiences directed one towards the decisions needed to be made.

The rapid growth and constant changing of technology and computers for education had greatly out distanced the ability of educational institutions to update their curriculum and student oriented goals and objectives. This meant that the educators using and experienced with computer use for education were developing plans on the spot and changing criteria as opportunities arose (Florkey, 1994). This phenomena created the extreme importance of interviewing those professionals as the most influential source of knowledge for this project.

A second major guiding factor was the strong opinion by several professionals that the best way to teach "computers" and the best use of the computer for students was that of actually teaching curriculum of academic subjects and using the computer as an educational tool (Davis, 1994; Cannings & Finkel, 1993). This approach seemed more valuable to students academic success and more exciting to teachers at Weisenborn (Dezarn, 1994; Hogsten, 1994).

With this opportunity of a seventh grade computer science class for nine weeks, a purpose of developing a course usable to our school and valuable to the academic growth of our students was generated (Flye, 1994).
Problem Statement

The purpose of this study was to develop and evaluate a curriculum guide for a nine week computer science course to be used with seventh grade students at Weisenborn Middle School. Development of the curriculum guide focused on nine student objectives. Evaluation of those objectives were accomplished by educational professionals in curriculum areas and in technology use answering a questionnaire related to the nine objectives.

Assumptions

In developing this curriculum guide some assumptions were made. It was assumed that teachers and other professionals were candid and honest when discussing the potential usefulness of this course to their curriculum field. It was assumed that when a teacher or other professional stated a certain need that this course addressed that need was pertinent to that student's academic well-being.

Limitations

There were several possible limitations that caused concern in the development of this curriculum guide. One possible limitation was the varied levels of computer skills and experiences of students in the same class. Students entered the class a wide range of computer experience and knowledge of how to use a computer. Some students had the availability of a computer at home and had experience with using a computer as an educational tool. Other students had no availability of a computer at home and had not used a computer as an educational tool.
A second limitation was that computer technology was constantly changing at a rapid pace. This rapid change would possibly cause computer curriculum to be technologically out dated in a short period of time.

A third limitation was that research material was not available in large quantities due to the newness of the topic. Using the computer as an educational tool and developing a course that valued both the academic areas and the technology areas in that same course was not widely represented in research articles.

Definition of Terms

**Exploratory Class.** This is the designation Weisenborn school gives nine or twelve week courses. Students will attend these classes one period every day for the nine or twelve weeks.

**Disciplines.** The different academic areas, including but not limited to computer application, computer literacy, language arts, math, science, and social studies.

**Formal interview.** Discussion of related content pertinent to this project that is planned and scheduled for this specific purpose.

**H.H.C.S.** Identification initials for Huber Heights City Schools, the school system where Weisenborn Middle School is located in.

**Integration.** The combining of two or more curriculums into the same lesson or project.

**Informal interview.** Discussion of related content pertinent to this project that happens spontaneously.

**Learner.** The person involved with using this curriculum guide to further their knowledge and skills.
Middle School. School building and program that involves sixth, seventh, and eighth graders.

Technology. For this paper technology, unless specifically stated otherwise, will refer to a computer, its software, and hardware tools used in the educational field.
CHAPTER II
REVIEW OF RELATED LITERATURE

In researching the topic of a curriculum guide for a seventh grade computer science course two main areas of reading material provided the basis for this research. First, the area of seventh grade curriculum in academic subjects was not difficult to find. Information was found in a variety of media and professional references. The second area was very difficult to find. That area was the computer used in the educational environment. The information that was found was, in several instances, technologically outdated. Professional interviews and conversations were much more helpful than school curriculums in this area. This seemed to be true because of the rapid advancements in technology and the lack of time needed to change printed curriculum.

The research information was divided into four main topics. These topics include: Reasons for teaching with computers; Ways to teach with computers; Computers and curriculum for seventh grade students; Integrated curriculum areas. For the purpose of understanding these areas, they were discussed separately in the review of literature.
Reasons For Teaching With Computers

Several sources examined the reasons for teaching with computers. Technology is an integral part of society in the industrialized nations of the world, including the United States of America. This technology influences how people live in these nations. As technology advances change how people work, play, and interact with each other it becomes a necessity that the technology advances how and what people must learn to thrive in society (State Plan for Technology, Ohio, 1992). As the technology changes how people live the necessity becomes apparent that the technology advances change how and what people must learn.

Computers have become a common and important tool in the work place (Cannings and Finkel, 1993). They are used in areas from bookkeeping to robotics. Computers have become an integral part of the work environment. To enable people to achieve success in entering the work force, they need to have a working understanding of the computer as a tool. Students need to be prepared to use computers as tools to achieve success in the work place (Technology Plan for Huber Heights City Schools, 1992).

American business is changing in today's world. Technology is a driving force behind many of the changes. Technology strongly influences what is produced, how an item is produced, and how the item is marketed. The change of American business being driven by technology has created the need for changing education to support business and more importantly, to prepare students for this technology driven business environment (Bitter, Camuse, and Dubin, 1993). This will allow students to have skills necessary to take advantage of the technology used in business.
One of the main goals in education is to help students develop skills to become lifetime learners (Technology Plan for Huber Heights City Schools, 1992). The ability to be a lifetime learner will allow the student to increase their knowledge as they grow, advance, and coexist in a changing society. (Bitter, Camuse, and Dubin, 1993). With a commitment to the student to help them become skilled as lifetime learners, there needs to be a commitment to help them gain the skill to use the computer (Computer Science Course of Study 10-12, Huber Heights City Schools, 1992).

