

**ELEMENTARY STUDENT USE OF  
ELECTRONIC DATABASES**

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## Table of Contents

Chapter 1	The Information Explosion - . . . . .	Page 1
	The Context of the Schools	
Chapter 2	Review of the Literature on . . . . .	Page 6
	Educational Use of Computer Databases	
	1. Appropriate Use of Computers In Schools	Page 7
	2. Using Databases in the Classroom	Page 9
	3. Databases Across The Curriculum	Page 14
	4. Getting Started With Databases Step by Step	Page 15
	5. Some Final Comments	Page 16
Chapter 3	Lesson Plans for Teaching With . . . . .	Page 18
	Computer Databases - A Resource Manual	
Chapter 4	Evaluation of the Resource Manual. . . . .	Page 25
Chapter 5	Next Steps In Using Computer . . . . .	Page 37
	Databases	
References	. . . . .	Page 41

## Chapter 1

### The Information Explosion- The Context of the Schools

Quality education is founded on a deep respect for the child as a learner. This underlying belief influences the educator's understanding of the child's world and the role of empowerment. As educators, we must provide children with experiences that enable them to learn how to effectively interact with all components of their world. This project is based upon four presuppositions concerning the child's world.

First, a child's world is characterized by a continually increasing amount of information and facts. Children base their personal interactions on their individual perceptions and understandings of this knowledge base. Children cannot be expected to be aware of all the information that is known today. We must provide them with the ability and skills needed to access information as it is needed.

Second, paralleling the rapid explosion of information and knowledge is technological advancement. Technology is developing and improving the capabilities of learners to access available information. The development of computer capabilities, telecommunications, and of storing, retrieving, and processing information has provided learners with almost instant access to the information of the world.

Third, children are being challenged to use information available to them to make more and more complex decisions. The decisions that children are making have a great impact on their personal lives, the lives of other individuals, and on the environment in which they live. Many of these decisions are made without accessing adequate information from all that is available.

Fourth, today's technology can provide young people with access to information to be utilized in their decision making process but young people must develop the skills necessary to effectively retrieve and use the information. It is educator's responsibility to provide children with the necessary knowledge and skills to utilize modern technology to access and process information. Learners need to be able to make the connections between the individual

components of the information. They must learn to look for these relationships and apply them in their decision making processes.

Children have the potential to tap into vast amounts of information, to process it effectively, and to base their decisions on the relationships that they see in the information. By using developed technology children can be empowered to deal effectively with the effects of the information explosion. Computer databases can assist learners with the organization, retrieval and processing of this information. Computer databases are a tool that children should become familiar with to assist them in becoming effective decision makers. These databases provide children with an opportunity to organize their information and to look for the relationships that exist within the information base.

This project is designed to begin the process of involving children with databases. By involving children with computer databases, they will become knowledgeable about databases and their use. Some specific learning outcomes for the project are the following:

1. Students will acquire a basic understanding of computer databases. They will know the various components of a database and the use of each component.
2. Students will learn how to interact with a database. They will know the procedures that are used to manipulate the data to meet a personal informational need.
3. Students will develop their own database to meet an informational need or how to choose an existing database to meet a need. Students will know where and when a database would assist them in information processing.

Students will be better able to deal effectively with information that is available to them if they know what a database is, how to use the information found within a database, and where and when it is appropriate to use a database.

If one accepts these initial four presuppositions; that there is an increasing amount of information that learners must interact with, that computer technology enables one to have access to and the ability to manipulate information with the use of databases, that

young people are making more difficult decisions, and that it is the role of educators to facilitate within learners the ability to function in an information world and to empower the learners to become more effective users of information and decision makers; then one must see the need for children to use electronic databases in the processing of information.

## Chapter 2

### Review of the Literature on Educational Use of Computer Databases

Today's educational system is undergoing a total metamorphosis. Students are preparing to enter the twenty-first century with an educational system that was established and designed for the thirteenth and fourteenth centuries. The technological and pedagogical developments of the past led to the establishment of classrooms and current teaching practices. We must now use the existing technology and current educational research to transform schools and education to reflect our current technological state. Schools that are using computer technology in their curricular programs provide some hope for the future. Many of these lighthouse schools, though, are using the Model T's of the computer era. (Mecklenburger, 1990)

Few educational institutions are keeping pace with current technological developments.



## 1. Appropriate Use of Computers in Schools

Before incorporating new computer technology into schools, one must review research to determine the most appropriate methods for this inclusion. Benjamin, Bryant, and Mack (1990) identified several principles that should guide the development of computer usage in elementary schools. First, that computer education should be integrated with the regular curriculum (Benjamin, p.49). Second, that a traditional computer literacy program should be de-emphasized. There should be a shift from learning about computers to one where learners use computers in their learning process. Computer use is especially appropriate in problem solving and in situations requiring higher level thinking skills. Hunter (1984) recommends that students need to use computers to learn how to handle information. Finally, Benjamin, Bryant, and Mack (1990) propose there should be a shift from school programs emphasizing computer programming to programs that involve the use of the computer and existing software.

For these principles to be adopted, the model that schooling is based on must change. Educational institutions and practice must evolve from a paradigm which places total reliance on the teacher's

experiences to one where the teacher facilitates the learner's total development.

The original school paradigm called for all experiences and knowledge to be transferred from a teacher to a single student. With more people demanding an education, the educational paradigm shifted to one where the experiences and knowledge of the teacher were shared with several students. The paradigm that we must now move to is a technology-based paradigm. Here the teacher becomes a facilitator of the learner's development. The learning experiences are developed jointly by the teacher and learner. Both became active participants in the learning process.

The use of computer databases is both appropriate and necessary in this paradigm. Opportunities exist for teachers and learners to share in educational experiences when databases are incorporated into the educational system. Care must be taken to develop an implementation plan that will enable teachers to successfully develop strategies for including the use of databases into the existing curriculum. Research has shown that innovative changes in the educational process must be done gradually. (Branson, 1990)

Teachers must be provided the information and given adequate opportunity to incorporate it into their personal educational philosophy and practice.

## 2. Using Databases in the Classroom

Articles and information on the use of electronic computer databases are readily available for educators to use in the planning of projects that incorporate databases into the curriculum. A large number of articles outline the processes used in specific projects that incorporate databases into the curriculum. Suggestions on ways that teachers can involve their students in similar projects are also given.

Little research has been conducted that states in objective terms the educational outcomes found when students use computer databases as part of their regular educational program. A qualitative study by Freeman (1984) studied classrooms involved with databases and outlined the educational consequences of the interactions as perceived by the teachers involved. Freeman studied eight elementary and middle schools where classrooms were conducting projects using computer databases. By observing students in each of the classrooms, an understanding of the students use of the computers was gained. From these observations combined with student and teacher interviews, Freeman concluded that learning as defined within the context of each classroom was enhanced by incorporating computer databases. Underwood (1988) identified and

studied the expressed aims and objectives of teachers with the actual classroom outcomes in projects where students were involved with computer-based information processing. The eighteen case studies Underwood researched collectively provided support for the argument that "use of computer-based information handling packages in schools would be beneficial." (Underwood, p.99)

Underwood studied the importance and value of using information handling packages in classrooms to encourage the development of higher level thinking skills. Eighteen classrooms were subjectively studied with teachers providing an analysis of the procedure they use in each of their rooms. The study identified several key points. The most critical was that the cognitive skills associated with questioning led to the development of higher level thinking skills. Success was dependent upon the activities planned by the teachers. Students also were found to be highly motivated and interested in the development of higher level thinking skills by incorporating databases into the curriculum. A process of generating problems, writing questions about the problems, and then finding answers to the questions within the information stored in the database was found to aid the development of more complex thinking skills. The relative

effectiveness of this was still dependent upon the quality of the activities planned by the teacher.

(Watson, 1988-89)

Elder (1989) extends this argument and states that databases can help students learn higher level thinking skills only if they are effectively used. Databases provide only the medium for developing such skills.

"The rest is dependent on the well-conceived implementation of solid teaching strategies that engage students in higher order thinking." (Watson, Strudler, 1988-89, p.47)

Information on the process or strategies that teachers should follow when including databases into their curriculum is delineated by several researchers. Newman and Rooze (1987) state that students should be taught technical information about databases either before they use or as they become involved with databases. These authors conclude that the students would be able to use databases more effectively if they were familiar with the appropriate terms and related background information associated with them. After the teachers and the students being familiar with the appropriate terms, the process of learning about how to use the database would be facilitated.

Kajoyian (1986) describes three activities that introduce students to computer databases. The first

activity identifies the parts of a database and the appropriate vocabulary associated with this identification. The second activity had students retrieving information from files in an existing database. The third activity had the class create a classroom database to be used to answer specific questions about the class. Learning activities of this nature are seen as important first steps to be followed when incorporating databases into the curriculum.

Others found that students were able to work with the information without the preliminary background information Rooze, Newman, and Kajoyian felt necessary. McLeod (1987) had students using a database dealing with the properties of buoyancy of several substances. The exercise was designed to teach the specific idea of density within buoyancy. Without any background or technical information about databases, the students were able to discover that substances with a density of greater than one sank and those with a density less than one floated. The background information was not needed to attain the desired educational outcome. Unia (1991) had students start work with databases by using ready-made databases. He then had them build files under teacher direction and finally asked students to design a database on a self-selected topic. Rooze, Newman, and Kajoyian argue that students would be able

to attain greater knowledge and skills if they had been given the necessary background information prior to using the databases. All these researchers agree, however, that the use of the database can facilitate learning.

Hunter reiterates the commonly held belief that structured activities, planned by the teacher, are essential to effective use of computer databases. "We cannot expect the tools to teach the skills, any more than we expect a pencil to teach a child how to write." (Hunter, 1987, p.39) Learning activities must be structured to assist students with locating, classifying, and interpreting information found within a database. Only when these skills are mastered should learning proceed to the more complex skills associated with information processing, analyzing, summarizing, formulating hypotheses, synthesizing, evaluating and communicating the outcomes. (Hunter, 1987)

Key components of an instructional program dealing with databases are identified throughout the articles. Newman, Spences, Watson, and Rooze all stress the need for teachers to involve students in a structured program of database study that would enable them to get maximum value from the information stored within databases.

### 3. Databases Across the Curriculum

The literature presents a wide range of possible database activities and projects from all subject areas. Social studies projects ranged from grade one students using databases to study family members (Collis, 1987) to databases dealing with countries, cities, and provinces in older grades. The articles dealing with Social Studies topics agreed upon the value of using databases to develop thinking and processing skills important to the inquiry process.

In the Language Arts, Shostak (1984) stressed the need for teachers to utilize databases to incorporate the language arts skills across all curriculum areas. Databases can be utilized to bridge the gap between specific subject areas by incorporating the information processing skills from language arts to all subject areas and in so doing they contribute to the achievement of program continuity. Possible projects in the language arts range from databases being used to evaluate literature or poetry to finding information on a specific topic being researched. Layton (1989) found that reluctant learners became actively involved in reading and writing activities when using computer databases in the Language Arts.

Wiebe (1990) found the computer database a powerful tool for elementary students to use in solving



mathematical problems. By following a well planned series of database learning activities, the students developed competencies that they were able to apply in similar problems at a later time.

Databases are available in virtually every subject area. Examples of database content include planets, inventions, plants or the place of early English colonies in Canadian history. Instructional use of databases, however, does not emphasize the content but rather on teaching children to make decisions and generalizations based on the information. Emphasis is placed on determining connections between information found within the database and applying these connections to problem solving situations in the content discipline.

#### 4. Getting Started With Databases: Step by Step

Rooze (1987) identifies four steps to be followed when incorporating databases into the classroom. The first step in getting started with database study involves the teacher becoming familiar with the databases which are available and the software needed to store them. Second, it is suggested that students be given the opportunity to use databases and explore the types of information that can be found in them. At this stage one could develop knowledge about some of

the technical terms related to the makeup of the database. A database made up of information on the class is proposed by several of the writers in this area as an appropriate way to introduce beginning database concepts to children.

Having students involved in searching existing databases for information is the third step identified. The importance of students to be able to successfully use databases as a source of information forms the basis of many of the arguments supporting the use of databases in classrooms. Once the students are familiar with databases and can answer questions using information from a particular database they then are ready to enter information into existing databases.

The final and fourth step for students to be involved with in learning about databases is to have the students design and use their own database tailored to meet a personal information or decision-making need.

##### 5. Some Final Comments

Research provides evidence that student learning can be increased when students are involved with information handling systems on the computers. The ability of students to construct meaningful questions and to use information at higher levels of thinking is a positive outcome of their involvement with

databases. The manipulation of information within a database has as its value the thinking and process skills that the children develop. The actual recall of the information found in the database is secondary to this.

The literature clearly identifies a need for teacher involvement in getting children to use databases effectively. The success of a project is dependent upon the activities that are planned by the teacher to initiate student involvement with the information. When the teachers have a planned procedure for students to follow then there is improved opportunity for learning. Some disagreement is found on the actual procedure that teachers should follow, but all studies support the development of a well-thought-out plan of action for the learner prior to the initial contact. What would be helpful then are planned lessons that incorporate practical, easy to follow plans that teachers may use to develop learning units using computer databases. These lessons should provide sufficient information to enable a teacher to use them as a springboard for their own planning. Individual teacher and classroom differences should be easily accommodated into the planning to meet specific learning needs. The provision of these guided lesson plans is the main outcome of this special project.

## Chapter 3

### Lesson Plans for Teaching With Computer Databases - A Resource Manual

The teacher resource manual "Computer Databases in the Elementary Classroom" is a document that provides a series of lessons for elementary students and their teachers. The lessons suggest learning experiences for students to become involved in to use computer databases to process information. Benjamin, Bryant, and Mack (1990) recommend that any teaching strategies which incorporate computer usage should be integrated into existing curriculum. They also state that practical knowledge about using the computer is more important than actual knowledge about the computer and how it works. The lessons found within the resource manual are intended to be used in the existing curriculum. The focus of the lessons is on the use of the computer as a tool and not on an explanation of how the tool works consistent with the Benjamin, Brant, and Mack recommendations.

The teacher resource manual is designed to be used by grade four, five, or six teachers. It is prepared for teachers with little computer experience or knowledge. By following the directions and experimenting with the process that the students are involved with, teachers with varying degrees of computer expertise, should be able to successfully integrate the material into their existing program. Several lessons teach the necessary skills for working with a computer database. Once the students have mastered these skills, the use of the database is expanded.

The importance for teachers to follow a series of well developed lessons that identify appropriate teaching techniques is identified by Watson and Strudler (1988-1989) as a critical factor in determining the success of a teaching unit involving computers. The resource manual provides directions and plans for teachers to follow when working with their students. The plans are meant to be followed in order and develop sequentially the necessary skills students need to process information with a computer database. The success that the students experience is related to the ability of the teacher to interpret the lesson plans and modify them to meet the individual needs of their class. (Rooze, 1987) Specific activities should

be modified when the teacher feels that a different activity would be more appropriate and would meet the same objectives as the one proposed in the teacher resource manual.

