The Formative Evaluation of

A Professional Development Training Package

The Computer in Early Childhood

Brenda J. Pollock

A Thesis Equivalent
in
The Department
of
Education

Presented in Partial Fulfillment of the Requirements

for the Degree of Masters of Arts at

Concordia University

Montreal, Quebec, Canada

May 1991

ISBN 0-315-68785-1

ABSTRACT

The Formative Evaluation of a Professional Development Training Package The Computer in Early Childhood

B. J. Pollock

Based on surveys of Montreal-based early childhood educators, it has been determined that a need exists for the design, development and implementation of a computer training package geared to the specific needs of early childhood educators: a better understanding of computers in general, exposure to software applicable to both early childhood education and educational management and an understanding of how to incorporate the computer into the early childhood classroom in developmentally-appropriate ways. The Association of Early Childhood Educators, the professional association representing these educators, offered support for the creation of this professional development training package. This researcher undertook the design, development and evaluation of the package, using the Dick and Carey model for the instructional systems design. The training covered the three (3) topic areas mentioned and was designed in a modular fashion to allow for a variety of delivery options based on the needs of the targetted population. Evaluation was conducted to determine whether the training package constitutes a marketable product. The results indicate a generally positive sense of accomplishment and positive attitude toward the training package. It is recommended that suggested revisions be made and that the training package be made available to the Canadian population of early childhood educators.

DEDICATION

I would like to dedicate this work to my mentors: Sandra, Hollace, Vi, Michele, Irene and Annie who kept after me, to my dear parents who have always supported me and to my daughter Jennifer, who for five long months was forced to mother the both of us and did it superbly. Without these special people, the project would never have been completed.

ACKNOWLEDGEMENTS

There are a number of people, departments and associations who have been involved in the development of this project, who must be gratefully acknowledged. I would particularly like to thank Richard Schmid for his supervision, guidance and insight. He kept me on target and he kept me honest. The Association of Early Childhood Educators, Inc. supported my efforts and offered assistance in recruitment and financing. I am grateful to Vanier College: To the Dean of the Faculty of Applied Technologies for his advice and support, to the Audio-Visual Department for providing technical support and a testing site and to the wonderful people in the Print Shop for their expertise and patience. To my children, thank you for understanding my need and to John, a special thank you for providing me with space in which to work, the tools to do it with and for endless cups of tea.

TABLE OF CONTENTS

Appendices

Figures

Tables

STATEMENT OF NEED

The rapid emergence of the personal computer has placed emphasis on the need for everyone to become computer literate. Courses in computer literacy are being widely promoted from a variety of perspectives and for various clientele. Most small businesses have enthusiastically adopted management by computer, finding that the technology allows them to become more efficient and profitable. Ads directed at parents pressure them to buy computers so that their children will not be left behind in the new Information Age. Beaty (1987) has found that "the earlier the better" is a rule as appropriate to learning the computer as it is to learning a second language.

Early childhood agencies and educators have been affected by this pressure and have responded to the best of their abilities. Many daycare administrators are using computers to more or less manage their administrative tasks. In terms of educational and parental concerns for computer literacy for children, the early childhood field's primary concern is that computers be introduced to children in developmentally-appropriate ways. As computers become more widely used in the preschool setting, computer literacy training for educators becomes a requirement. This researcher defines computer literacy as the ability to use the available hardware and software systems in an informed and comfortable manner.

Local colleges and universities offer general computer literacy courses but none to date (except for a short-lived attempt by Concordia University) offers anything specific to the early childhood field. Although the CEGEPs are currently introducing one course into their Early Childhood Education DEC (Diploma of Collegial Studies) programs, these programs come too late for educators already in the field. Educators currently in the field have little if any computer expertise, either because of minimal professional training or because their professional training did not involve computers.