In today's society people need to have critical thinking skills at home and at work. Workers are needed to exhibit skills of thinking, problem solving, inventing, creating solutions, and developing products (Bitter, Camuse, and Dubin, 1993). To help prepare students for these challenges in society education needs to create scenarios and projects that will help the student to meet these needs. The computer is an effective tool for educators to use in developing and activating programs and activities that help develop these skills in the learner (Technology Plan for Huber Heights City Schools, 1992).

Ways To Teach With Computers

A second topic area identified in the research material for this project was that of ways to teach with computers. This includes a look at how computers have been used in the past in education and present ways the computer is being used in education. The effectiveness of different methods and approaches for teaching with computers is also examined and noted.
With technology entering the educational realm, decisions must be made as to how to use this technology (State Plan for Technology, Ohio, 1992). A wide variety of influences can come into play in making decisions, including financial, personal preference, availability of materials and resources, and professional training and skills. There needs to be one overriding concern and ideology concerning technology in education. That ideology should permeate all other influences for education. This ideology mandates that every decision made concerning technology in education must be made with the best interest of the learner in mind (State Plan for Technology, Ohio, 1992). With this ideology being used, it will help direct the wide variety of influences to their proper order of importance and usefulness.

The question of computer programming was addressed when examining ways to teach with computers in the schools. At the beginning of the computer age in schools, computer programming was thought of as essential for computer education in schools. This training allowed students to develop computer programs and experience how different tasks were accomplished by the computer. As technology advanced in computers, programs were developed that allowed the operation of a computer to be successful at a task without programming skills. With the exception of students interested in the specific field of computer programming, today's educational training should center around computer usage as a tool. This belief is prevalent due to most jobs in the work force use computers as task oriented and not programming oriented. (Carnings & Finkel, 1993).
In examining the past practices in computer education, distinct computer curriculum was taught that kept computer areas separate (Cannings & Finkel, 1993). Thus computer literacy, computer as a tool in education and in the work force, and computer as a problem solver were all addressed in different courses or separated into distinct sections within a course. Serious concerns arose with this practice. It was hard and impractical to totally separate these areas. In the work place a person needs to master these computer skills at the same time. Separating the school computer curriculum would take more time in the educational environment and be less practical in helping prepare students for occupations that use computers (Davis, 1994).

In looking at different curriculums that utilize the computer, one model is becoming the most popular. That is using the computer with curriculum integration (Cannings & Finkel, 1993). This is an evolving curriculum model for computers use in education. There are several positive points of combining integrated curriculum and the use of the computer. One positive value is that using integrated curriculum fits into the already existing educational structure. A second positive value of using integrated curriculum and the computer is that it adds to curriculum goals in academic areas. A third positive value is that skill areas such as finding, locating, judging, modeling, creating, discovering, and reporting, that are assets the computer brings to the learner, are used in an academically educational environment. (Cannings & Finkel, 1993).

A concern that seems to always be front and center when planning academic activities, programs, and curriculums is that of time. An attempt to take each academic goal and teach it independently in itself is a time consuming task (Lockard, Abrams, & Wesley, 1994). Using an integrated curriculum will help alleviate a time problem
(Dupree, 1994). Using an integrated curriculum will also allow the learner to experience several important academic goals, intertwined together, and practiced at the same time.

One common usage of the computer in the classroom seems to have very little value for the learner to experience the computer as an educational tool. This usage is the method of drill and practice. Drill and practice curriculum is inefficient usage of computers, the learner has very little interaction with the computer and gets into a rut repeating the computer worksheet activity (Thornburg, 1994).

Computers And Curriculum For Seventh Grade Students

Another major area of consideration for this curriculum guide was the match up of using the computer with seventh grade curriculum. If the proper curriculum was developed and used there was a better chance that teachers in other academic areas would be able to enrich the computer class with academic material. This would also allow students in the computer class to use the computer as an educational tool for other academic areas.

The computer as an educational tool gives the learner great opportunity to become more powerful and better equipped to become an independent learner (State Plan for Technology, Ohio, 1992). Schools need to develop educational environments that empowers learners to become more independent in research, data collection and organization, finding informational resources, expressing ideas and knowledge, and storing information.

The curriculum for computer use, and for any other academic curriculum area, needs to emphasize efficient use of the student's mind. Curriculum should steer away from rote repetition and emphasize learner thinking skills. Schools should be challenged
to create more "mind on task" time for learners (State Plan for Technology, Ohio, 1992). The curriculum set-up is an essential component in the school's resources to achieve the goal of having the learner more "mind on task."

The learner seems to always be able to get more involved in their own education when certain characteristics are present in the curriculum course of study. One of those characteristics is that the curriculum needs to be purposeful (Dale, 1994). The learner needs to be able to see and understand the value the activity or assignment has for them in the relationship with learning how to use the computer as an educational tool. A second characteristic is that the curriculum needs to be important. The learner needs to see the educational value to them at that level to either benefit their own learning process or to develop something to benefit a co-learner (Oberlander, 1994). A third characteristic for the curriculum to possess is that it needs to be interesting to the learner. To keep the interest of the learner will keep an interactive educational environment for the learner and challenges will be approached by the learner in a more active problem solving attitude. These three characteristics are essential for the learner to get the best possible educational growth from the curriculum.