The resource manual consists of seventeen lesson plans. Each lesson plan is written in the same format. Each plan starts out with a section detailing background information necessary for the teacher to understand prior to teaching the lesson. Materials that the teacher or the students need for the lesson are identified in the next section entitled "Pre Planning Activities / Resources Needed". These two sections are followed by separate sections explaining objectives, learning activities, evaluation, and follow-up. The terminology that is developed in a particular lesson is identified in a "Vocabulary Development" section. The final section of the lesson plan outlines student activities that might be included in a student booklet.

Many of the learning activities involve students working in groups. By working in groups, students may assist one another with the material being covered in the lessons. Cooperative problem solving assists in the development of the concepts for many of the lessons.

Throughout the manual, reference is made to student worksheets. The worksheets are a series of activities, charts, or sheets that support the lesson. All of the worksheets can be found at the end of the teacher resource manual. A "Glossary" and an "Apple Command" sheet are also provided for students to review information that they learn throughout the unit.

The learning activities are suitable for students in grades four, five, or six. Students proceed with experience learning at a concrete level before going on to work at higher levels of abstraction. Initial activities focus on the immediate environment of the student. A database consisting of student information is used as the foundation for their first database experience. Once they are capable of using databases to record information about themselves and their immediate surroundings, the activities are extended to different people associated with the school. The final project for the class is designed to fit the existing curriculum for the grade level. For example, grade six students in social studies might develop a database with information that would facilitate a comparison of ancient civilizations. Grade five students might study the history of Canada in social studies, e.g., students could develop a database with information on Canadian explorers. The final project in the database unit is

tailored in this way to fit in with ongoing regular study in the school curriculum.

The lessons develop four major concepts related to the use of computer databases to process information. The necessary vocabulary and terminology associated with databases is taught in lessons one and two. Rooze and Newman (1987) state that by including the appropriate background information, student learning is enhanced. Kajoyian (1986) identifies a three step process to teach students about databases. It begins with activities that identify the parts of a database and the appropriate vocabulary associated with them. Based on these ideas, the first two lessons have the students engage in activities that highlight terminology and background information related to computer databases.

The second group of lessons provides activities that facilitate the learning of the skills necessary to manipulate information within an existing database. Lessons three to five outline activities that have students arrange and sort information within specific categories of a commercially prepared database. Hunter (1987) indicates that before students are involved with the complex skills associated with creating database information they must first be able to manipulate the information within an existing database. Therefore,



lessons three, four, and five provide students with experiences that enable them to learn how to manipulate database information.

Once students have mastered the skills related to finding information, they are ready for the next series of lessons. Lessons six through ten outline learning activities that have students design database categories and determine the appropriate format for the entry of information into the database. The categories and entries are part of a teacher-made database about people found within their school environment. Students learn from each other and modify their initial designs to reflect input from others in the class. The activities and the design of the categories at this stage is teacher directed. Students need a great deal of assistance in developing the skills necessary for independent work.

The final series of lessons have students create and design a database on a specific curricular topic related to their grade level. The class is divided into groups to complete the activities outlined in lessons eleven through seventeen. An important component of these lessons is the opportunity for the students to discuss the process they are using to design a database, the process they use to record information within the database, and the process used

to manipulate the information to identify relationships and patterns. By having all students in the class develop a database on the same topic, students are able to share their ideas with their classmates. The common database provides a framework for students to discuss the process of developing and using databases.

The original teacher resource manual has gone through two revisions. These revisions are the result of an initial trial by teachers and students of the seventeen lessons outlined in the manual.

## Chapter 4

### Evaluation of the Resource Manual

The evaluation of the resource manual is based upon an initial implementation of lessons found within the manual by one class at each grade level. The sequence of lessons for each grade level was implemented in Fall Semester, 1991. Feedback from students who participated in the learning activities formed the basis of the evaluation and revision of individual lesson plans. The manual was also examined by a teacher from each of the grade levels.

#### Introduction

The manual was designed so that teachers with little computer expertise would be able to incorporate the ideas into their teaching. Several factors were considered in the evaluation of the resource manual. One of these was the ease that teachers had in using these lesson plans in their existing curricula. Another factor considered the learning objectives in terms of appropriateness to grade level and to

determine if the sequence of activities followed a logical and useful progression.

The evaluation focused on the four main content areas: database terminology; basic skills in database use; elements of database design; and designing one's own database. Suggestions and comments are made on each of these four general topics and specific suggestions were made on individual lessons within each topic. Many of the suggestions have been incorporated into the final draft of the resource manual.

#### Theme 1 : Terminology (Lesson One and Two)

The first topic area of the manual has students involved in activities that develop the technical background information and the terminology associated with databases. Lessons one and two introduce the student to the world of electronic storage of information. These lessons are designed to facilitate the introduction of terminology of databases. Students are provided with concrete examples that enable them to build new learning on a foundation of knowledge that they already have. With the use of transparencies, students experienced little difficulty learning the terminology and background information associated with databases. Teachers with limited computer experience had no difficulty teaching the first two lessons.

The activities in lesson one and two did not involve the use of the computer. Students worked individually and in groups. The students concentrated on a topic that was familiar to them and the terminology of databases was developed based on that familiarity. When dealing with children in elementary schools, the real life situation that children exist within should be used whenever possible to link their learning to situations they can comprehend.

Grade four students found difficulty when working in groups. More time was spent in organizational tasks associated with group work than on the actual development of the objectives of the lessons. Grade five and six students each took commensurately less time to deal with similar organizational tasks. Instruction on how to function as a group member would likely be helpful especially for teachers who did not have very much experience with grouping children for instructional tasks.

Students met the objectives that were set out for these two lessons. Younger students and students of lower academic achievement needed additional guidance when identifying different categories of information within specific database topics. By grouping students heterogeneously, students were able to assist one another with this task.

## Theme Two: Basic Skills in Database Use

### (Lessons Three, Four, and Five)

The second topic area involved students with activities to acquire the skills necessary to manipulate information within an existing database. In lessons three, four, and five students learned how to arrange information within categories, and how to select specific records based on criteria they established. Once again, the activities appeared to be outlined with sufficient detail to enable all teachers to be successful in implementing the lessons. Sequence also seemed to be appropriate in the three lessons associated with the manipulation of the information in a database.

Students were able to successfully complete the activities outlined and were able to attain the objectives specified for the lessons. Grade four students required more practice and guidance with the activities than grade five or six students. The younger or academically weak student needed more practice with individual component skills that were being taught. The lessons were presented over three days at each of the grade levels. One of the main suggestions coming from feedback was that students should spend additional time dealing with manipulation of information before proceeding with selection of

information based on specific criteria covered in lesson five.

All students, regardless of grade or ability level, had difficulty determining relationships and patterns within the information. Unless the pattern was obvious, most students were unable to determine relationships. To improve upon this, a database that contains easily recognizable patterns and relationships should be developed. The database on student information has patterns within the information but these patterns need to be clarified and strengthened.

One of the problems with this series of lessons was the speed at which content was presented. Individual lessons could be improved if students were given additional time to practice the skills they were learning in the current lesson and to review material from previous activities. This was especially true with grade four students.

Lesson three had students learn how to arrange information within categories. Lesson four dealt with teaching students the logical connectives and the process used to incorporate these connectives into the record selection command. This information needs to be extended over several lessons with additional time built in for review. The activity in lesson five had students utilize record selection commands to identify

teachers with specific characteristics within a teacher-information database. Students needed assistance with the task. Group work may have allowed students to assist one another. Another alternative might have been to provide more teacher direction treating this lesson as a closely structured teacher-led class.

Theme Three: Elements of Database Design  
(Lessons Six Through Ten)

The next topic area had students design a database with teacher direction. Lessons six through ten had students create a database on people at school. This database was used as a foundation for all of the other activities found within this lesson sequence. Students had little difficulty identifying several different categories of information that could be contained in the database. They did experience difficulty in varying degrees when they decided on what format that the entries were to be recorded in. This involved more abstract ideas and planning for future manipulation of the information. Once again, the older students had less difficulty with this task than the younger ones.

The actual entry of the categories and the information within the database into the computer was easily accomplished by all students. The lesson plans



provided adequate guidelines and sufficient detail to ensure that students achieved success. Lessons seven and eight had students create the database, enter information into the database, save the database on a data disk, and add additional records to an existing database. Every student accomplished the objectives set out in these two lessons with relative ease.

Lessons nine and ten had students propose hypotheses to be tested within the database they had created in earlier lessons. The students were excited to work with information that they had entered but were not able to test their hypotheses. Grade four students, once again, had greater difficulty even in finding simple patterns and relationships within the information. Hypothesis generation seemed to be beyond their grasp. Grade five and six students were more proficient with manipulating information and were able to suggest possible connections and able to test to see if these relationships existed within the information. Working with other students in groups provided opportunity to develop ideas and solve problems cooperatively. Students learned a great deal when they reported to the class on the process they used to identify relationships and to test hypotheses. Peer tutoring and support provided in student groups emerged

as an essential element to the success in this phase of the study of databases.

#### Theme Four: Designing One's Own Database

(Lesson Eleven Through Seventeen)

The final section of the resource manual had students work in groups to create a database on a topic. The students designed their database, recorded the information, and shared their information with the rest of the class. Each group had the same topic to research. By working on the same topic students were able to see different ways to design a database to record information. Students from one group met with other groups to identify strategies that other groups were attempting. Many of these ideas were then incorporated into their databases.

Lessons 11 - 17 appeared to provide sufficient structure for students to follow in order to design and create their own database. The younger students needed a great deal more assistance than older ones especially in determining categories of information that would be appropriate to hold information. Grade six students had no difficulty with the task. Once the categories and entry formats were decided, all students were able to complete the project and enter information into the database. Older students, as well, had little

difficulty manipulating information to find relationships between elements in the data. Younger grades needed additional support and guidance to be successful in this task at every stage.

The students learned a great deal from the presentations they made. Learning from throughout the database unit was consolidated during the presentations suggested in the final lesson of the resource manual.

#### Some Generalizations

Older grades generally required less direction and were better able to utilize the information within the database than younger ones. When the information was controlled as it was in the first series of lessons, younger students were capable of manipulating information to identify patterns and relationships. The relationships were built into the information and ensured student success at identifying them. With less direction as students researched a topic and created their own database, younger students experienced great difficulty and needed more assistance to determine relationships within the database.

Responses of the teachers to the resource manual were generally positive. The easy-to-read format of the manual was identified as a strength. Also its self-contained nature was thought noteworthy -

background information was provided for teachers, all necessary worksheets were included, and the learning activities were explained in sufficient detail for teachers to be successful at implementing the lessons. Teachers felt that the inclusion of material for the preparation of a student recordkeeping booklet was essential. One suggestion was to place the student worksheets with the actual lesson plan where it was needed rather than in the appendix. Overall, the manual was developed in a format that was useful to teachers.

The quantity of material covered in each lesson emerged as the area of greatest concern. For younger students, more time was needed to accomplish the objectives of each lesson. It was suggested that additional time, at all levels, be built into the unit to allow for review and consolidation of concepts along the way. Teachers felt it would not be difficult to extend the teaching of the unit over several months. This would allow for greater practice of skills necessary to manipulate information within a database. The sequence of the activities would remain the same with additional lessons built in to expand and reinforce the material.

Another suggestion was to divide the content found within the manual into specific grade levels. Over the

course of three years students would be taught the content of the entire unit. Grade four students could be given background information and learn how to manipulate information within an existing database. Grade five students would learn how to enter and design a database with teacher assistance. Then grade six students would then design a database on their own to assist them with gathering and using information on a specific topic.

When the teachers were asked if the manual should be changed or remain the same, the majority felt that it should not be changed. Individual alterations to the manual could be done by the teacher implementing the unit and utilizing the manual at the time of implementation. Teachers could increase the amount of time that they take to cover the lessons found within the manual. If their students were successful at mastering the objectives for a lesson, they could proceed to the next level. If they were not, individual teachers could plan supplementary materials and activities to enable the students to achieve the learning objectives.

The final copy of the manual was modified from the original draft based on the suggestions and comments received from students and teachers who had used it. As the lessons were presented at each grade level,

activities were deleted or rewritten to improve clarity and sequence of individual tasks in association with the goal of using databases effectively. Overall the resource manual fulfilled an important instructional need serving as a guide or framework of lessons that could develop the necessary process skills within students to enable them to utilize computer databases to process information.

## Chapter 5

### Next Steps In Using Computer Databases

The use of the computer in elementary classrooms is becoming common in all subject areas. In most instances, users of computer technology are not utilizing a fraction of the power that the computer can provide. Games, word processing, simple programming, and drill and practice activities form the basis for most school's computer programs. Changes must occur for computers to be used to their fullest educational potential.

Research on educational change states that individual classroom teachers must see the advantage and need for change before it can be successful. Change directed in a top down fashion does not work. These findings were taken into account in the current study.

Elementary school teachers must become aware of the power of the database within their educational program before they will be willing to change their program to include it. Teachers should be encouraged

to visit classrooms that use databases. Demonstrations by peers encourages teachers unfamiliar with database usage with an opportunity to see first hand the types of activities that students do. Once teachers have been exposed to database usage, assistance should be provided to them if they wish to attempt some similar learning activities. Research on change also indicates that change should be gradual. Teachers should be encouraged to try one activity at first. Once they feel comfortable and secure with one stage, only then should they proceed. Assistance must be provided throughout the entire process.

A second action that must occur in order to obtain successful integration of computer databases in teaching and learning is the development of quality databases. These databases must be developed to support the existing curriculum within the program of studies. Government curriculum departments should supply educators with databases that support the program of studies. The amount of time that educators are able to spend developing new materials is limited. If material is provided for them, a greater probability exists that the material will be incorporated into the regular program than without this support.

The use of databases supports all subject areas. Schools that have a lab of computers with access once



or twice a week limit the effective use of the computer. This structure creates a separate subject for computers. Generally the focus is on learning about the computer and not on using the computer as a tool to assist in other content areas. Additional financial assistance is needed for schools to expand their computer facility and programs. Teachers are reluctant to integrate computer usage into other subject areas because of the administrative problems associated with scheduling too few computers for too many students.

Even with additional computers, educators must be careful to properly utilize the power the computer offers. Research seems to show that individual computer projects related to database usage have a positive impact on the attainment of educational goals with children.

If the major purpose of schools within society is to assist in the development of individuals to their fullest potential, then assessment techniques must reflect this. Achievement tests have been used traditionally to measure this development. With today's emphasis on the processing of information and learning how to learn, new assessment techniques and strategies must be developed to track the success of an individual in the educational environment.