Data from both informal and formal surveys indicate a strong desire by educators and administrators alike, to acquire computers for both educational and administrative purposes. Educators are continually requesting guidance in the use of computers with young children and for young children. A formal survey was conducted in the spring of 1990 (see Appendix A) using as respondents the staff members, educators and directors of twelve (12) different day care centres in and around the island of Montreal. These respondents (N=60) are members of the Association of Early Childhood Educators and are primarily anglophone females. The Daycare centres serve the needs of young children between the ages of just a couple of months to five years, and while business is conducted mostly in English, a number of the centres are bilingual and occasionally trilingual.

Survey results indicate the following:

- 75% of the centres had at least one computer, being used primarily for administrative purposes.
- only 1 educator at 1 centre had specialized computer training.
- 83% felt the need for specialized training and were willing to allocate funds for training.
- 80% believed that they would personally benefit from computer training, the area of assistance most frequently selected as a top priority.
- all respondents felt a need to introduce the microcomputer into the early childhood environment as a technological tool.
- 92% were willing to allocate funds for the acquisition of computer hardware and appropriate software.

The Association of Early Childhood Educators, Inc. (A.E.C.E.) is the professional association which represents these educators. It is a well-established organization (founded in 1946) whose mandate is to provide quality care for preschool children through professional support for its membership. It serves approximately 350 educators, primarily anglophone, in the Greater Montreal area. The Association offered its sponsorship and financial support to this researcher for the development of a comprehensive computer training package, designed to meet the specific needs of its early childhood educators (See Appendix A for letters of support).

The need is for professional training; the training required to put the computer to optimal use as a tool for teaching, learning and administration. These three (3) distinct requirements focus on computer training that will enable the educator to feel competent and comfortable with the technology, provide hands-on experience with computer applications that will help with the teaching and administering of education, and offer exposure to relevant issues as they apply to computers in early childhood education. These issues include selection of developmentally-appropriate software, techniques for incorporating the computer into the early childhood classroom, and computer research relating to gender-use, social interaction and cognitive development.

In order to meet the needs described, this researcher accepted the challenge of developing a computer training package to support and enhance the professional development of early childhood educators. It was decided that a mix of stand-up training, discussion, hands-on activities, visual displays and video demonstration would consititute the training approach best suited to the nature of this population...social, interactive, collaborative and concentrated. The three (3) major units of instruction were designed in a modular fashion, allowing for a variety of delivery options to suit the needs of the population.

The Dick and Carey model (1975) for instructional systems design was used for the design, development and evaluation of the training package which includes a self-instructional Trainer's Manual as well as three (3) participants' manuals ready for reproduction. The Trainer's Manual includes the modules of instruction, teaching aids, overheads, lists of applications software, testing instruments, and reference materials. The participants' manuals include module summaries, exercises, visuals and relevant appendices.

RELATED RESEARCH

Computers and Young Children

The Age of Technology and the need for developmentally-appropriate curricula for preschoolers have finally come together. The notion however, of computers together with young children has become an issue of some concern for the parents and the educators of young children. Over the last decade or so, a wide variety of research has been conducted to address these concerns. Research has centered around the issues of developmental-appropriateness, social isolation, sexism and the general development of the young child.

Children learn through play. Research suggests that play is the best way to begin the on-going relationship with the computer; play through exploration and discovery (Bonner, 1984; Eliason & Jenkins, 1986; and Rubens, et al, 1984). Like blocks, sand and paint, the computer is a tool which can be used to enhance all areas of early childhood development. Studies by Beaty (1987); Campbell (1986); Hoot (1987); and Munro (1986) propose that the computer be integrated into a comprehensive preschool curriculum, to function just as any other activity centre in the classroom.

A number of studies suggest that computers actually enhance social interaction among young children (Borgh & Dickson, 1986; Davidson, 1989; Lipinski, 1984, 1986; and Swigger, 1984). If given developmentally-appropriate software with which to work, children get together at the computer creating dramatic role situations, solving problems and discussing cause and effect. A study by Swigger and Swigger in 1984, was designed such that children were encouraged to work alone at the computer. The children would not comply. They had such a need to share with their peers (just as they do at the sand table for instance) that the study had to be redesigned.