As in any curriculum there needs to be an element of school individuality in material taught and/or in methods of teaching. The needs and abilities of Weisenborn students must be examined to develop a curriculum that best fits Weisenborn seventh grade student's needs (Grant, 1994). A curriculum that allows for a wide range of student's previous computer experience will be necessary to take into account students that have very little working experience on a computer to students that have a great deal of working experience (Chapman, 1994). Consideration also needs to be made as to the
future needs of the learner, both in the areas of education and of work force (Davis, 1994).

There is a need for academic continuity in the Huber Heights City School System. The format for the Seventh Grade Computer Science Curriculum Guide would be most valuable to the school district if it is designed to similar standards as the Computer Course of Study for Grades Ten through Twelve. This will allow a more efficient coverage of computer knowledge and skills for the learner in the Huber Heights School District. (Computer Science Course of Study H.H.C.S., 1992; Dale, 1994).

Integrated Curriculum Areas

In developing this curriculum guide discussion and examination of the integrated academic curriculum needs to be addressed. The main source of information for this subject comes from the seventh grade teachers at Weisenborn. Their input gives this guide an excellent source of information and allows the teachers involved opportunity for input concerning academic needs, and a little bit of ownership in the seventh grade curriculum. This writer believes this is essential to the utmost success of this program as students use information and resource from academic areas and integrate it with computer skills to increase their learning abilities. In this section possible goals and activities will be discussed and academic disciplines covered by those goals and activities will be identified.

A method of recording and storing information is essential to the learning process (Computer Science Course of Study, H.H.C.S., 1992). One of the most proven ways of doing this is the use of a student journal (Dezarn, 1994). The learner would need to keep a journal of terms, skills, activities, and other pertinent information for class. This
journal can be kept on paper or put on computer diskette (Chapman, 1994; Davis, 1994). The academic disciplines that would be included in this activity are computer literacy and language arts.

A major use of the computer is that of collecting information, organizing information and publishing that information in an interesting and informative way (Cannings & Finkel, 1993). These skills used by the learner will be prevalent in their future academic experiences, in many areas of the work force, and at home for personal use (Computer Science Course of Study, H.H.C.S., 1992). These computer skills are essential in today's world when preparing the learner to be a lifetime learner (Florkey, 1994). Using word processing and desk top publisher the learner can develop a newsletter on current issues in science, social studies, and technology. This newsletter can then be published for their classmates. The publishing of this material will allow the learner to see added importance in their work, pride in publishing personally developed material, and allow other students and faculty to benefit from the computer used as an educational tool (Dezarn, 1994; Davis, 1994). The academic disciplines used in this activity includes computer application, language arts, science, social studies, and technology.

The spread sheet is a basic function of the computer that is used in many areas of the learners life, both now and in their future (Bitter, Camuse, & Dubin, 1993). The learner needs to experience the usefulness of the spread sheet and examine the purpose of a spreadsheet. One effective way the learner can get experience with a spread sheet is to develop and use a spreadsheet for their grades in their class (Florkey, 1994). The learner would also be able to evaluate a spreadsheet's usefulness in this application and potential
usefulness in other applications. The academic disciplines in this activity would include computer application, computer literacy, and math.

The development and use of a data base is another basic use of the computer (Lockard, Abrams, & Wesley, 1994). The gathering, organizing and sorting of various data is a valuable skill and activity to benefit the learner in their academic career, many work experiences, and at home (Florkey, 1994; Davis, 1994). One effective way the learner can examine the purpose of a data base, develop and use a data base to generate, organize, and sort data is by developing a data base using the states in the United States of America as a topic (Trent, 1994). This data can then be published for classmates. The academic disciplines included in this activity are computer literacy, computer application, language arts, and social studies.

The computer used as an academic tool is an excellent vehicle in helping the learner participate in problem solving tasks and experience simulated situations (Cannings & Finkel, 1993). These activities allow the learner to practice problem solving skills, examine and evaluate their solutions, and evaluate their thought processes they used to come to those solutions. These activities also allow the learner to experience close to real life situations and problems and enables the learner to use their knowledge and problem solving skills to effectively get through these situations (Hellinger, 1994). The learner can be given problem solving tasks and simulation situations at different levels of difficulty and allowed to complete the tasks. The learner would also be allowed to evaluate their effectiveness and problem solving skills used for the task (Burchfield, 1994; Hellinger, 1994). The academic disciplines used in this activity include computer application, math, science and language arts.
A data base is a valuable educational tool in organizing, sorting and comparing data. The learner can use a data base to record and compare information from a science experiment. The learner will be able to sort and chart their information gathered during this experiment (Burchfield, 1994; Hogsten, 1994). The academic disciplines used in this activity includes computer application, math, and science.

Technology in today's world is quickly changing. The learner of today has accessibility to more technology and tools for technology than at any other time in history (Bitter, Camuse, & Dubin, 1993). At the same time, because of this technology explosion, there is a great need for the learner to become aquatinted with the computer technology available to them today (Dupree, 1994). The learner needs to examine computer hardware and software available, what hardware and software is compatible to each other, what is financially reasonable, and what is coming in the near future. One activity that could help the learner meet this academic need would be to allow the learner to gather information on available hardware with the intent to purchase so reasonability and financial accountability is a factor (Hogsten, 1994). The learner must go through the process of identifying personal goals and needs that the hardware and software would satisfy. The learner would hypothesize the relationship between differently equipped hardware and the cost. It is important for the learner to also identify software needed to meet the identified personal goals and needs (Davis, 1994). The academic disciplines included in this activity are computer application, language arts, math, science, and technology.