Additional research must be done to see if the use of computer databases improve the student's learning over an extended period of time. The initial steps for this research is to have teachers involve their students with computer database usage. Only then can the effects be measured. The resource manual that has been developed as part of this creative project is only the first step in this process. Teachers should incorporate the ideas found within the manual in a manner they feel is appropriate for the students in their classroom. Modifications and improvements should continually be made. By including activities that involve students with computer databases, the initial step has occurred. Continuous research must then be done to see the long term effects and the improvements that should be made to improve the overall effectiveness of computers and databases in learning.

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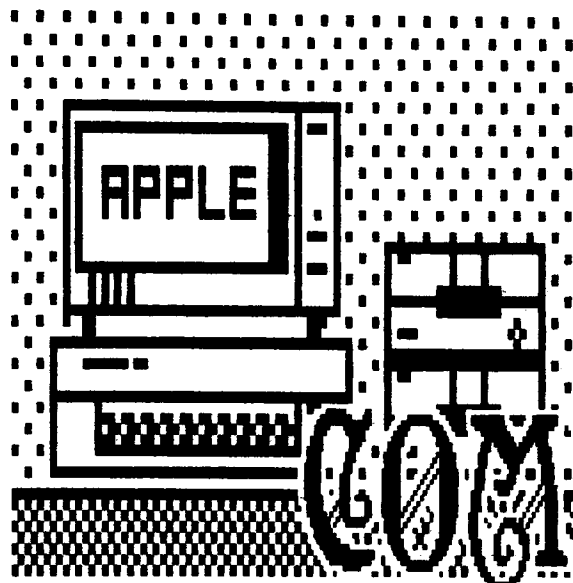
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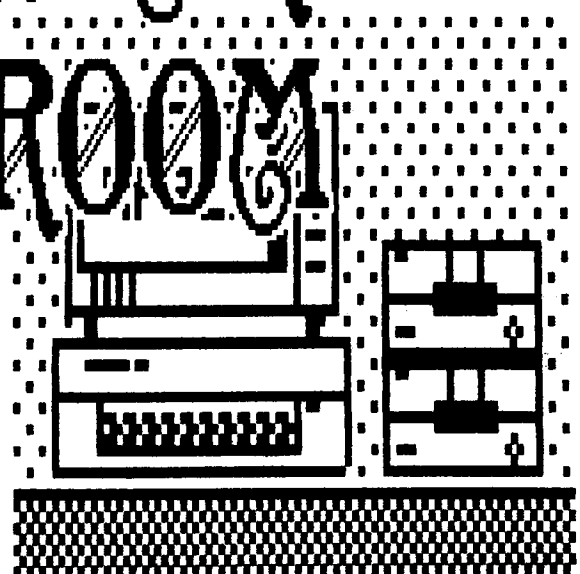
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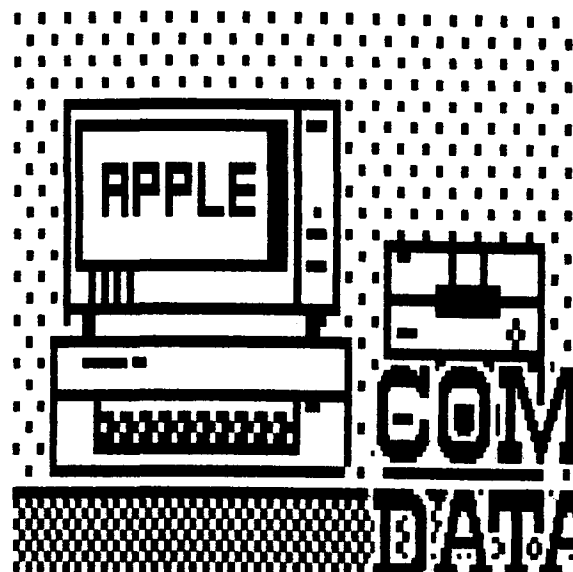
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COMPUTER  
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IN THE  
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CLASSROOM



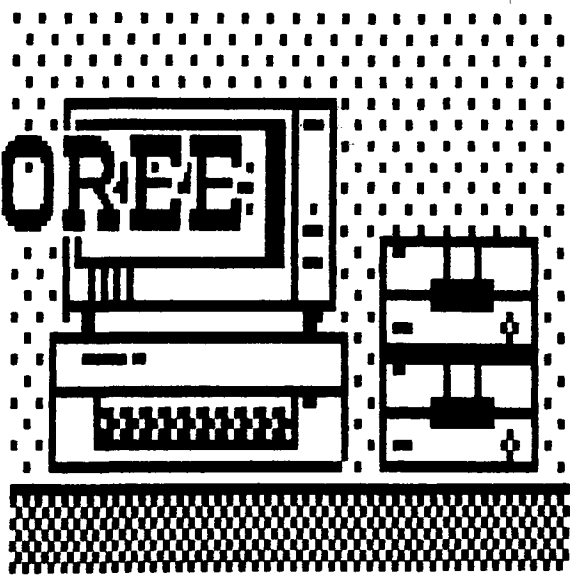




**COMPUTER  
DATABASES  
IN THE  
ELEMENTARY  
CLASSROOM**

**BY**

**JOHN LOREE**



## To The Teacher

Introduce your students to the world of information processing on the computer. Help your students become skilled in manipulating information quickly and efficiently with the use of a computer and database software.

Computer Databases in the Elementary Classroom is designed for elementary teachers with little computer experience. By working through the lessons, students will be able to use the computer to assist them in looking for relationships found within information. The unit is designed for grades four, five, and six students.

The goal of the unit is to provide learners with activities that facilitate the learning of skills necessary to process information electronically. The important components for the students to learn deal with the processing of information and not with the actual content of the information.

The lessons within the unit follow the same sequence for grades four, five, and six. The content area of the final project is dependent upon the content found within a particular grade.

As you work through the unit, spend a great deal of time talking about the importance of information in today's society and why it is important for people to be able to use the information available to them in an effective manner. If you can think of a base of information to use in the lessons that will be of greater interest to your students; then modify the lessons to meet your student's particular needs and interests.

Best of luck as you work through the material!

## Organization of the Lessons

The guide provides a series of lessons suitable for students in grade four, five, or six. The final project that the students complete is planned to be dependent upon the curriculum being studied by the individual classes.

All of the necessary materials for the unit have been included. Lesson plans, teacher resource materials, and student materials are organized by lessons to assist in the teaching of the unit.

Lesson plans are composed of several sections. First, each lesson contains Background Information that provides the teacher with the information that is needed for the particular lesson.

The materials that are needed by students and the teacher are identified in the Pre Planning Activities & Resources Needed section.

The actual learning outcomes or objectives for the lesson are stated in the Student Objectives section.

The Learning Activities / Sequence section explains the sequence of the actual lesson. A brief outline of the lesson is provided. Teachers are encouraged to modify the plans to meet the needs of their particular class. If there is insufficient time to complete an activity then the teacher should continue the lesson on another day.

The Evaluation section provides suggestions on methods for evaluating student progress in the unit.

Some Extension Activities are suggested for some lessons that would provide additional activities for students to complete to expand upon the content of the lesson.

When new vocabulary is introduced the words and their definitions can be found in the Vocabulary Development section.

Materials that the students should collect to form a booklet are identified in the Student Booklet section. Students may also copy class retrieval charts to be included in their final product.

### Software

This unit is designed to incorporate the database found within "Appleworks" into the learning activities. Students should have familiarity with the operation of a computer prior to being involved with this unit. This familiarity may be of a very basic nature.

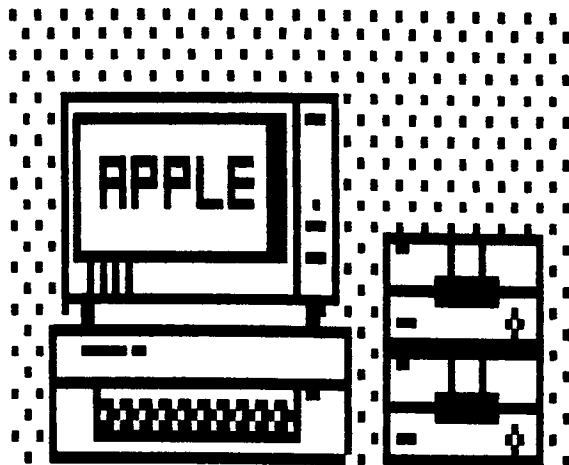
Other database software may be utilized. If teachers incorporate other database software into the unit they must modify the lessons to reflect the individual characteristics of the database software they select.

### Class Structure

The unit's activities are designed for use in classrooms where there exists one computer per student. Some of the lessons have several students working together on a single computer.

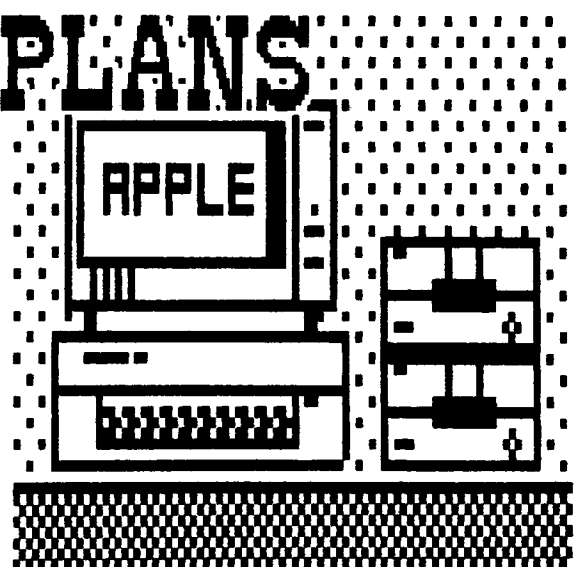
Activities may be modified where there are insufficient numbers of computers for individual use. Students do gain from increased "hands on" experience when manipulating the information found within a database and as much time as possible should be provided for this.

It is important that students have the opportunity to discuss the process that they are involved with. Students learn a great deal from the experiences of others.



**COMPUTER  
DATABASES  
IN THE  
ELEMENTARY  
CLASSROOM**

**LESSON PLANS**



## LESSON # 1

### Background Information For Teachers

Everyone talks about the "information explosion" that we are currently experiencing. People are aware of the ever increasing amount of information that is available to use in making judgements and decisions. Difficulty arises when one tries to cope with the mountains of information in traditional ways.

The computer can be used as a tool to assist the human mind with the processing of information. The human mind can make inferences, draw conclusions, and evaluate alternatives. These activities are beyond the capabilities of computers. Computers can store vast quantities of information in very organized manners. This computer storage of information can be reorganized in very short time periods. The human brain cannot do this as well. There exists a great possibility for a marriage of the human brain and the computer in processing information.

Computerized databases are the answers. Everyone uses a database of some form. It might be an address book, a collection of recipes on 3 X 5 index cards, or the phone book. A database is simply a collection of related information stored in an organized, systematic manner. The computer allows greater freedom in manipulating the information found within a database.

Computerized databases allow users to continually update the information, rearrange the order of the information, and generate reports on paper to meet particular needs. Information within computerized databases is stored on disks or tapes and can be shared, added to, or amalgamated with other collections of information.

### DATABASE

A Collection Of Related Information Stored  
In An Organized, Systematic Manner

### Pre Planning Activities / Resources Needed

- Copies of student information that is maintained by the school. If the information is stored by computer, access to a computer terminal to display the information or a print out of the information that is recorded on the students should be obtained.
- Chart showing definition of "database". (Worksheet 1)
- Paper for groups to record their responses on. Each group will require 2 sheets. The worksheets provided may be used or teachers may use chart paper with the appropriate headings. (Worksheets 2 & 3)
- Felt pens
- Summary Sheet (Worksheet 4)

### Student Objectives

After Completing this lesson, students will be able to:

- 1) State the definition of a "database."
- 2) Give three collections of information that could be contained in a database. Examples are:
  - student information
  - information on sports stars or teams
  - information on countries
  - addresses
  - recipes
  - information on animals



### Learning Activities/Sequence

Show students a sample database of information that is kept at the school on the individual students. If this information is kept on a computer, then a hard copy of information related to the individual student should be printed out. Discuss the different types of information that is contained within the database on the students. Discuss the different types of information that a school might require.

Define the word "database" and post chart with definition. (Worksheet 1) Discuss the definition with the students.

Divide the class into small groups. Each group has two tasks to complete.

- 1) Identify three ways that the information within the student database might be used by the school
- 2) Identify three other collections of information that could be stored in a database.

Discuss the tasks with the whole class. Brainstorm for one possible use of student information and one other collection of information that could be stored in a database.

Individual groups begin to work on their tasks. The groups are to record their information on chart paper to share with the rest of the class when they are finished. (Worksheets 2 & 3)

After the groups have completed their two tasks, bring the class back together and have each group share their information. Summarize the information on a class retrieval chart.

Students may also work independently on the two tasks. Once a majority of the students have finished, then a class discussion could be used to complete the class retrieval chart summarizing their responses.

Students copy information from retrieval chart onto the "Notebook Sheet" (Worksheet 4)

### **Evaluation**

The charts produced by each group or by individual students.

### **Extension Activities**

A contest to see which student or group of students can identify the largest number of possible collections of information that could be stored within a database.

Students complete a cover page for their Database Notebook.

Invite a police officer in to discuss the information database they access to find information on specific individuals.

### **Vocabulary Development**

#### **DATABASE**

A Collection Of Related Information Stored  
In An Organized, Systematic Manner

#### **Student Booklet**

- Cover Page
- Worksheet 4 - summary of today's lesson
- Glossary page- definition of database

## LESSON # 2

### Background Information For Teachers

Computers can be used to store and process information more efficiently than the human brain. By using the power of the computer to manipulate information, hypotheses can be tested and individuals can use information to creatively solve problems.

Information within a database is called a file. A file is any collection of information on a particular topic. A file of information on all students attending a school is a file called "student information".

The information within the file is organized into subsets called records. The information on a particular student attending the school makes up a record. Information on each different student makes up a different record.

Information within the record is identified within specific topic areas or categories. The "name" or "address" of a particular student are two different categories. The categories are the headings the actual information is listed under.

The actual information in the category is called the "entry". If the student's name is Bill, Bill is the entry under the category "First Name".

The three major advantages of using a computer database to process information are the quantity of information that can be stored, the quality of the information, and the capability it has to allow the user to manipulate the information in an efficient manner. Computer databases can store a great deal of accurate information. Once the information is stored within the computer file, there is no information lost. The information stored can be readily updated and added to. Once the information has been entered into the file, the computer user can manipulate the data in many different ways.