Beaty sees the computer in the preschool as the "great equalizer". It avoids the insidious sex stereotyping that becomes more prevalent in the higher grades. It further offers the shy or the isolated child opportunities for social interaction. Socialization is seen to be an important area of development in early childhood. Numerous sociometric studies have been conducted to better understand the problem of early social adjustment and to offer suggestions for helping children develop strategies for improved peer-interaction. When children use appropriate software, they are in the driver's seat. They tell the computer what to do. This mastery over technology develops a sense of competence and self-esteem (Geisart, 1983; Rubin and Hayvren, 1981; Wright and Samaras,1986; and Ziajke, 1983). Because the development of pro-social skills is a very important component of the curriculum, particularly in early childhood, educators are concerned about the possible threat of children becoming isolated. Studies by Chadwick (1986); Grimes (1981) and Swigger (1984) indicate that it is highly beneficial for children to work in pairs at the computer, not only to enhance their social development, but also to promote verbal interaction, making children's problem-solving strategies more observable.

The development of cognition in the pre-operational child is a complex and often covert process (deBono, 1970, 1972). Flavell (1977) coined the term "metacognition" to refer to that process of intellectual self-regulation whereby one recognizes one's own cognitive processes (problem-solving strategies). Seymour Papert (1980) used this term to describe the process involved when children think about their own thinking. He suggests that really good software enables the chid to stand back and watch himself/herself think, and the feedback from the computer helps the child revise his/her processes. The computer offers the child an opportunity to articulate these covert strategies making them more observable. One of the functions of metacognition according to Marion (1987) is the shift from external controls to self-control, an emergent cognitive skill throughout early childhood.

Grimes (1981) and Munro (1983) suggest that the self pacing, non-threatening and immediate feedback aspects of the computer offer opportunities for children to experiment with problem solving strategies. The development of problem-solving skills gives children a sense of mastery over the environment and enhances self-esteem (Munro, 1984). This is supported by Beaty (1987); deBono (1970-72); Hoot (1986); and Wright and Samaras (1986), who believe that the computer enhances self-image, increases attention span, and fosters divergent thinking, problem solving and autonomy. This is especially true, according to Papert (1980), when the locus of control rests with the child. Studies by Beaty (1987); Bonner (1984); Clements (1985), 1987); deBono (1970-72); Hoot (1986); Hyson & Eyman (1986); Papert (1980) and Solomon (1982), see the LOGO language for example, as a learning environment which best meets the educational needs of early childhood, by supplying an interactive environment for total development. It helps children think procedurally and promotes creative problem-solving techniques Beaty (1987) believes that the quality computer program approximates the natural learning process inherent in young children: learning through interaction, through discovery and through visual thinking.

The great debate over the appropriateness of computers for young children has been fairly well resolved. Many of the fears expressed by parents and educators alike have to a large extent, been put to rest. When used in developmentally appropriate ways, when the software is appropriate and selected on the basis of established criteria (Buckleitner (1989), Haughland & Shade (1990), Hohmann (1990) and Shade and Daniel (1983), the computer enhances social and language skills, is non-sex related and has no real adverse effects on other classroom activities. Software can be used by children independently and provides excellent opportunities for cognitive and metacognitive development. The computer is a learning tool like any other used in the classroom.

Educators' informed attitudes and appropriate strategies for introducing the computer into the early childhood classroom are the determinants to whether the computer becomes the excellent tool for learning it has the potential to be.