Along with the growth of technology in our society, a growth of related occupations and career changes have developed (Dupree, 1994). Many occupations are directly related to the computer field, most other occupations are being influenced by computer
technology. The learner of today needs to see these occupations. An activity is needed to allow the learner to see the wide range of computer related occupations present in our society. One possible way is by having guest speakers come into the classroom and explain and demonstrate the value and use of technology in their occupations. Another way of meeting this goal is by having the learner interview professionals in technology careers and then have the learner share the results of the interviews (Davis, 1994). The academic disciplines used in this activity includes language arts and technology.

Interviews with computer educators were conducted and a review of recent literature was examined in preparation for the development of this Curriculum Guide for Seventh Grade Computer Science. The writer believes a well developed curriculum can be developed and evaluated to meet the needs of seventh grade students at Weisenborn.
CHAPTER III
PROCEDURE

Subjects

This curriculum guide was written for a seventh grade computer science exploratory class. This class is in session for nine weeks and is designed for one teacher having responsibilities for the class. Subjects of the curriculum guide evaluation were educational professionals in two major areas. One area of expertise of the professionals was educational curriculum including computer literacy, language arts, math, science, and social studies. The other area of expertise of the professionals was computer technology use. Twelve educational professionals evaluated the curriculum guide using the curriculum survey. Five educational professionals evaluated the curriculum guide using the computer technology use survey.

Setting

School. Weisenborn is a sixth through eighth grade school building in the Huber Heights City School District. Weisenborn is one of two middle schools in the district. Approximately six hundred students are split reasonably evenly to each middle school at each grade level. Students are assigned a middle school by which elementary school they attended in fifth grade. Huber Heights City Schools recently gained financial strength and the school board made a commitment to improve the technology opportunities for their students. Sixth graders attend a nine week course in keyboarding. The seventh
graders attend a nine week course in computer science. Both of these courses are classified at Weisenborn as exploratory classes. Eighth graders attend an eighteen week course in computer literacy.

**Community.** Huber Heights is located in North East Montgomery County in Ohio. There is a wide range of racial, social, and economic backgrounds in the people of Huber Heights. The majority of residents are Caucasian, but there are significant populaces of African Americans, Asian Americans, and Hispanic Americans. These racial and social groups are intermingled in the community and do not represent a segregated populous. There are, however, specific areas in the community of economic groups. The school system makes a conscious effort to mix students of different economic backgrounds into each middle school. Wright Patterson Airforce Base is the largest employer of parents of students at H.H.C.S.. This fact probably contributes to the high mobility rate of students at H.H.C.S..

**Development of Curriculum**

In the development of this curriculum for this seventh grade computer science course of study several aspects of the procedure were addressed as the process progressed. Such aspects of: Purpose and direction of the course; Method at which instruction is presented and skills gained; Ability to critique curriculum guide on educational value; were investigated, defined, and mapped out to attain success in this endeavor.
The purpose of this course is identified by looking at the outcomes the administration and staff desire from this course. Formal and informal meetings were held with teachers, department heads, administrators, and counselors to gain input into the desired student goals and curriculum objectives these professionals wanted to see met. A dated log was kept that included date professional person was talked to and information given by the professional including but not limited to: attitude of professional toward this computer science course having value to their educational goals, their suggestions and comments of what should be offered in this course, how the student should be evaluated, and how the course should be offered.

In choosing the methods at which the curriculum was developed several sources of information were utilized. The Huber Heights Computer Science Course of Study grades ten through twelve and The State Plan for Technology for the State Board of Ohio were utilized to help develop student goals and course objectives for using the computer as a learning tool. Teacher input and the review of journals were utilized to help develop student goals and course objectives for the areas of math, science, social studies, language arts, and life skills. Professional textbooks and journals were used to investigate the feasibility of integrating the curriculum.

Set-up and Design

The curriculum guide was developed into sections. These sections included: Philosophy and Mission Statement; Educational Goals; Student Objectives; Suggested software usage as available to the lab and suggested activities to be used; Methods of
Evaluation of Student Skills; Physical set up of lab; Chart showing individual discipline areas and how each activity is integrated.

The Philosophy and Mission Statement were used to tie this course with the same nature of education all curriculum and courses have at Huber Heights City Schools. The school's mission statement was used as a prototype.

Educational goals were stated clearly to identify general areas of knowledge the student was expected to learn. With each educational goal the academic area or areas were identified and academic goal or goals were stated.

Student objectives were clearly stated to identify specific tasks and skills the student was expected to learn. With each objective suggested procedures and resources were stated for better implementation of activities for students' benefit in successfully completing student objectives. Related program goals were stated with each student objective.

A list of available software and suggested activities was generated to enable the teacher a base of programs that meets the educational goals and student objectives. This section also encourages flexibility in order to keep up with changing technology.

Evaluation of student's skills was developed for a reference point for the teacher and the student. A teacher was encourage to evaluate a student's knowledge and skills in a variety of ways.

Physical set up of the lab emphasized an educational environment conducive to students using technology tools such as computers, printers, and other technology tools. Emphases was placed on student comfort, accessibility to equipment, electrical availability, safety to students and equipment, and teacher mobility.
Curriculum Guide Evaluation

After the development of the curriculum guide it was evaluated in two different ways. The individual academic goals and objectives were evaluated by professionals in specific academic areas. A total of twelve educational professionals evaluated the academic areas of the curriculum guide. These professionals represented the following academic areas: computer literacy, language arts, math, science, and social studies. A survey was developed that enabled the professional to evaluate each student objective in the following way: 3 for very valuable; 2 for potentially valuable; 1 for some academic value; 0 for no value; and NA for not applicable to their subject area.