### Pre Planning Activities / Resources Needed

- Overhead projector and transparencies of Worksheets 5 through 10
- Charts of Worksheets 7, 8, 9, & 10
- Chart paper or copies of Worksheet 11
- Class set of Worksheet 12
- Felt pens

### Student Objectives

After Completing this lesson, students will be able to:

- 1) Match the following terms related to databases with their appropriate meanings:
  - database
  - file
  - record
  - category
  - entry
- 2) Match the parts of a database with the appropriate terms.
  - file
  - record
  - category
  - entry
- 3) State three advantages for maintaining a database on a computer.
  - Information can be updated easily.
  - Information can be reorganized easily.
  - Information can be updated easily.
  - Information can be shared.
  - Information can be included in reports.

### Learning Activities/Sequence

Review the definition of "database". Go over the retrieval charts completed in Lesson 1.

Discuss with the students the definitions of a file, a record, a category, and an entry. Use an overhead transparency of student worksheets 5 through 10 to assist in the definitions. Post the definitions in the classroom.

In groups, have students identify or state:

- 1) 5 different information databases that could possibly exist
- 2) 5 categories of information that could be found within each of the databases identified

Information should be recorded on charts for sharing with the rest of the class. (Worksheet 11)

Have groups present their information. Complete a class retrieval chart listing the possible databases and their respective categories.

Have students identify possible advantages and disadvantages for recording and using computers to assist with the processing of information. List these on charts.

Review material covered and have students complete worksheet # 12.

### Evaluation

The information found within the retrieval charts completed by groups/individuals.

Summary sheet completed at end of lesson.  
(Worksheet 12)

### Extension Activities

Crossword puzzle using vocabulary associated with databases.

Students check dictionaries to discover and record all definitions of today's vocabulary words.

Students write a story explaining what happened the day all the information within a computer database was stolen or disappeared.

Students complete posters showing the different components of a database. Posters should be labeled with correct vocabulary terms. These posters can then be displayed in the classroom for future reference.

Have students survey their parents to see what information is stored by computer at their place of employment.

### Vocabulary Development

#### FILE

A Collection of Related Information  
Stored On A Diskette

#### RECORD

A Subset Of A File That Contains One  
Group Of Related Information

#### CATEGORY

A Subset Of A Record That Contains  
One Type Of Information

#### ENTRY

The Information In A Specific  
Category Of A Record

### Student Booklet

-Worksheets 5, 6, 11, & 12

-Glossary Page - file, record, category, entry

## LESSON # 3

### Background Information For Teachers

Students need to be able to use Appleworks prior to beginning work on this lesson. Students need to be able to:

- Load the Appleworks Software into the computer
- Take a Data File from a disk and load it into the computer

If they cannot do this yet, spend several lessons teaching them how to use Appleworks Software.

For demonstration purposes, it is beneficial if there is a large monitor for students to follow the directions given throughout the lesson. If one is not available, the computer can be connected to a VCR and the image can be shown on a television monitor.

Information can be stored in an Applework's Database file. These files are saved on a data disk in the same manner that word processing files are saved.

The information within a database file can be viewed in two formats. The table format shows all the information that is contained within the database. The records go down the side of the table with the different categories identified across the top. Information is entered into the appropriate location on the grid. The amount of information shown on the screen is limited by the size of the categories. When a database file is loaded into the computer, the information is shown by the table format.

Information on a particular record is shown on a Record Format. The entries for the categories on a single record are shown. One may view additional records, one at a time. By holding down the [OPEN APPLE] and [Z] keys at the same time, one zooms from one format to the other.

To move the cursor from one category to another, push the [TAB] key down. Each time the [TAB] key is pushed, the cursor will move one category to the right. When the [OPEN APPLE] and [TAB] key are pressed, the cursor moves one category to the left.

To move up or down in the database, one pushes the appropriate arrow key. By pushing [OPEN APPLE] and an arrow key, one moves to the top or bottom of the screen of information.

Information within the database can be arranged in a particular order by pressing the [OPEN APPLE] and [A] key. This command instructs the computer to arrange the category that the cursor is on. You are asked to select the manner you wish the information arranged. Your choices are:

- 1) From A to Z
- 2) From Z to A
- 3) From 0 to 9
- 4) From 9 to 0

Only one category of information can be arranged at any particular time.

To return to the previous screen or the Main Menu, one pushes the [ESC] Key on the computer.

#### **Pre Planning Activities / Resources Needed**

- Class set of computers or 1 computer per group of students.
- Set of Appleworks Software
- Set of Prepared Data Disks - File "Students"

#### **Student Objectives**

After Completing this lesson, students will be able to:

1. Load an Appleworks Data File into a computer from a data disk.
2. Use the Zoom commands to change the display format from a single record to all records
3. Use the Tab Key and the arrow keys to move the cursor to specific locations within the database.
4. Arrange the information within the categories numerically and alphabetically using the Arrange command.



### Learning Activities/Sequence

Distribute Appleworks Software to students. Have them load the program into the computer. Explain that today they will be working with information kept within a database file. The file is stored on a data disk. Distribute the prepared data disks to the students.

Once the students have the data disks, review the process for loading a file with Appleworks. Have the students load the file "Students" into their computers. Be sure that all students work at the same rate and are successful at following the directions. A summary of the information contained within the file "Students" can be found on Worksheet 13.

Have the students shut off their computers and practice loading the file on their own. Repeat this procedure several times.

Once the students can load the data file into the computer, discuss with the students the information that they see on their screen. Review the categories and the entries that they can see. Discuss the size limitations of the screen and that the database they are looking at is actually larger than actually appears.

Demonstrate the [TAB] key and the [OPEN APPLE] [TAB] keys to the students. Have them practice on their computers moving throughout the categories.

Demonstrate the [ARROW] and the [OPEN APPLE] [ARROW] keys to move throughout the database. Have students practice moving to a specific location within the database.

Demonstrate the command to arrange the information within a specific category. Have the students arrange the categories of information in alphabetical and numerical order. Discuss the importance of this feature on computerized databases.

Have students look for patterns in the information. For example, ask them - is there a pattern between the marks of a student and their sex. Have the students arrange the marks category numerically and look for a relationship to the sex of the students. Once the students have an opportunity to work with the information, demonstrate for the arrangement they were asked to do. Repeat this process for the different categories of information. Relationships to look for include:

- Sex and Marks
- Sex and Sports
- Sex and Pets
- Age and Marks
- Height and Sports
- Sex and Height
- Age and Sex

In many instances, the students will have to look for general patterns. Discuss how general patterns differ from instances where a specific fact is contrary to the pattern that seems to exist.

#### Evaluation

Students ability to:

- 1) Load a data file into the computer
- 2) Use the Zoom commands to select the format of information they wish to see
- 3) Move the cursor throughout the information within the database.
- 4) Arrange the information within specific categories numerically and alphabetically.

#### Extension Activities

Students look for patterns within the database. One student establishes a pattern and provides clues to a second student who tries to determine it.

Use of the information found within another teacher prepared database to look for patterns.

Representing the information found within the database in graphs or pictures.

Determining possible explanations for the patterns found within the information.

#### Student Booklet

- Apple Commands Page - zoom, tab, arrange
- Students copy out directions for using Appleworks

## LESSON # 4

### Background Information For Teachers

The computer has the ability to select information that meets specific information criteria that have been established by the user.

The "Record Selection" command for the database is [OPEN APPLE] [R]. The different categories for the database are listed on the screen. Users are asked to select the category they wish to establish criteria for. For example, the "SEX" category is selected by moving the cursor with the arrow keys to highlight the category "SEX". It is then selected by pressing [RETURN].

The next screen asks for additional information on the record selection. Several possibilities are presented for the user to choose between. Some of the possibilities are intended for numerical information and some for information recorded as words or letters. By highlighting "EQUALS", we have directed the computer to do its selection based upon:

SEX EQUALS

To complete the record selection process the user must type in the criteria they have established. If we wanted all of the males, we would enter "MALE". We have now told the computer to select those records where:

SEX EQUALS MALE

Computerized databases allow users to select information with limits placed on several categories. The record selection criteria for each category can be integrated with the use of the connectives "and", "or", and "through".

(SEX EQUALS MALE) AND (PETS EQUALS FERRETS)

With this selection, the records identified are all males that have ferrets as pets. Both criteria must be met for the record to be selected.

(SEX EQUALS MALE) OR (PETS EQUALS CATS)

With the connective "or", males are identified and also all individuals that had cats as pets. With the connective "or", if the information is found in either category, the record is selected.

(MARKS EQUAL 50) THROUGH (MARKS EQUAL 75)

All students that have marks between 50 and 75 are identified using the connective "through".

The selection criteria appear at the top of the screen. Three different categories can be linked using one of the connectives. Once the record selection criteria have been entered, the computer will identify those records that meet the selection criteria. To select the matching records, the user presses the [ESC] key. The records selected will then appear on the screen.

To return to the entire database of information, enter [OPEN APPLE] [R]. The computer will ask you if all records are to be selected. Enter yes for the entire database to be appear once again.

#### Pre Planning Activities / Resources Needed

- Class set of computers or 1 computer per group of students.
- Set of Appleworks Software
- Set of Prepared Data Disks

#### Student Objectives

After Completing this lesson, students will be able to:

1. Combine sets using the logical connectives "and", "or", and "through".
2. Select entries that match certain selection criteria by using the [OPEN APPLE] [R] keys.

### Learning Activities/Sequence

Review the process of loading a file from a data to the computer. Have students load the file "Students" from the data disk. Have students place their cursor on specific categories. Review the process of moving the cursor using the [OPEN APPLE], [TAB], and [ARROW] keys.

Have students arrange the information within the database in particular orders using the [OPEN APPLE] and [A] keys. Work through the database with the students, providing them with a specific task, allowing them time to accomplish the task, and then demonstrating for the class the process used.

Provide students with problems that involve 2 categories. Possibilities include the following:

- number of boys that have hockey as favorite sport
- number of girls that have a snake for a pet
- number of students that have a mark over 75
- number of boys that are 11 years old

Work through the examples with the students. Have the students explain how they might arrange the information to solve the problem the easiest. Record the 2 categories on the blackboard and the number of records that match.

Discuss with the students the power of the computer to combine the requests that they had just been doing. By entering a single command the computer can search through information to find the records that match the record selection criteria.

Explain the connectives "and", "or", and "through". Provide the students with examples of how each term is interpreted by the computer.

Work through the "Record Selection" process with the students. Take them step by step through the process they will use to establish the criteria for record selection by the computer. Have the students practice this record selection process using the categories found in the previous part of this lesson. The information that the computer selects should be the same as recorded on the board.

Discuss with students the advantages of using the record selection powers of the computer compared to arranging the information within the database on their own. Have students work in pairs providing specific criteria for selecting information.

### **Evaluation**

Student demonstration of record selection procedure.

### **Extension Activities**

Students identify records containing specific information using the arrange function, and then by using the record selection function. On graphs, record the amount of time taken for each type of selection. Identify which way was most efficient.

Additional practice using different databases.

### **Student Booklet**

-Apple Commands - Record Selection

## Lesson # 5

### Background Information For Teachers

Continued practice is required for students to master the process of using a database. The objectives and procedure for this lesson reinforce the process students learned in Lesson 4.

The activities for today's lesson are taken from a database on teachers. Continued practice with databases is critical for students to be able to develop the necessary skills to work effectively with information within a database.

### Pre Planning Activities / Resources Needed

- Class set of computers or 1 computer per group of students.
- Set of Appleworks Software
- Set of Prepared Data Disks - File "Teachers"
- Transparency of Worksheet 14
- Class set of Worksheet 15

### Student Objectives

After Completing this lesson, students will be able to:

1. Arrange the information within categories of a database numerically and alphabetically using the "Arrange" command.
2. Combine sets using the logical connectives "and", "or", and "through".
3. Select entries that match certain selection criteria by using the [OPEN APPLE] [R] keys.

### Learning Activities/Sequence

Display an overhead transparency of a "Tables" format of a database on school information. (Worksheet 14) Discuss the information that is contained on the overhead.

Review the connective "AND". Have students give a definition or explanation of how it is used when joining two or more sets of information within a database.

Based on the information found within the overhead, have the students identify the teacher(s) that:

- are male and their favorite color is red
- are younger than 40 and teach grade 4
- their favorite food is pizza and their favorite color is green
- are male and their favorite food is stew

Discuss the process used to determine the teachers.

Review the connective "OR". Have students give a definition or explanation of how it is used when joining two or more sets of information within a database.

Based on the information found within the overhead, have the students identify the teacher(s) that:

- are male or female
- teach grade 4 or like pizza
- are younger than 30 or their favorite color is red
- teach grade 5 or are female

Discuss the process used to determine the teachers.

Review the connective "THROUGH". Have students give a definition or explanation of how it is used when working with information within a database.

Based on the information found within the overhead, have the students identify the teacher(s) that:

- are 35 through 45 years old
- teach grade 4 through grade 6

Discuss the process used to determine the teachers.

Have students load the database on teachers into their computer. Distribute Worksheet 15. Have students complete the Worksheet using the information found within the database.



### Evaluation

Student performance on Worksheet 15.

Ability of students to use the commands to select and arrange information within a database.

### Extension Activities

Students establish criteria for the selection of information and have other students solve their questions.

Students establish a database on students within the classroom. At this stage, the information may be stored on index cards. They then use the information to determine groupings of students based on selection criteria they establish.

Students illustrate the selection of certain information groups.

### Student Booklet

-Worksheet 15

Lesson # 6

**Background Information For Teachers**

The first step in establishing a database is to determine the purpose that the information will be fulfilling. The categories and information that is entered into the database should be designed to meet that purpose.

The categories and entries must be carefully defined. Categories should be specific and limited to one word. The information that will be entered into the categories must be standardized to facilitate the manipulation of the information. The format that the information will be entered in must be decided prior to collecting the information.

If several different individuals collect information to enter into a database, an information retrieval form that identifies the categories and the format of the entries should be developed.

**Pre Planning Activities / Resources Needed**

- Chart Paper
- Felt Pens
- Worksheet 16

**Student Objectives**

After Completing this lesson, students will be able to:

- 1) Define appropriate categories to be used in an electronic database when they are given a specific topic.
- 2) Define an appropriate format for information to be entered into a database's categories.
- 3) State 2 reasons why it is important to select the appropriate categories and entries when developing a database.

### Learning Activities/Sequence

Review the parts of a database. Discuss the importance of establishing appropriate categories to enter information into. Discuss situations where the same information could be entered in several different ways. If the same information is entered in different formats it limits the effectiveness of the database. Possible situations where that could occur include:

- Information on the sex of a student being entered as a "girl" or a "female"
- Weight or height being recorded using the Imperial or Metric systems
- Numbers being written numerically or as a word (8 or eight)
- Individual names being recorded with their last name followed by their first name or having their first name followed by their last
- A birthday being recorded as 11/05/81 or as 05/11/81 or as May 5, 1981

Discuss the implications these would have on arranging or selecting information within the database.