Instructional Design

In the systematic design of instruction, a thorough front-end analysis is vital to ensure optimal learning outcomes (Dick and Carey, 1985; Gagne, 1974; Mager, 1962; and Romiszowski, 1981). The Dick and Carey model is a 10-step procedure for the design, development and evaluation of instructional systems. The first four (4) steps constitute the design phase (front-end). Once an instructional need has been established, the system of interest has to be defined: (the instructor, the instruction and the target audience). Thorough learner analysis is critical to ensure that the planned instruction is in fact needed and appropriate to the competence, attitudes, language level, and skills of the intended learner (Glaser, 1986; Thiagarajan, 1976).

It must be determined what types of instruction and which instructional strategies are to be used to best match the system's definition. The instruction must be organized into "chunks" which are related, sequential and where each chunk will result in pre-established student behavior (Gagne, Wager & Rojas, 1981). Dick and Carey define a module of instructions (or chunk) as "... a self-contained or self-instructional unit of instruction that has an integrated theme, provides students with information needed to acquire specified knowledge and skills, and serves as one component of a total curriculum" (1986, p. 5).

The production phase of the model requires the development of criterion tests to match the instructional objectives and to develop the instruction itself: the delivery of instruction and the development of instructional materials. Kemp (1985) and Kemp and Dayton (1985) discuss the rationale behind and the three (3) stages involved in the design of instructional media. In reference to the production of effective overhead transparencies, they recommend a number of production techniques to optimize learning outcomes and to ensure that a good picture... is worth a thousand words. Margolis (1989) discusses the design of effective documentation which must be carefully matched to learner characteristics and system objectives. To be effective, written documentation must be clear, precise and less, rather than more.

Evaluation, one of the final components of instructional systems design is pre-planned very carefully. The feedback from both formative and summative evaluation are essential to final systems revision. Romiszowski differentiates between formative and summative evaluation ... "In systems jargon, the formative evaluation is designed to produce feedback which modifies the course or the inputs to the course. Summative evaluation has no intention of producing such feedback" (1986, p. 369). It is crucial to conduct thorough formative evaluation to ensure that the system of interest maintains its integrity-that is, that it satisfies the original goal and the objectives subsumed within that goal. By standard definition, formative evaluation is a systematic process of testing instructional materials with intended learners in an attempt to gather data to be used for the revision of the materials (Briggs, 1977). Once revised the materials can be used in the environment and with the population selected and summatively evaluated.

METHODOLOGY

The 10-step Dick and Carey model for instructional systems design has been used to design, develop and evaluate the professional development training package "The Computer in Early Childhood". The 8 steps which are relevant to this project have been divided into three phases: Design, Development and Evaluation. The model follows. Please note that the design phase includes steps 1-4: Identify instructional goal(s), conduct instructional analysis, identify entry characteristics and write performance (behavioral) objectives. Steps 5-7: develop criterion-referenced test items, develop instructional strategy and develop and select instructional materials constitute the development phase and step 8 design and conduct formative evaluation, the evaluation phase. The design and conducting of summative evaluation and final revision are not relevant to this project.