The second evaluation was done by professionals with expertise in the field of computers in education. Five professionals evaluated the curriculum guide on the value of its use of computer technology. Each professional answered a survey. This survey allowed them to evaluate computer technology use in the curriculum guide in the following manner: 3 for very appropriate; 2 for potentially appropriate; 1 for some what appropriate; 0 for not appropriate.

After information from both surveys were gathered and recorded a comparison of the data from the surveys was completed. A graph was used to show the comparison of the two surveys.

Due to the nature of today's technology that is rapidly changing this guide was maintained on computer disc as well as paper. The storage on disc enabled the curriculum guide to be updated as technology changes.
CHAPTER IV
RESULTS

The curriculum guide was developed into four main sections. The first section contains a philosophy and mission statement. These writings mirror the philosophy and mission statements of curriculum guides in the Huber Heights City School system. The second section contains the educational program goals. There were six goals stated relating to student skill and performance. The third section contains student objectives. The student objectives state specific knowledge and skills the student needs to learn. This section also gives suggested procedures and resources to use. Related program goal numbers are also given for reference purposes. The fourth section contains two charts. One chart shows the relationship of the program goals and the student objectives. The other chart shows the relationship of the student objectives and academic curriculum areas.

This format best represented the ideas and concerns represented in the review of literature. Input from written material and personal communications was used to develop the philosophy of education and mission statement, program goals, and student objectives.

The evaluation of the curriculum guide was accomplished by educational professionals answering a survey. Twelve professionals evaluated the academic curriculum areas of the curriculum guide. Five professionals evaluated the computer technology use of the curriculum guide. The data showing the results of the surveys are on Tables one, two, and three.
### Table 1

Survey for Curriculum Areas.

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| | 23 | 33 | 24 | 29 | 29 | 23 | 27 | 18 | 27 |
| | 2.3 | 2.8 | 2.4 | 2.4 | 2.4 | 2.3 | 1.5 | 2.3 | ave. |

### Table 2

Survey for Computer Technology Use.

<table>
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| | Total | Ave. |
Table 3
Comparison of Academic Areas and Technology Use.

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Table 1 shows the results of each survey for the evaluation of the academic curriculum areas of the curriculum guide. It also shows the raw totals of each student objective. The last row shows the average, three is a maximum score for each student objective. Table 2 shows the results of each survey for the evaluation of computer technology used in the curriculum guide. It also shows the raw totals for each student objective. The last row indicates the average score for each student objective, three is a maximum score. Table 3 showed a comparison of the average of each student objective relating between curriculum areas, table 1, and computer technology use, table 2.

Student objective 1 (the student will define the following terms: keyboard, CPU, ROM, RAM, load, save, file, cursor, hardware, software, hard disk drive, CD-ROM (drive), laser disk (drive), monitor, printer, fax, modem, mouse, double density disc, high density disc, compact disc (CD), and laser disc) was scored at a 2.3 average by curriculum area evaluators. They gave a wide range of scores, from NA for not applicable to their subject area to a maximum score of three. This objective received a higher score from computer technology use evaluators shown in table two. The average score was 2.8 and no evaluator gave below a two. This objective had a wide difference of scores between the two groups of evaluators as indicated in table three. This wide difference may be due to the emphasis of this objective on computer literacy and terminology.
Student objective 2 (the student will use simulation and application programs to problem solve tasks. Student will evaluate academic disciplines used and ways the computer helped in the task) received the highest score of any objective from curriculum area evaluators. Nine of the twelve evaluators gave this objective a maximum score of three. No evaluator gave a score lower than two. Evaluators of computer technology use gave a maximum score average. Each evaluator gave a three for this objective. This objective also had the highest average combined score of tables 1 and 2. This high score may be due to the educational value of simulation and application activities to the student. The value of these activities was discussed in the review of literature and the high evaluation scores given by the educational professionals shows support of that review of literature.

Student objective 3 (the student will use current magazines, newspapers, and other media to glean information in science, social studies, government, and technology. The student will use a word processing program to create a newsletter concerning this information relevant to the student's academic and social life. This newsletter will be published for distribution to classmates) scored a 2.4 average from evaluators of curriculum areas. Evaluators in science and language arts gave the highest scores. Evaluators of computer technology use gave a much higher average score at 2.8. The strong use of the computer as a word processor and publication of student generated material made this objective extremely valuable to language arts and computer technology use areas.

Objective 4 (The student will examine the purpose of a spreadsheet. The student will develop and use a spreadsheet to record and figure data such as grades, expenditures, and survey results. The student will use the spreadsheet to check hypotheses on critical
thinking strategies in calculating results of given data. The student will evaluate the usefulness of a spreadsheet) received an average of 2.4 from evaluators of curriculum areas. All academic areas gave a value to this objective, only the language arts area gave below a two. Evaluators of computer technology use gave an average score of 2.6. This is a very small difference in average score between evaluators in tables one and two. Evaluators in the math curriculum gave the highest scores due to the emphasis of math in a spreadsheet.

Objective 5 (the student will examine the purpose of a database. The student will develop and use a database to generate, organize, and sort data. This data can be published for classmates) received a 2.4 from evaluators of curriculum areas. Every evaluator saw academic value in this objective, with only one evaluator in math scoring this objective below a two. Computer technology use evaluators gave an average of 2.6 for this objective. The concern of this objective is that it does not state what data will be used or from what curriculum area to use.