Students will establish a database for the use in the next several lessons. The topic of the database is "People Within Our School Environment". The database is to contain general information on the different individuals that are part of the school environment. Discuss with the students the role that the many different people play within a school environment. Brainstorm with the students for a list of as many different classifications of people as possible.

Divide the students into groups of four or five. Explain the tasks for the groups. They are to:

- decide on 10 specific categories that could be included in the database
- identify the format that the entries into the categories they have established are to take

Remind them they are to be as precise as possible. Students are to record their decisions on chart paper.

When the students have completed the process, bring the class back as a whole and have each group share their responses. The class is to decide on ten categories that will be the most effective to record information into and the format for the entries within those categories. Some possible categories and entries are found on worksheet 16.

Before the next class, develop an "Informational Retrieval Chart" for students to record information. The categories and the format for the entries that the class has decided upon should be identified.

### **Evaluation**

Appropriateness of the student developed categories and entry choices. This information is recorded on the group charts produced during the lesson.

### **Extension Activities**

Have students write out a series of entries of information that would be found within a database. Other students are then to determine the categories they belong to.

Given several categories, have students determine databases that would include all of the categories identified.

Given a specific topic, students would plan a database that would include all of the necessary information.

### **Student Booklet**

-Students copy the ten categories and the format for the entries into their notes.

Lesson # 7

**Background Information For Teachers**

Once categories and entry format have been decided upon, a database can be created using Appleworks. The directions for creating a database from scratch are:

From the "Main Menu" of Appleworks, select:

1. Add Files To The Desktop

From the "Add Files" Menu select:

4. Database

From the "Database" Menu select:

1. From Scratch

You are then asked to type a name for the file or database. Enter the name you wish the database to be called and press return.

You then enter the category names you have selected. Enter the categories one at a time. When you have finished entering the category names, press [ESC].

You then enter information into the database. Type the information into the specific categories in the correct format. When you have entered all of the information, press [ESC].

The database has now been established and can be saved on a data disk.

To add a new record to the database, place the cursor on the last record. To move the cursor to the last record automatically, enter [OPEN APPLE] [9]. This will move the cursor to the end of the file. [OPEN APPLE] [1] will move the cursor to the beginning of the file.

When the cursor is on the last record, enter [OPEN APPLE] [2]. Move the cursor through the categories of this record by pressing [RETURN]. When you have moved through all of the categories for the final record you will be asked if you wish to add additional records. Select yes. You may then continue with the process of creating or extending a database.

To save a database file use the same procedure as saving a word processing file. Enter [OPEN APPLE] [S].

### **Pre Planning Activities / Resources Needed**

- Class set of Appleworks
- Class set of Data Disks
- Computers
- "Completed Information Retrieval" form

### **Student Objectives**

After Completing this lesson, students will be able to:

1. Create a database from scratch that records information on people within a school environment.
2. Enter personal information into the appropriate categories on the database they have designed on people within the school environment.
3. Save their created database on a data disk.

### **Learning Activities/Sequence**

Review with students the importance of accurate and concise categories and entries within a database.

Tell students that they will now be creating the database designed in the previous lesson. Have students load Appleworks into their computers. Explain the process of creating a database. Demonstrate the process and have students follow on their computers, creating their own database. The name of the file they create is "school".

Have students complete an "Information Retrieval Form" on themselves. This information will then be used to enter into the database. Students are now to enter information on themselves into the various categories. Work through the process with the students. Once they have entered the information on themselves, have them save their database on a data disk.

Have students exchange computers with another student. They enter their personal information into the second computer. Once they have entered the information they save the database on their data disk. Students repeat this process as many times as time will permit. Through continued practice students will develop their skills at entering information into the database. A database on different individuals within their room will also begin to be developed on their data disk.

Distribute a second "Information Retrieval Sheet" to the students. Each student is to be assigned an individual from outside of the class. The students must interview that individual and complete the Information Retrieval Form on them. Students must interview the individual and have the sheet completed prior to the next lesson. Be sure to include as many different types of people within the school environment as possible.

#### **Evaluation**

The ability of the student to create a database with the appropriate categories.

The ability of the students to create a record about themselves with the appropriate information recorded in the categories.

The ability of the students to save their database on a data disk.

#### **Extension Activities**

Students can create databases on different topics. They may design the categories and begin to enter information into the database.

If students create their own database, they may use the information to look for patterns and relationships within it.

Students may extend their interviews to include family members or other community people.

#### **Student Booklet**

-Personal Information Retrieval Form  
-Apple Commands Page (OPEN APPLE)(1) to (OPEN APPLE)(9)

### Background Information For Teachers

To add new records to the database, place the cursor on the last record. To automatically move the cursor to the last record, enter [OPEN APPLE] [9]. This will move the cursor to the end of the file. [OPEN APPLE] [1] will move the cursor to the beginning of the file.

When the cursor is on the last record, enter [OPEN APPLE] [2]. Move the cursor through the categories by pressing [RETURN]. When you have moved through all of the categories for the final record you will be asked if you wish to add additional records. Select yes. You may then continue with the process of creating or extending a database.

One saves a database file using the same procedure as saving a word processing file. The easiest way is to enter [OPEN APPLE] [S].

To combine several group's databases together to form one large database one uses the copy command.

Load the original database into the computer. Load a second group's database into the computer. They will both have the same names. Copy the information from one database to the clipboard by placing the cursor at the beginning of the database. Enter [OPEN APPLE] [C]. Select "To The Clipboard". Select the entire body of text by moving the cursor to the end of the database ([OPEN APPLE] [9]). All of the highlighted text is now on the clipboard.

Go into the main database file. Once you are in the main file, copy the information from the clip board to the database with the [OPEN APPLE] [C] command.

Before you repeat the process you should remove the second database from the desktop. Do this from the main menu of Appleworks.

Repeat the process for each of the groups. When you are finished you will have one database that contains the information from each of the smaller groups.



### Pre Planning Activities / Resources Needed

-Class set of Appleworks and Data Disks

-Computers

-"Completed Information Retrieval" form on an individual from within the school environment

### Student Objectives

After Completing this lesson, students will be able to:

1. Add records to an existing database.
2. Save the modified database on a data disk.

### Learning Activities/Sequence

Students load Appleworks into their computers. Review the process of loading an existing database file from a data disk. Students load the file "School" from their data disk.

Review the process of entering information into a database. Demonstrate the process and outline the steps on the blackboard.

Students enter the information that they have collected into the database. When they have entered the information, have them save the expanded database on their data disk.

Have students work in groups of four or five students. Each student is to enter the information from their "Information Retrieval Chart" into the database. When they have saved this information, they are to move to a computer belonging to another member of their group. At this computer they are to enter the information about themselves and about the other school person they interviewed. The process continues until each group has a database that includes the records of the individuals that belong to the group and the records of the school personnel that each member had interviewed.

When a group has completed their task, check the information for accuracy. Combine the databases together on one data disk. When the databases from all of the groups have been combined, check the database for duplicate records. Eliminate duplicate records. Create a class set of data disks that contain the database "School".

### **Evaluation**

The records the students entered into the "School" database.

### **Extension Activities**

Students work together to develop other database topics. Within each topic they define the categories and the format for the entries. They may then work to build the database. The database should reflect an area of interest of the students. Topics could include hockey players, dancers, pets, or dinosaurs. This project could extend over several days. The information within this database could then be used by the students for special projects.

Students research the type of databases that exist within various businesses. Charts showing the purpose of the database and the types of entries could be recorded.

### **Student Booklet**

- Information Retrieval Form on the school individual interviewed by the student.
- Apple Commands page (OPEN APPLE)(C) & (OPEN APPLE)(S)

**Background Information For Teachers**

Students have had prior experience in arranging and selecting information based on specific criteria. This information is provided to review with the teacher the steps necessary to arrange and select specific information.

The information within a database can be arranged by category in several ways. To move the cursor from one category to another, push the [TAB] key. Each time the [TAB] key is pushed, the cursor will move one category to the right. When the [OPEN APPLE] and [TAB] key are pressed, the cursor moves one category to the left.

To move up or down in the database, one pushes the appropriate arrow key. By pushing [OPEN APPLE] and an arrow key, one moves to the top or bottom of the screen of information.

Information within the database can be arranged in a particular order by pressing the [OPEN APPLE] and [A] key. This command instructs the computer to arrange the category that the cursor is on. You are asked to select the manner you wish the information arranged. Your choices are:

- 1) From A to Z
- 2) From Z to A
- 3) From 0 to 9
- 4) From 9 to 0

Only one category of information can be arranged at any particular time. To return to the previous screen or the Main Menu, one pushes the [ESC] key on the computer.

The "Record Selection" command for the database is [OPEN APPLE] [R]. The different categories for the database are listed on the screen. Users are asked to select the category they wish to establish criteria for. For example, the "SEX" category is selected by moving the cursor with the arrow keys to highlight the category "SEX". It is then selected by pressing [RETURN].

The next screen asks for additional information on the record selection. Several possibilities are presented for the user to choose between. Some of the possibilities are intended for numerical information and some for information recorded as words or letters. By highlighting "EQUALS", we have directed the computer to do its selection based upon:

## SEX EQUALS

To complete the record selection process the user must type in the criteria they have established. If we wanted all of the males, we would enter "MALE". We have now told the computer to select those records where:

### SEX EQUALS MALE

Computerized databases allow users to select information with limits placed on several categories. The record selection criteria for each category can be integrated with the use of the connectives "and", "or", and "through".

(SEX EQUALS MALE) AND (PETS EQUALS FERRETS)

With this selection, the records identified are all males that have ferrets as pets. Both criteria must be met for the record to be selected.

(SEX EQUALS MALE) OR (PETS EQUALS CATS)

With the connective "or", males are identified and also all individuals that had cats as pets. With the connective "or", if the information is found in either category, the record is selected.

(MARKS EQUAL 50) THROUGH (MARKS EQUAL 75)

All students that have marks between 50 and 75 are identified using the connective "through".

The selection criteria appear at the top of the screen. Three different categories can be linked using one of the connectives. Once the record selection criteria have been entered, the computer will identify those records that meet the selection criteria. To select the matching records, the user presses the [ESC] key. The records selected will then appear on the screen.

To return to the entire database of information, enter [OPEN APPLE] [R]. The computer will ask you if all records are to be selected. Enter yes for the entire database to be appear once again.

Relationships exist within the information. Students may find difficulty at first discovering these relationships but will develop higher levels of thinking by working through the information on their own. To assist students with this, group work is advised. Encourage students to propose hypotheses related to the information. They should then test their hypotheses by manipulating the information.

### Pre Planning Activities / Resources Needed

-Computers

-Appleworks Software

-Class Set of Data Disks with "School" database

### Student Objectives

After Completing this lesson, students will be able to:

- 1) Propose a hypothesis on relationships that are found within the information
- 2) Demonstrate the appropriate way to test a hypothesis using the "Arrange" and "Record Selection" commands.

### Learning Activities/Sequence

Students load the database "School" into their computers. Review the steps for arranging information within a specific category. Demonstrate the process and have students practice the procedure.

Review the steps for Record Selection within a database. Demonstrate the process and have students practice the procedure.

Review the definition of hypothesis. (Worksheet 17) The students will be making hypotheses about the relationships within the information found in the School Database. State a hypothesis and show the students the process that can be used to determine its validity. Have the students work with you in manipulating the information to test the hypothesis you proposed.

Students work in groups. Each group is to create hypotheses and test their validity. On chart paper, the groups are to record:

- their hypothesis
- the process they used to test the validity of the hypothesis
- the final outcome of their test of validity

Groups are to manipulate the information and look for relationships between the different categories and records of information. Relationships should be recorded on chart paper. The charts will be shared with the entire class during the next lesson.

### **Evaluation**

Charts that identify the hypothesis and the process used to determine validity. The focus is not on the final outcome but on whether the students can plan a process to determine the validity of their hypothesis.

Charts that identify the relationships found within the information.

### **Extension Activities**

Continue the process with the databases that students have created in previous lessons.

### **Vocabulary Development**

#### **HYPOTHESIS**

An Idea Suggesting The Reason  
Why Something Happens  
-An Educated Guess-

#### **Student Booklet**

-Students copy their group charts as notes

-Glossary page - Hypothesis

## LESSON # 10

### **Background Information For Teachers**

The learning that we provide students should last them throughout their life. For this reason it is important to recognize that the learning that occurs when students work with the information within a database is the process skills they are developing. The factual content found within the database is important but not as important as the student being able to determine what information is needed and how can that information be manipulated to determine relationships that exist.

Students learn using the cooperative learning approach. As educators we must facilitate this cooperation.

### **Pre Planning Activities / Resources Needed**

- Computers
- Appleworks Software
- Class Set of Data Disks with "School" database
- Charts that groups began work on in Lesson 9

### **Student Objectives**

After Completing this lesson, students will be able to:

- 1) Propose a hypothesis on relationships that are found within an information database.
- 2) Demonstrate the appropriate method to test a hypothesis using a database.

### **Learning Activities/Sequence**

The lesson today will consist of three activities.

First, students continue working with the information within the database on "School". Students continue to develop and test hypotheses and look for patterns and relationships within the information.

Second, students prepare their presentation for their classmates. Discuss the process that students will use during their presentations. Each group will discuss their hypotheses and the process they used to determine their validity. The groups will also identify any relationships that they found within the information. Discuss the relationships that were discovered by the students.

Discuss the different strategies used by the groups to test their hypotheses. Have the class identify common patterns or relationships that were discovered by the groups. Determine how the relationships were identified by the groups.

### **Evaluation**

The hypotheses formulated and the appropriateness of the hypothesis. The process that the groups used to determine the validity of the hypotheses.

The relationships that the students discovered within the information and the process used to discover the relationships.



### Background Information For Teachers

Students need sufficient background information on a topic to design an effective database. General information on a topic should be presented to students to enable the student to formulate a "Knowledge Map" to organize their existing knowledge and relate new information to.

Student interaction is also a very valuable source of student learning. Planned sharing sessions provide students with an opportunity to discuss their learning and learn from one another.

### Pre Planning Activities / Resources Needed

-Chart Paper

-Felt Pens

### Student Objectives

After Completing this lesson, students will be able to:

- 1) Design a database with 10 categories that provide relevant information on a given topic.
- 2) Modify a database based on discussions and suggestions from classmates.

### Learning Activities/Sequence

Select a specific topic for students to design a database on. Students will design a database and research the topic chosen to complete the database. The topic selected should be relevant to the curriculum of your classroom and of interest to the students. There must be several sources of information on the topic since all students will be involved with research activities based on the topic.