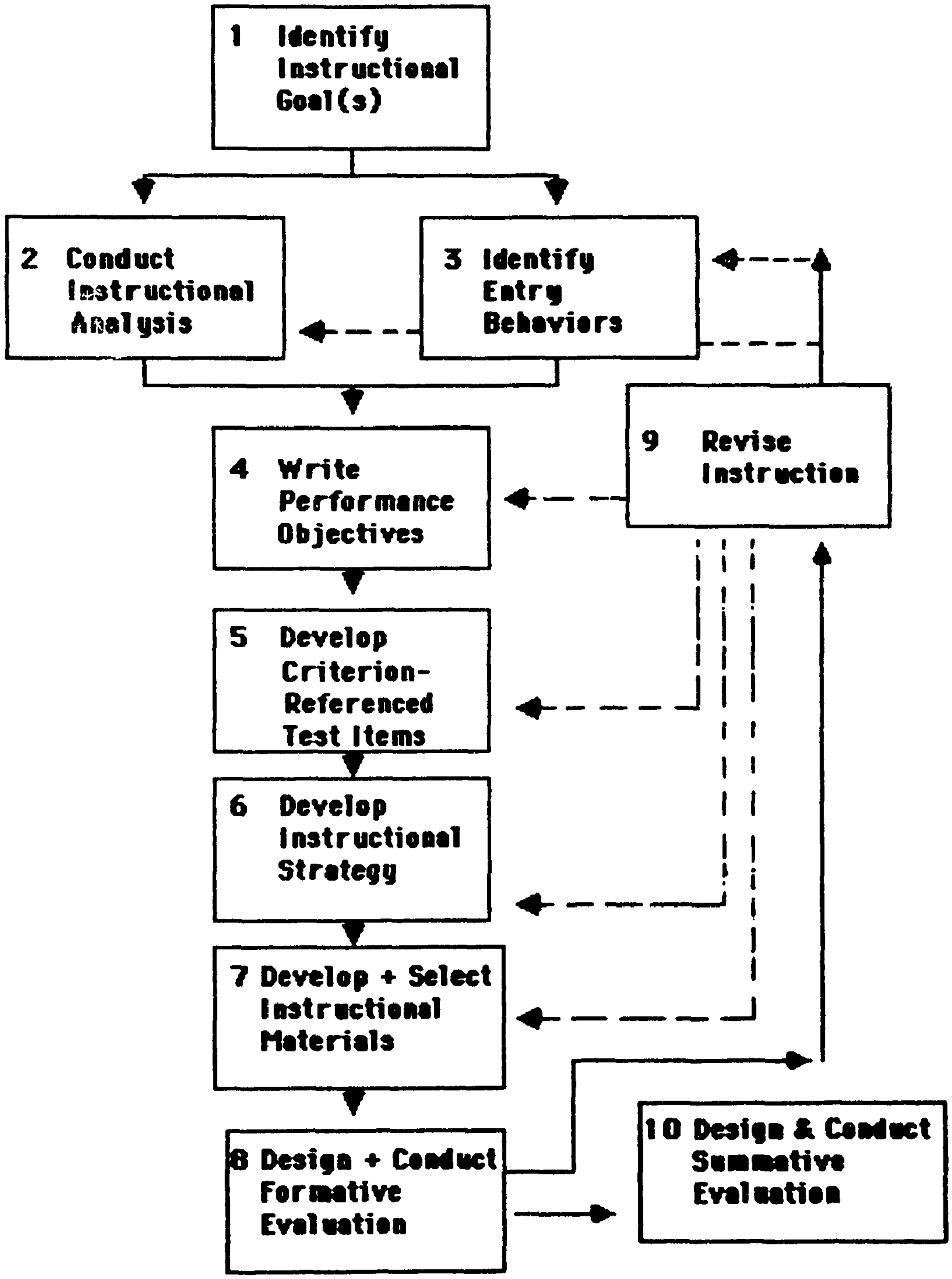


FIGURE 1

The Dick and Carey Systems Approach Model for Designing Instruction (1975)

DESIGN PHASE

Step 1 Based on the needs assessment conducted on the early childhood educator population, a terminal goal was determined. Rationales were established for each of the three (3) instructional units and instructional goals were established for each unit (workshop).

Terminal goal: Given sufficient instruction and a variety of hands-on experiences, early childhood educators will feel comfortable and competent with the computer in the early childhood classroom.

Instructional goals: (One per workshop)

A. Participants will have a basic understanding of computer evolution, concepts, terms and applications

B. Participants will be able to design, produce, merge and print a word-processed document, a data base report and a spreadsheet analysis report.

C. Participants will understand how to implement the computer into the early childhood classroom in developmentally-appropriate ways.

Step 2 Based on the the instructional goals established, an instructional analysis was conducted to determine the subordinate skills (rules, concepts, information) required to accomplish those goals. These skills were organized sequentially by interdependence (antecedent or procedural) for each of the units, hereafter referred to as workshops. The Instructional Analyses follow on pages 16-19.