Objective 6 (the student will use a database and/or a spreadsheet to record and compare information from a science experiment) received an average score of 2.3 from the curriculum areas evaluators. The lower score was attributed to the objective being specific in its academic use. Evaluators in the science area gave the highest scores. Evaluators of computer technology use gave an average score of 2.4 which was the lowest numerical average score in table two. This objective had the smallest difference in average scores between evaluators represented in tables one and two.

Objective 7 (the student will develop material using the computer that benefits the student and other students in learning) received an average score of 2.3 from curriculum area evaluators. This is a low score compared to other average scores from
curriculum area evaluators. In contrast, computer technology use evaluators gave an average score of 2.8, which was a very high score. The difference in these two averages is substantial. This difference is due to no specific academic area designated in this objective, thus academic area evaluators saw potential usefulness. Evaluators of computer technology use saw this objective as an excellent opportunity for students to use the computer as a learning tool.

Objective 8 (the student will gain a basic knowledge of current available computer hardware and software in the market place. Emphasis will be placed on the ability to select a personal computer system that meets the needs of students and families for today's society. Cost and equipment compatibility will be emphasized. Students will hypothesize the relationship between differently equipped hardware, different software and the cost of that hardware and software) received the lowest average score from curriculum area evaluators. The average score of 1.5 was substantially lower than any other objective. Seven of the twelve curriculum area evaluators saw little or no academic value in this objective. Evaluators for computer technology use gave an average score of 2.4, which was one of the lowest average scores of objectives in table two. The difference of the average score on this objective was the greatest of any of the nine objectives. Computer technology use evaluators rated this objective higher than their colleagues in the curriculum areas. This indicated that the computer technology use evaluators were more sensitive to the needs of students to be computer consumer aware as stated in the review of literature.

Objective 9 (the student will examine a wide range of computer related occupations and discuss the significance of the computer in those occupations) received a 2.3 score from curriculum area evaluators. Evaluators in the area of science gave the
highest ratings for this objective. Computer technology use evaluators rated this objective at 2.8, a high rating. This represents a significant difference of this objective's scores between the two tables. Computer technology use evaluators showed more concern of students awareness of the importance of computers in the work place.

The scores of each of the nine student objectives were lower from the curriculum area evaluators than from the computer technology use evaluators. A total score of 20.7 was given by evaluators of curriculum areas. The computer technology use evaluators gave a total score of 24.2. This difference indicated that the curriculum guide was perceived as being educationally stronger in the computer technology use areas than in the academic curriculum areas by the evaluators.
CHAPTER V
SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

This curriculum guide developed for this project and its evaluation covered the following areas: summarize the justification and purpose for the study; restate the problem statement; summarize the procedures, format, and content of the guide; and summarize the professional evaluations of the guide.

A commitment to increase technology use in the Huber Heights City Schools created the opportunity for a seventh grade computer science class. This class necessitated the development of a curriculum guide for seventh grade computer science.

A combination of research material and interviews and discussions with educational professionals served as the sources of information used in creating this curriculum guide. The input by educational professionals was essential due to the fact that it was difficult to find up-dated written material and computer curriculums.

The purpose of this study was to develop and evaluate a curriculum guide for a nine week computer science course to be used with seventh grade students at Weisenborn Middle School. Development of the curriculum guide focused on nine student objectives. Evaluation of those objectives were accomplished by educational professionals in curriculum areas and in technology use answering a questionnaire related to the nine objectives.
Educational professionals evaluating the curriculum guide in computer technology use gave higher scores for each of the nine student objectives when compared to results from educational professionals evaluating the curriculum guide in curriculum areas.

Conclusions

In making conclusions concerning the curriculum guide each section of the guide was discussed as was the entire guide. The survey results and comments written on the surveys were used to help evaluate and draw the conclusions.

The philosophy of education and mission statement was stated to help the reader understand the basic reasoning and purpose for the educational process. The statements also helped this curriculum guide to tie into the school district's plan. Larry Dale stated on his evaluation, "Appropriate for the age of the students as well as the philosophy of the district's Technology Plan."

The program goals were used to guide the student objectives, activities, and ways to evaluate students' progress. Program goals were stated as precisely as possible to help the reader to get a clear understanding of the educational goals given to the students. Due to this curriculum guide written for a nine week course, six program goals were realistic to meet. Completion of these goals will give the student a well rounded experience with computer use in education. The student will have experiences in computer literacy, computer applications, the use of the computer as a tool for learning, integration of curriculums, and technology available to the student.
The student objectives were evaluated higher by those evaluating for computer technology use in comparison to those evaluating academic value. Objective numbers two, four, five, and six were evaluated at a similar score from both groups of evaluators. This would indicate that according to these evaluators the above mentioned objectives have a similar educational value in both the academic curriculum area and computer technology use area.

One reason for the low evaluation of objective one (the student will define the following terms: keyboard, CPU, ROM, RAM, load, save, file, cursor, hardware, software, hard disk drive, CD-ROM (drive), laser disk (drive), monitor, printer, fax, modem, mouse, double density disc, high density disc, compact disc (CD), and laser disc) by several evaluators in the academic curriculum area may have been due to the complexity of the objective. Another reason may have been due to the emphasis of computer terminology evaluators in other academic areas did not see this a important as their subject.