If you wish to limit the sources of information to one format, instruction should be provided on the use of that particular format. For example, if you want the students to use almanacs for information, you must provide instruction on the appropriate way to use an almanac.

Possible topics that could be used for a class project include:

- Provinces of Canada
- Cities or Towns of Alberta
- Nationalities of Students in Class
- Countries Around the World
- Ancient Civilizations
- Political Parties
- Dinosaurs
- Classifications of Animals
- Planets
- Famous Explorers
- Famous Fictional Characters
- Fairy Tales

The topic selected should be broad enough to facilitate groups of students researching specific information on the general topic. The entire class should work on one topic. This will allow them to share their ideas and compare the reasons that they develop for following the process that they decide upon.

Present the necessary background information to give students a general outline or description of the topic chosen. The categories that the students define will be based upon the general information they have prior to researching the topic.

Divide the class into groups of four or five students. Each group will design a database on the topic. Each group should state 10 categories for information to be entered into. These categories should provide the most relevant information to the topic. The groups will also decide on the format of the entries. The categories and the format of the entries should be recorded on chart paper.

Each group explains the database they have designed to the rest of the class. They state the categories they have chosen, the format of the entries, and then provide the reasons for their decisions. The charts should be posted for everyone to utilize in the modification of their databases.

The groups then go back and modify to improve the database they have designed. Each group should examine their design and use the information presented by the other groups to modify their original design. Once again the ten categories and the format of the entries should be recorded on chart paper.

Based upon their group's database, students are to design an "Information Retrieval Form" that they will use to record information on the topic. Before the next class, copies of each group's form must be duplicated for the students to use in their research.

#### **Evaluation**

The original design of the group's database that is presented on chart paper.

The presentation by the group to the rest of the class. The focus should be on the rationale given by the students for the format they chose.

The modifications or improvements to the group's original databases.

#### **Extension Activities**

Students may select an individual topic to research. Students would then follow the same procedure on an individual basis. They design a database to record the information.

Students research existing databases that exist on specific topics. They determine where they are available, how one accesses them, and would they be appropriate for a student to use.

#### **Student Booklet**

-Information Retrieval Form designed by the group

### **Background Information For Teachers**

For students to be successful when researching a topic, they must have background information prior to beginning the research process. The background information provides a mind map to organize future learning and develop relationships between existing information. As students develop an understanding of the topic, adjustments to the structure of the mind map occur.

Students need a format to record the information they discover through research. In this unit we use the "Information Retrieval Form" as the organizational tool for the students to use.

If students are to research a topic, there should be several sources of information on that topic. If students are required to use one specific type of resource, there should be sufficient numbers of that resource for students to find success in their research. For example, if students are using encyclopedias, there needs to be sufficient numbers of encyclopedias available for everyone to be actively involved.

Students must be given instruction on the use of the sources of information. Direct instruction on the process to be used when utilizing resources should be given prior to the actual use of them.

### **Pre Planning Activities / Resources Needed**

- Copies of the "Information Retrieval Forms" that the groups designed in the previous lesson.
  
- Sources of information for students to research their topic .

### **Student Objectives**

After Completing this lesson, students will be able to:

- 1) Research a topic using a specific type of information source. Students will use the source in the appropriate fashion.
  
- 2) Summarize information found within a source. This summary is to be recorded on an Information Retrieval Form.

## **Learning Activities/Sequence**

Review the general topic that each group will be researching. Discuss with the students the type of resource that they will be accessing the information from. Review the appropriate ways to use the resource.

Distribute the "Information Retrieval Forms" that the individual groups designed. Specify the number of records that are required. The number of records is dependent upon the availability of resources, the topic chosen to be researched, and the format of the databases that the students have designed. There should be a balance between the learning that will occur from the content of the research and the process that the students are learning when processing the information.

Students work as a group to develop the procedure that they will follow to research the topic. Each student might research several records on their own and then combine them to form the group's database or students may work with a partner to research the information on a particular topic.

The groups of students then research the topic and complete the "Information Retrieval Form" on the records.

### **Evaluation**

The information that is contained within the "Information Retrieval Forms" that the students complete.

The appropriate use of the source of information. If specific skills have been taught on the use of an information source, are the students using these skills to research their topic.

### **Extension Activities**

Research activities of students could be expanded to include different sources of information.

Continued work on individual database and research topics that they have chosen.

### **Student Booklet**

-Completed Information Retrieval Forms

Lesson # 13

**Pre Planning Activities / Resources Needed**

- Copies of the "Information Retrieval Forms" that the groups designed in the previous lesson.
- Sources of information for students to research their topic .

**Student Objectives**

After Completing this lesson, students will be able to:

- 1) Research a topic using a specific type of information source. Students will use the source in the appropriate fashion.
- 2) Summarize information found within a source to a previously decided format.

**Learning Activities/Sequence**

Students continue to research their topic and complete the "Information Retrieval Form" for the records that they are responsible for. The completion of the Information Retrieval Form can occur over several days.

Once students have completed their research, they enter the information into the database that they have designed. The group members will construct one database that is a summary of all the information found in the group's retrieval forms. The database can be constructed on one data disk and then copied so that every student has a copy of it on their own data disk.

**Evaluation**

The information that is entered into the group's database. Checks should be made for:

- accuracy of information
- format of the entries into the specific categories

**Extension Activities**

Students continue work on their individual projects. They should follow they same process that they are doing as a group.

**Student Booklet**

- Completed Information Retrieval Forms

## Lesson # 14 & 15

### Background Information For Teachers

The information that is contained in a database can be processed and shared in a variety of ways. The database within the computer can print out a "Table" format of the information or can print out a "Label" format report.

To obtain a "Tables Format", load the database into the computer. Type [OPEN APPLE] [P]. You are asked the format that you wish the report to be printed in. Once you have established a format, the computer will save the format on the data disk for future use.

Select [2 - CREATE A NEW "TABLES" FORMAT]. You will then be asked to enter a name for the report.

The next screen allows you to change the format of the report. This menu allows you to adjust the widths of the columns of information, select the records that you wish to be printed, or arrange the information within specific categories. Once you have formatted the report to meet your needs, enter [OPEN APPLE] [P].

You are asked where you would like the report to be printed. Select the name of your printer and the report will be printed out. You may return to the main menu by pressing [ESC].

Information can be manipulated and arranged on the computer screen before it is printed out. Patterns and relationships should be tested on the computer and then a hard copy of the report can be printed to share with others.

Groups will be sharing the information contained within their database with the rest of the class. Students must be shown different formats for sharing information contained within the database. Possible formats include graphs, pictures, charts, diagrams, tables and in paragraph form.

### Pre Planning Activities / Resources Needed

- Computers
- Printers
- Appleworks Software
- Data disks
- Material to make reports - chart paper, felts, rulers
- Worksheets 18 to 21

### Student Objectives

After Completing this lesson, students will be able to:

- 1) Print a report from a database using the "Tables" format.
- 2) Prepare three different formats for sharing information from a database they have created.

### Learning Activities/Sequence

With the use of Worksheets 18 to 21, demonstrate the process to print out a "Tables" format report from a database. Have students work through the process as you give step by step directions. Each group should have access to a printer. Provide the students with practice changing the layout of the report prior to them printing a copy of all the information contained within their database.

Have the students brainstorm different ways that they could share the information within the database. The content of the information is only one small component of the sharing. The patterns and relationships that exist within the information is the critical aspect that should be shared with their classmates. As the students identify different ways of showing the relationships, list them on the blackboard. Have the students describe the process they would follow to use each of the different formats of information sharing.

Students work in their groups to prepare their presentation. The presentation must include the following items:

- all the information contained within the database (the categories and the specific entries for each of the different records). This can be obtained by a print out in "Tables" format of their entire database.
- information describing the relationships within the information that they have discovered.
- a chart explaining why they chose the categories and entries that they chose.
- a chart explaining the process that they used to determine relationships. On this chart successful and unsuccessful attempts should be identified.



Students must be given a concise set of directions for the presentation that they will be making. The presentations will be made by the entire group and should last approximately 15 minutes. The students should describe the database they designed and the different manipulations of the information that they tried. At the end of their presentation, other students should have the opportunity to ask any questions they might have related to the information presented by the group.

The presentations will be prepared over 2 lessons. Individual groups will need assistance to develop the material they will be presenting. Parent volunteers or older students would be of value to act as aides at this point to assist the groups where needed.

#### **Evaluation**

The different formats that the groups produce to share the information within the database they have designed.

The identification of relationships within the information or the processes that the students used to determine relationships. This information will be identified on one of the charts.

The accuracy and completeness of the database that the students have produced. The information contained within the categories for each of the records will be printed out on the "Tables" format that each group is to produce.

#### **Extension Activities**

Continued work on individual projects using the database that they have created.

#### **Student Booklet**

- Copies of charts, graphs, or presentation material
- Print out of their completed database.

Lesson # 16

(Presentations Should Occur Over Several Days)

**Background Information For Teachers**

Students learn a great deal when they share the information they have discovered with their peers. Activities need to be structure to assist the students in the appropriate formats for presentation. Students need to be taught the skills involved in presenting information to groups. As each group makes their presentations, students should be encouraged to discuss the positive aspects of the report given and offer suggestions on ways to improve. The suggestions for improvements must be limited to avoid discouraging students in the future.

**Pre Planning Activities / Resources Needed**

- Supplies and technology for the group presentations. Each group must prepare a list of materials they need assistance with prior to doing their presentation.
- Evaluation forms (Worksheet 22)

**Student Objectives**

After Completing this lesson, students will be able to:

- 1) Present information to classmates in clear concise format.
- 2) Identify the patterns and relationships that exist within data found within a database and explain these relationships to their classmates.
- 3) State 2 positive points related to a presentation and offer 1 constructive suggestion on ways to improve the presentation.

### Learning Activities/Sequence

Students will be involved as an audience for the presentations by their classmates. Students will be asked to provide feedback to their classmates about the presentations. Distribute copies of the evaluation form (Worksheet 22) and discuss the appropriate way to complete the form. As their classmates present the information they have discovered, students will be asked to complete an evaluation form on the presentation. Students will be evaluated on the quality of the feedback they are providing their classmates.

Each group presents the information they have discovered and recorded in the database they have designed. The presentations must include:

- identifying the categories and the format of the entries for their database and an explanation of why they designed it that way
- the information within the database (the categories and the specific entries for all of the different records). This can be displayed as an overhead of the "Tables" format of the report of the entire database.
- an explanation of the relationships and patterns that were discovered in the information within the database.
- a chart explaining the process that they used when looking for relationships. On this chart all of the attempts to manipulate, sort, and arrange the information to determine relationships that did not work should be identified.

At the end of each presentation, students should be given an opportunity to ask any questions to clarify the information given during the presentation. The evaluation forms on the presentations are then completed by the students and collected by the teacher.

After one group has presented their information and the evaluation is completed, the next group begins their presentation. The process is continued until all groups have presented.

### **Evaluation**

The presentations by the groups are evaluated to see if they have met the requirements set out for them. The evaluation of the presentations focus on three components.

- 1) The content of the database and the relationships and patterns identified within the information.
- 2) The format that the groups used to present their information. Was the presentation clear, concise, and accurate.
- 3) The explanation of the process that the students attempted to determine patterns and relationships within the information.

The second area of evaluation looks at quality of the feedback an individual provides for his/her classmates. Each student has been asked to state two positive comments regarding the presentation and to offer one constructive suggestion to improve the presentation or the database created.

### **Extension Activities**

Completion of the independent activities on databases that the students initiated in previous lessons.

### **Student Booklet**

-Evaluation forms on their presentation

**Background Information For Teachers**

After students have completed a process of retrieving information, processing the information, and sharing the information with an audience they should be given an opportunity to complete the process by taking a holistic look at the process they were involved with. The final lesson of the unit provides the students with an opportunity to examine and consolidate the learning that the students have experienced throughout the unit related to the process of using a database to process information.

**Pre Planning Activities / Resources Needed**

- Chart paper and felt pens
- Charts that summarize the evaluation information taken for each of the presentations. These charts should be completed by the teacher prior to the lesson. The following charts should be completed.

<u>The Actual Format Or Design of The Databases</u>	
<u>Positive Statements About The Databases</u>	<u>Possible Improvements To The Databases</u>

<u>The Information Contained Within The Databases</u>	
<u>Positive Statements</u>	<u>Possible Improvements</u>

<u>The Process Used To Manipulate Information</u>	
<u>Positive Statements</u>	<u>Possible Improvements</u>

### **Student Objectives**

After Completing this lesson, students will be able to:  
1) State three key ideas to remember when using a database in the processing of information.

### **Learning Activities/Sequence**

Display charts of information that have been taken from the individual evaluations of the presentations. The charts are a summary of the information that they have provided on the presentations. Discuss the type of information that is contained under each specific heading.

Divide students into groups to discuss the information found in the charts. After discussing all of the points each group is to record the two statements that they feel are the most important under each section on chart paper.

Have each group report back their decisions to the rest of the class. Their responses should be followed up by a discussion of the process that they have been involved with in using a database to process information.

### **Evaluation**

Group charts identifying the key statements under each heading.

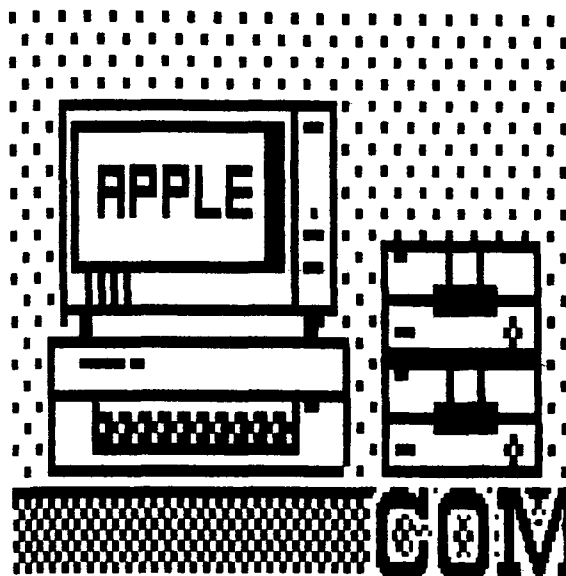
Final booklet that contains their work during the unit.

### **Extension Activities**

Students complete their independent projects that they have worked on throughout the unit.