Figure 2 Instructional Analysis

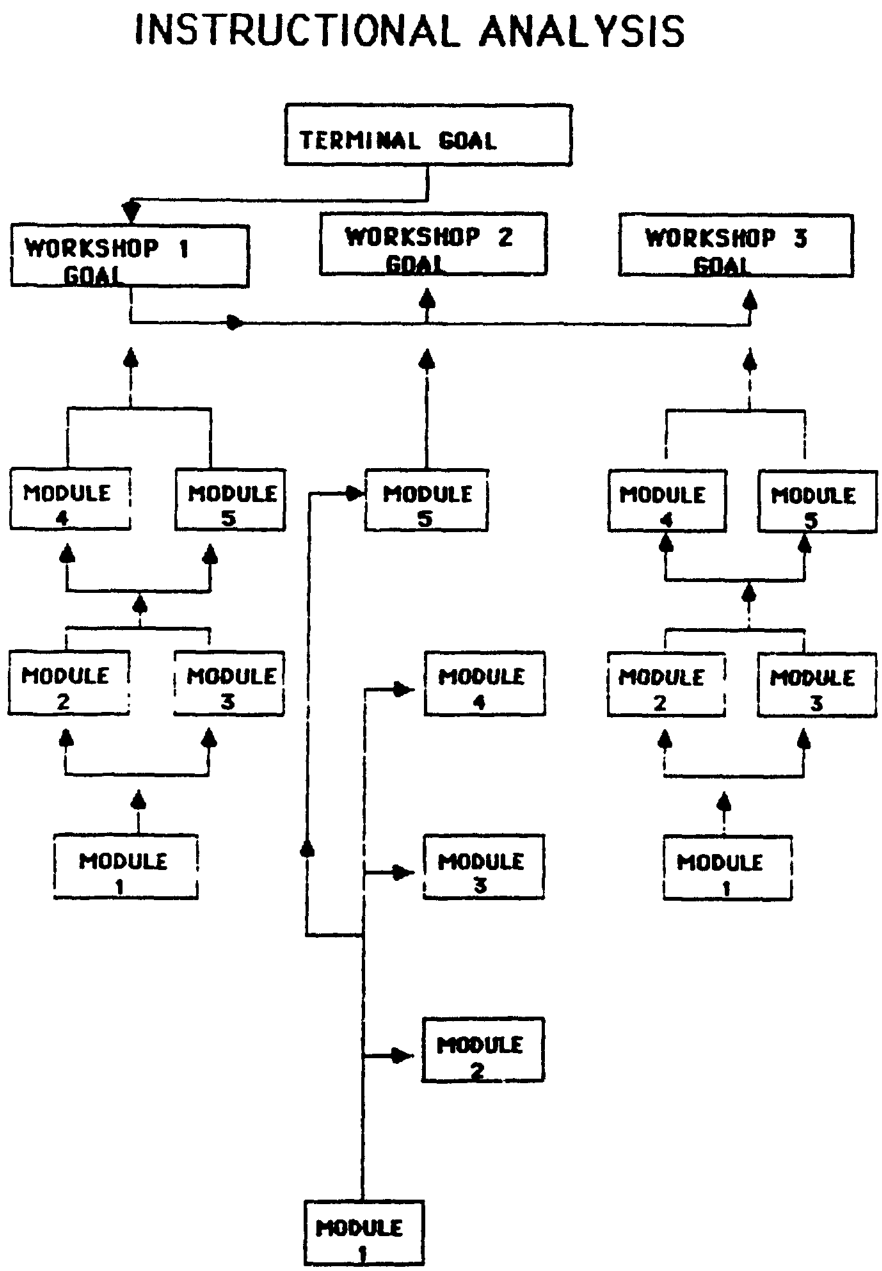