Objective 3 (the student will use current magazines, newspapers, and other media to glean information in science, social studies, government, and technology. The student will use a word processing program to create a newsletter concerning this information relevant to the student's academic and social life. This newsletter will be published for distribution to classmates) had a much lower score from academic area evaluators. This may have been due to the objective being more readily available to science and language arts. There should be no restrictions for social studies and math to be applicable for this objective.
Academic area evaluators scored objective 7 (the student will develop material using the computer that benefits the student and other students in learning) lower than the technology use evaluators possibly due to the awkwardness of the stating of the objective. It does not clearly state an exact activity or curriculum area. Evaluators not experienced with using computers or not desiring to use computers in their teaching strategies would possible keep away from incorporating this objective.

Student objective 8 (the student will gain a basic knowledge of current available computer hardware and software in the market place. Emphasis will be placed on the ability to select a personal computer system that meets the needs of students and families for today's society. Cost and equipment compatibility will be emphasized. Students will hypothesize the relationship between differently equipped hardware, different software and the cost of that hardware and software) had a substantially lower evaluation score of those evaluating for academic curriculum area. This may well be a measure of the teacher's view as to the importance of computers and technology in education.

Objective 9 (the student will examine a wide range of computer related occupations and discuss the significance of the computer in those occupations) received low scores from language arts and math evaluators. These evaluators may not have envisioned there curriculum areas being used, thus a rating on NA would have better represented their judgments.

The student objectives allowed the students to meet the program goals in an integrated academic learning environment. The objectives stressed a hands-on approach and gave the teacher the flexibility to adjust activities to meet current technology availability. The student objectives allowed the teacher to evaluate the students' achievements in a variety of ways.
With the combination of the information used in the review of literature and the results from the surveys the writer concludes that this curriculum guide meets the educational needs of seventh grade students at Weisenborn Middle School.
Recommendations

In implementing this curriculum guide several recommendations were given. Computer software is just as important as the hardware to perform the student objective tasks. Make sure that the software you have will accomplish the task being attempted and that the educational goals are attainable while using that software.

A second recommendation is to allow the cooperating academic area teachers to have some time on the computers to gain experience with using the computer as an educational tool before the start of a student objective activity that their students will participate in. This will allow that academic area teacher and you to have some insight for possible problems and the opportunity to suggest to students the best ways to approach problems to solve them.

A third recommendation is that of allowing students to work together. This could be the best way to overcome one of the limitations mentioned. Students that do not have as much computer experience can learn a new skill as they work with someone who has more experience.

A fourth recommendation is to be ready to modify your program as technology advances. Constantly be looking for ways to up-date the program through outside sources, software, and hardware.
Appendix A

A CURRICULUM GUIDE

FOR

SEVENTH GRADE COMPUTER SCIENCE

JUNE, 1995

by David W. Florkey
TABLE OF CONTENTS

Table of Contents .................................................................2
Philosophy of Education and Mission Statement .....................3
Program Goals ........................................................................4
Student Objectives / Suggested Procedures and Resources /
Related Program Numbers .......................................................5
Chart / Integrated Discipline Areas .......................................15
Philosophy of Education and Mission Statement for the
Curriculum Guide for Seventh Grade Computer Science
at Weisenborn Middle School

The primary purpose of public school is to help young people to gain knowledge, develop the habit of becoming lifetime learners, and to develop the skills to apply this knowledge throughout their lives in solving problems and making decisions. (Generated from the HHCS Computer Science Course of Study Grades 10 - 12.)

To fulfill this philosophy the Curriculum Guide for Seventh Grade Computer Science at Weisenborn Middle School takes as a mission to seek assistance from parents and the community in helping the educational professional in guiding the students to gain knowledge; to develop the habit of being motivated, lifetime learners; and to develop the skills of reasoning to apply this knowledge throughout their lives in solving problems and making decisions.
SEVENTH GRADE COMPUTER SCIENCE

PROGRAM GOALS

I. The student will understand the need to become computer literate, and examine the wide range of computer related occupations.

II. The student will understand terminology used in identifying computer parts, accessories, ideals, and software.

III. The student will identify the importance of using the computer as a tool to be used for learning.

IV. The student will become aware of the many choices available in purchasing a computer and related technology, equipment and software.

V. The student will be able to use the computer to solve problems and perform tasks accurately.

VI. The student will become aware of the many changes in technology, science, and social studies.
STUDENT OBJECTIVES / SUGGESTED PROCEDURES AND RESOURCES / RELATED PROGRAM NUMBERS.

OBJECTIVE # 1

The student will define the following terms: keyboard, CPU, ROM, RAM, load, save, file, cursor, hardware, software, hard disk drive, CD-ROM (drive), laser disk (drive), monitor, printer, fax, modem, mouse, double density disc, high density disc, compact disc (CD), and laser disc.

SUGGESTED PROCEDURES AND RESOURCES:

Teacher input: teacher notes; media print; class discussion;

Student response: Journal writing; notebook; class discussion; application.

RELATED PROGRAM NUMBERS: #I  #II  #IV
OBJECTIVE # 2

The student will use simulation and application programs to problem solve tasks.

Student will evaluate academic disciplines used and ways the computer helped in the task.

SUGGESTED PROCEDURES AND RESOURCES:

Teacher input: computer application programs; task evaluation cards.

Student response: Journal writing; task evaluation cards; cooperative learning activities.

RELATED PROGRAM NUMBERS: #I  #III  #V
OBJECTIVE # 3

The student will use current magazines, newspapers, and other media to glean information in science, social studies, government, and technology. The student will use a word processing program to create a newsletter concerning this information relevant to the student's academic and social life. This newsletter will be published for distribution to classmates.