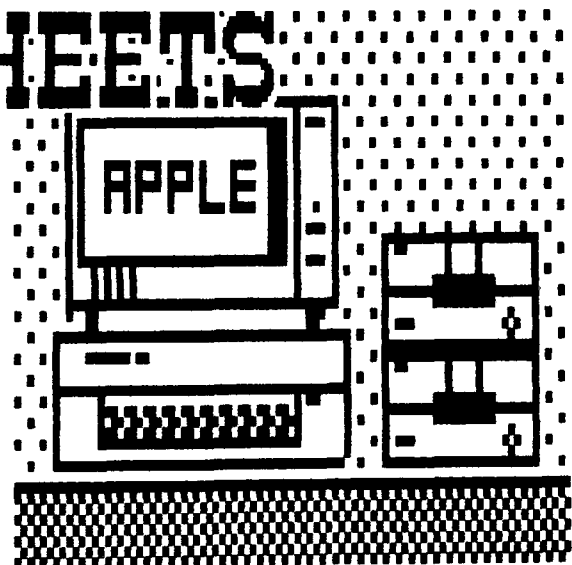
### **Student Booklet**

-Students copy the summaries of the evaluation into their notebooks



**COMPUTER  
DATABASES  
IN THE  
ELEMENTARY  
CLASSROOM**

**WORKSHEETS**

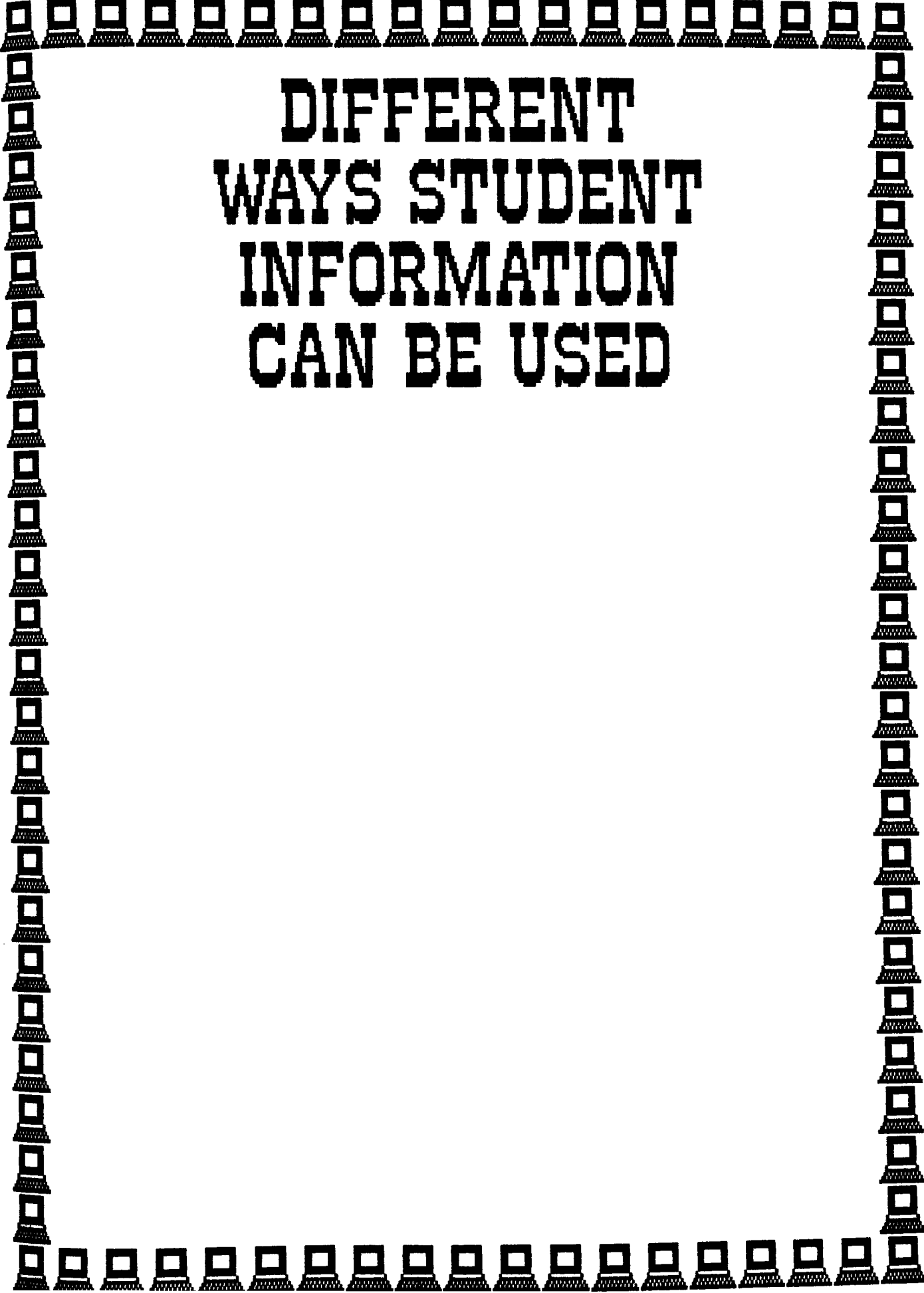




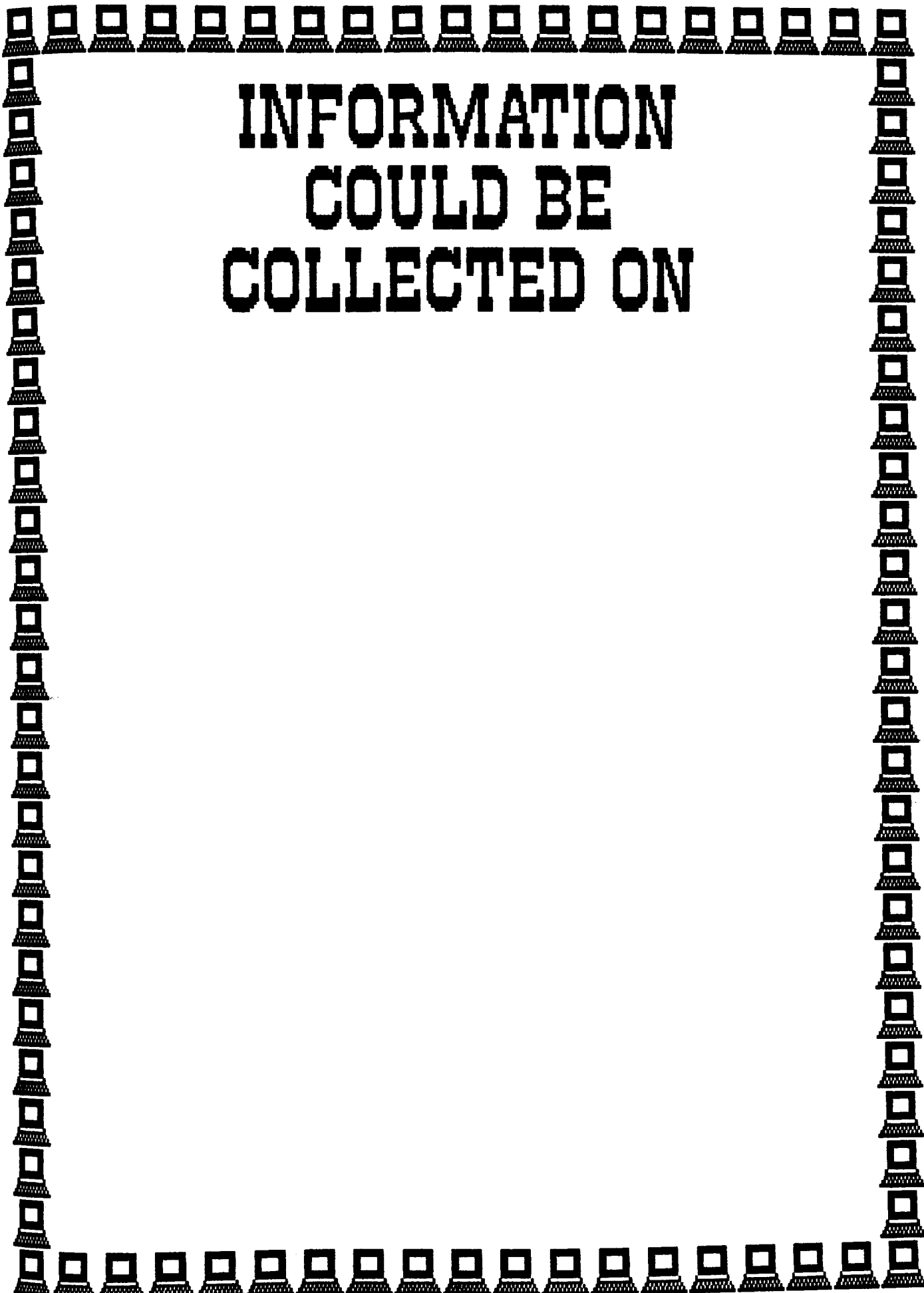
# **DATABASE**

**A COLLECTION  
OF RELATED  
INFORMATION  
STORED IN AN  
ORGANIZED,  
SYSTEMATIC  
MANNER**





**DIFFERENT  
WAYS STUDENT  
INFORMATION  
CAN BE USED**



**INFORMATION  
COULD BE  
COLLECTED ON**

## Databases and Information

A database is a \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Three ways that information about students could be used are:

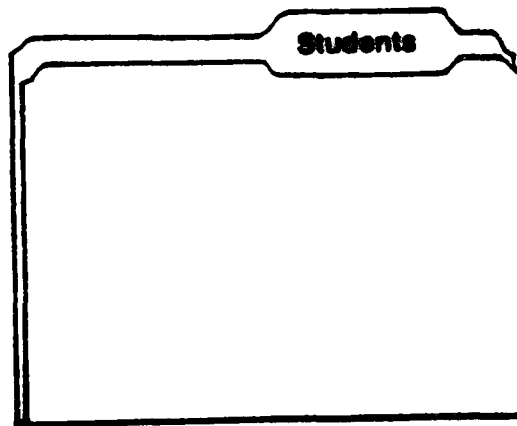
1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

Databases could contain information that has been collected on:

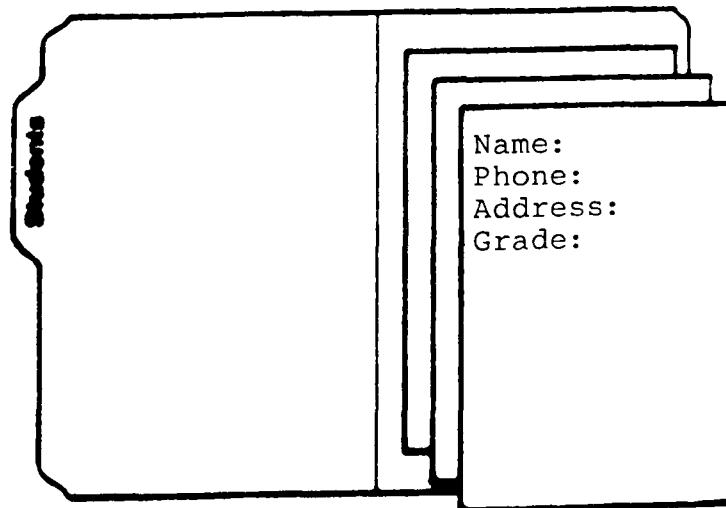
1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

# FILES AND RECORDS

**A File:**



**Record:**



# RECORDS AND ENTRIES

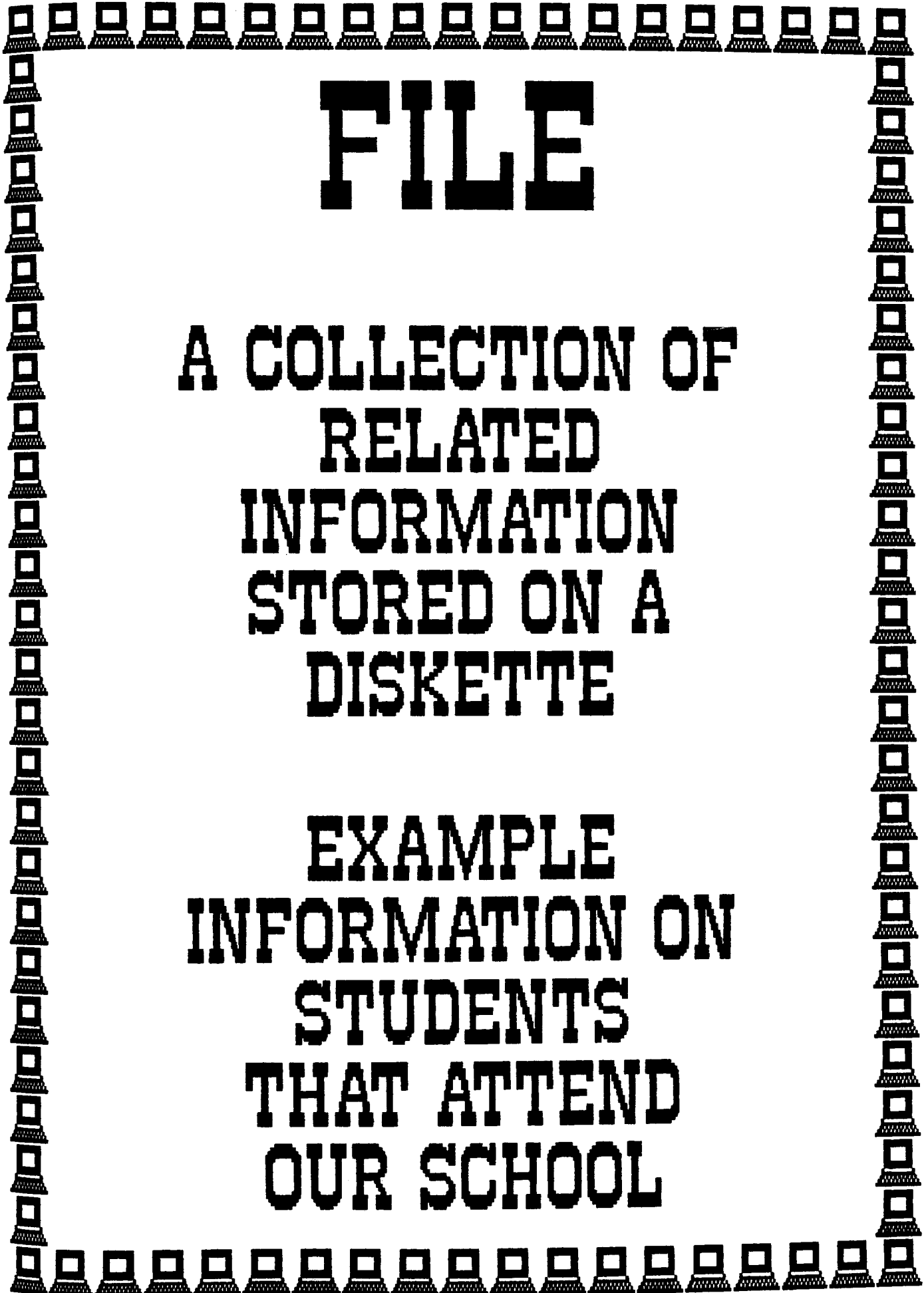
STUDENTS

JOE JENSEN

JIM JOHNSON

BILL SMITH

First Name: Bill  
Last Name: Smith  
Phone: 234-9876  
Address: 12 Elm Road  
Age: 45