SUGGESTED PROCEDURES AND RESOURCES:

Teacher input: Group work; research and library time; outside media; word processing program; writing process; publishing materials; distribution opportunity.

Student response: Cooperative learning; outside materials; research; distribution of material, interviews, written summaries from articles.

RELATED PROGRAM NUMBERS: #I  #II  #III  #V  #VI
OBJECTIVE # 4

The student will examine the purpose of a spreadsheet. The student will develop and use a spreadsheet to record and figure data such as grades, expenditures, and survey results. The student will use the spreadsheet to check hypotheses on critical thinking strategies in calculating results of given data. The student will evaluate the usefulness of a spreadsheet.

SUGGESTED PROCEDURES AND RESOURCES:

Teacher input: Spreadsheet program; survey samples; word processing program.

Student response: Survey samples; spreadsheet formulas; data; charts and graphs.

RELATED PROGRAM GOALS: #I  #II  #III  #V
OBJECTIVE # 5

The student will examine the purpose of a database. The student will develop and use a database to generate, organize, and sort data. This data can be published for classmates.

SUGGESTED PROCEDURES AND RESOURCES:

Teacher input: database program; information material; printing and distribution opportunity.

Student response: cooperative learning; information material; organization and distribution of database.

RELATED PROGRAM GOALS: #II  #III  #V
OBJECTIVE #6
The student will use a database and/or a spreadsheet to record and compare information from a science experiment.

SUGGESTED PROCEDURES AND RESOURCES:
Teacher input: Working with science teacher to gain the data needed to organize.
Student response: Participate in the experiment; organize data; compare data; report findings to the science teacher.

RELATED PROGRAM GOALS: #II #III #V #VI
OBJECTIVE # 7

The student will develop material using the computer that benefits the student and other students in learning.

SUGGESTED PROCEDURES AND RESOURCES:

Teacher input: facilitate discussion; check journals; supply software to help create materials; work with teachers in other subject areas to identify academic information to be used.

Student response: participate in discussion; record in journal; develop materials to aid in learning of academic materials, distribute to other students and teachers.

RELATED PROGRAM GOALS: #I  #III  #V
OBJECTIVE #8

The student will gain a basic knowledge of current available computer hardware and software in the market place. Emphasis will be placed on the ability to select a personal computer system that meets the needs of students and families for today's society. Cost and equipment compatibility will be emphasized. Students will hypothesize the relationship between differently equipped hardware, different software and the cost of that hardware and software.

SUGGESTED PROCEDURES AND RESOURCES:

Teacher input: Description of equipment and software; advertisements that include descriptions and costs of hardware and software; price range and financing methods.

Student response: Identify needs and expectations of the student in relation to hardware and software technology available; equipment and software to meet those needs; examine adds and go to stores to price equipment and software; list reasons for purchasing of equipment and software; identify costs of purchase of equipment and software.

RELATED PROGRAM GOALS: #I  #II  #IV  #VI
OBJECTIVE#9
The student will examine a wide range of computer related occupations and discuss the significance of the computer in those occupations.

SUGGESTED PROCEDURES AND RESOURCES:
Teacher input: Guest speakers; student reports on interviews of professionals in technology careers; published material on computer related fields; class discussions.
Student response: Interviews; short reports; class discussions.

RELATED PROGRAM GOALS: #I #II #IV #VI
### Table 1
Integration of Program Goals and Student Objectives

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### Table 2
Integration of Student Objectives and Curriculum Areas

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</table>
SURVEY OF SEVENTH GRADE COMPUTER SCIENCE CURRICULUM

Please read the following objectives and rate each objective as to its value in the curriculum area or areas you teach. Please fill out a survey for each curriculum area that you teach. Use the following scale:

3 very valuable (could fit into curriculum you use).
2 potentially valuable (could be developed to fit the curriculum you use).
1 some academic value (not in current curriculum, but has academic value for student).
0 no value (no academic value).
NA not applicable to my subject area.

ACADEMIC AREA: ____________________________

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SURVEY OF SEVENTH GRADE COMPUTER SCIENCE CURRICULUM

Please read the following objectives and rate each objective as to its value in using computer technology in an appropriate manner to help students learn. Use the following scale:

3 very appropriate (uses computer technology and emphasizes appropriate use of the computer while strongly benefiting the student).

2 potentially appropriate (with appropriate hardware and software computer use will be very beneficial to the student for experience with computer technology).

1 some what appropriate (computer use is adequate, but with changes would be much more beneficial to the student).

0 not appropriate (no computer technology benefits for the student).

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CURRICULUM GUIDE EVALUATORS

Bostelman, Joan: "Math Teacher" Weisenborn Middle School, Huber Heights Ohio, 1994.


Dezarn, Vivian: "Language Arts Teacher" Weisenborn Middle School, Huber Heights Ohio, 1994.

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Flye, Alisia: "Principal" Weisenborn Middle School, Huber Heights Ohio, 1994.

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REFERENCES


_Arcanum Butler Course of Study_. Arcanum Butler School District; Arcanum, Ohio 1989.


_Computer Science Course of Study 10-12, H.H.C.S._, Huber Heights City Schools; Huber Heights, Ohio, February 13, 1992.


_State Plan for Technology for the State Board of Education._ State Board of Education; Columbus, Ohio, November 1992.


PERSONAL COMMUNICATIONS


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