# FILE

A COLLECTION OF  
RELATED  
INFORMATION  
STORED ON A  
DISKETTE

EXAMPLE  
INFORMATION ON  
STUDENTS  
THAT ATTEND  
OUR SCHOOL

# RECORD

A SUBSET OF  
A FILE THAT  
CONTAINS ONE  
GROUP OF RELATED  
INFORMATION

EXAMPLE  
INFORMATION ON  
A PARTICULAR  
STUDENT AT  
OUR SCHOOL

# CATEGORY

A SUBSET OF  
A RECORD THAT  
CONTAINS ONE  
TYPE OF  
INFORMATION

EXAMPLE  
ON A STUDENT  
RECORD CATEGORIES  
COULD INCLUDE THE  
NAME ADDRESS AGE



# ENTRY

THE INFORMATION  
IN A SPECIFIC  
CATEGORY OF  
A RECORD

EXAMPLE  
THE CATEGORY  
"FIRST NAME"  
WOULD HAVE THE  
ENTRY  
"ANNIE" OR "JOHN"



Computer Databases

A FILE is a \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

A RECORD is a \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

A CATEGORY is a \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

An ENTRY is a \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Examples of information that could be stored in a computer database include:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

The advantages of using a computer to store information are:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## Worksheet 13

File: STUDENTS  
Report: Worksheet 13

NAME	AGE	FAV.CLASS	MARK	FAV.SPORT	HEIGHT	PET	SEX
FRED	12	PHYS.ED	45	SOCCER	134		M
TOM	11	MUSIC	49	HOCKEY	110	CAT	M
HARRY	11	ART	55	FOOTBALL	122		M
EMILY	10	READING	58	HOCKEY	117		F
ROY	11	MUSIC	64	SKIING	115	HAMSTER	M
MAX	11	ART	65	FOOTBALL	122		M
LIL	9	PHYS.ED	67	RINGETTE	113	CAT	F
MARY	9	SCIENCE	68	SKIING	112	DOG	F
FRANK	10	READING	68	SKIING	116	RABBIT	M
AL	10	READING	69	SKIING	115	MOUSE	M
SAM	10	ART	70	SOCCER	115	DOG	M
BOB	10	MUSIC	70	SOCCER	121	FERET	M
WES	11	ART	71	HOCKEY	121		M
JON	10	FRENCH	74	HOCKEY	119	DOG	M
ANNE	10	SOCIAL	75	SKIING	120	FISH	F
JOE	10	SCIENCE	75	HUNTING	118	CAT	M
SARA	9	MATH	76	HOCKEY	103	BIRD	F
SUE	10	SCIENCE	76	SOCCER	134		F
DICK	10	PHYS.ED	76	FOOTBALL	102	FERET	M
HALEY	10	ART	78	BASKETBALL	130	DOG	F
JENNY	10	MATH	85	BASKETBALL	124	BIRD	F
GEORGE	10	READING	85	FOOTBALL	119	FERET	M
LISA	10	SOCIAL	89	BASKETBALL	124	CAT	F
HELEN	10	HEALTH	89	SOCCER	118		F
JOY	10	PHYS.ED	94	SKIING	124	SNAKE	F
DEB	10	SOCIAL	95	HOCKEY	125	DOG	F
LOU	10	ART	95	SKIING	120	RABBIT	M
KAY	10	ART	96	HOCKEY	119	FISH	F
ANNIE	10	READING	97	SOCCER	116	CAT	F

Database on School Teachers

Teacher	Grade	Favorite Color	Favorite Food	Sex	Age
Mr. Smith	4	Green	Pizza	M	35
Mr. Jones	5	Red	Steak	M	47
Mr. Jensen	6	Red	Hamburger	M	56
Mrs. James	6	Blue	Pizza	F	39
Mrs. Jensen	5	Green	Stew	F	21
Mrs. Murphy	4	Purple	Fish	F	39

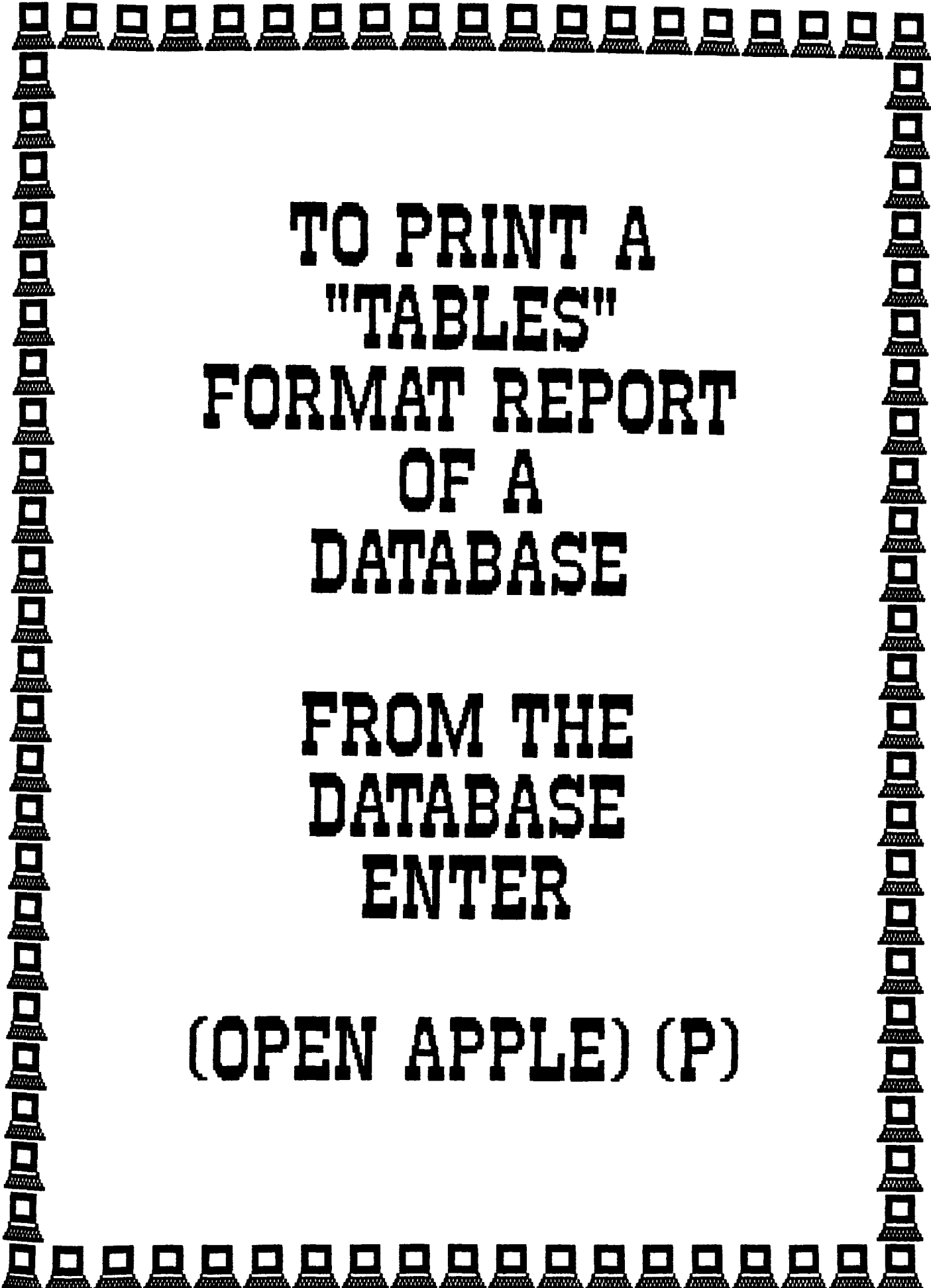
A decorative border made of small, stacked rectangular blocks surrounds the central text. The blocks are arranged in a grid-like pattern, forming a frame around the page.

# POSSIBLE CATEGORIES AND ENTRIES

# **HYPOTHESIS**

**AN IDEA  
SUGGESTING THE  
REASON WHY  
SOMETHING  
HAPPENS**

**AN  
EDUCATED  
GUESS!**



**TO PRINT A  
"TABLES"  
FORMAT REPORT  
OF A  
DATABASE**

**FROM THE  
DATABASE  
ENTER**

**(OPEN APPLE) (P)**



-2-

**ENTER A NAME  
FOR THE  
REPORT**

**PRESS  
"RETURN"  
WHEN YOU ARE  
FINISHED**



# FORMAT MENU

YOU MAY SELECT  
THE FORMAT OF THE  
REPORT NOW

OPTIONS INCLUDE  
ARRANGE  
CATEGORIES  
RECORD SELECTION  
SIZE OF CATEGORIES  
SPACING  
FOLLOW DIRECTIONS



# PRINTING LOCATION

SELECT THE  
NAME OF YOUR  
PRINTER  
PRESS RETURN

EVALUATION FORM

Name of Students Being Evaluated:

---

---

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The Actual Format of Design of The Database

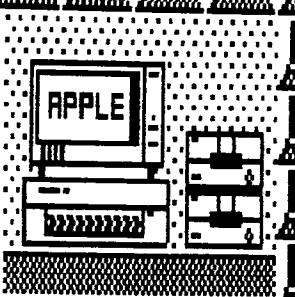
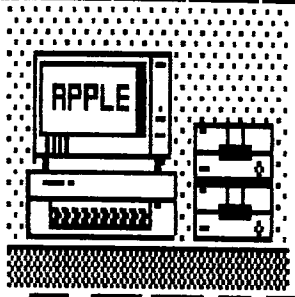
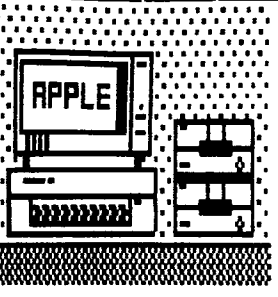
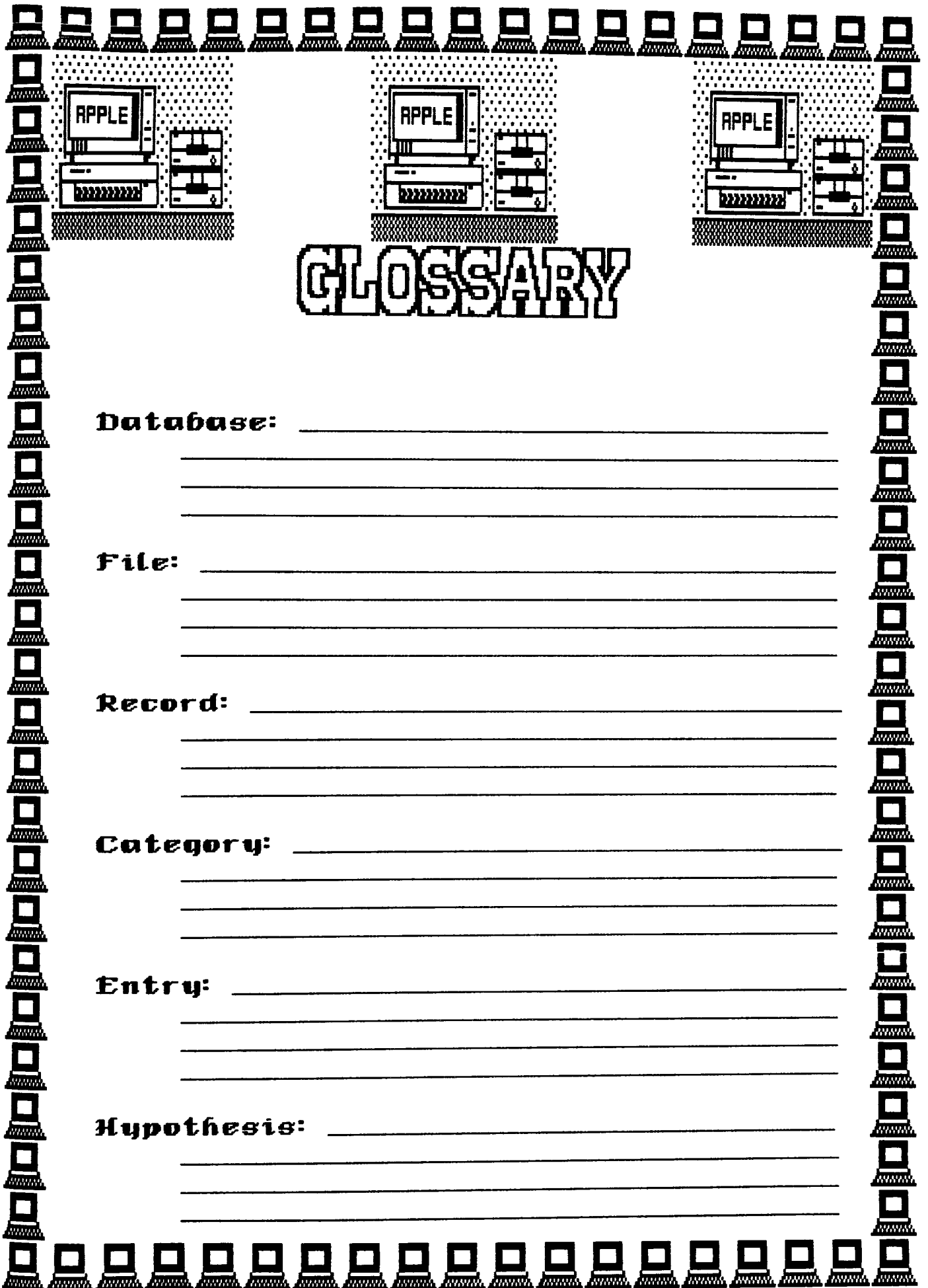
Positive Statements About The Database	Possible Improvements To The Databases

The Information Contained Within The Database

Positive Statements	Possible Improvements

The Process Used To Manipulate Information

Positive Statements	Possible Improvements



# GLOSSARY

**Database:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**File:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Record:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Category:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Entry:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Hypothesis:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



# APPLE COMMANDS

**TAB:** \_\_\_\_\_

**OPEN APPLE TAB:** \_\_\_\_\_

**OPEN APPLE Z:** \_\_\_\_\_

**OPEN APPLE A:** \_\_\_\_\_

**ARROW:** \_\_\_\_\_

**OPEN APPLE ARROW:** \_\_\_\_\_

**OPEN APPLE R:** \_\_\_\_\_

**OPEN APPLE S:** \_\_\_\_\_

**OPEN APPLE (1 to 9):** \_\_\_\_\_

**OPEN APPLE C:** \_\_\_\_\_

**OPEN APPLE P:** \_\_\_\_\_