Figure 3   Workshop 1 Analysis

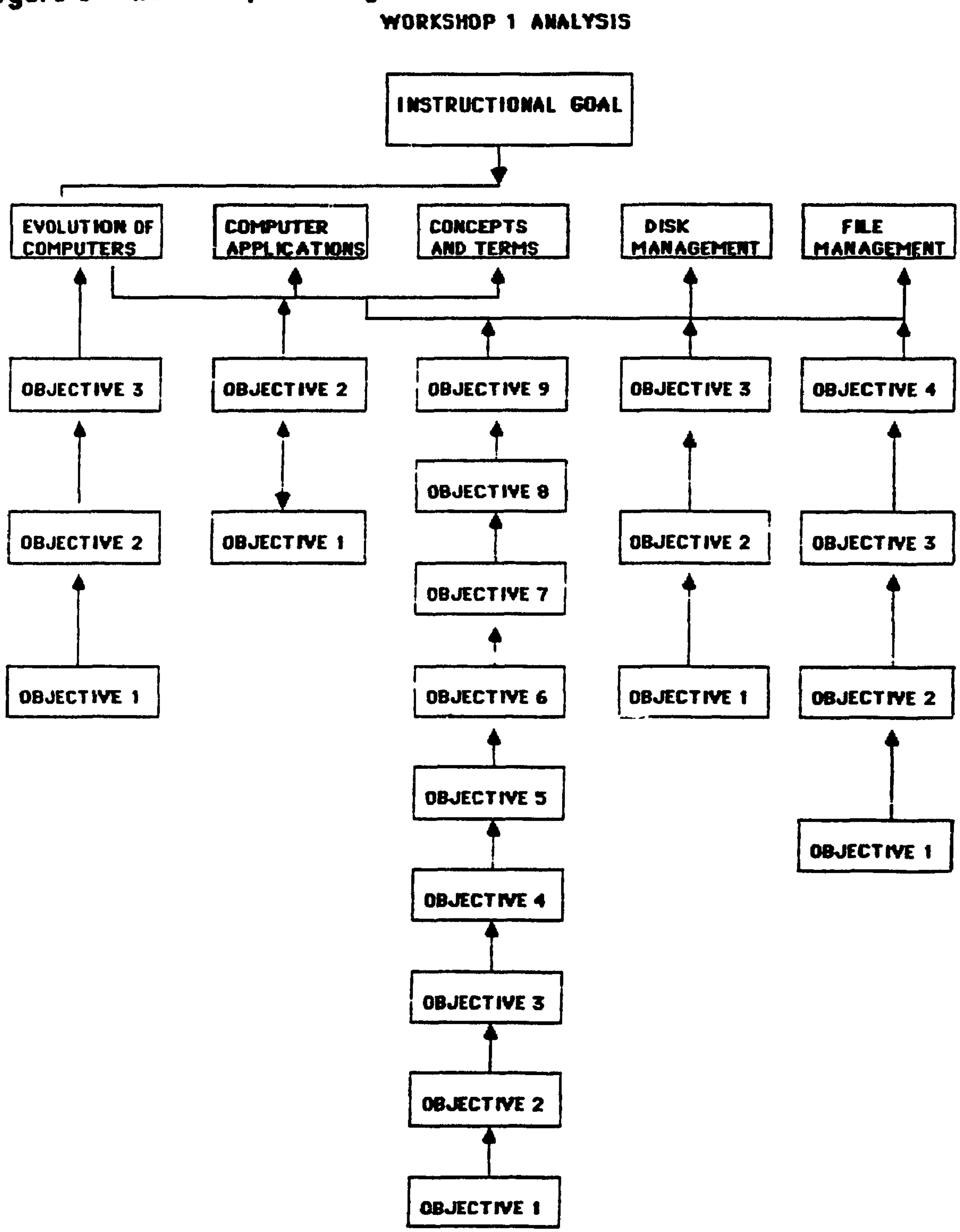


Figure 4 Workshop 2 Analysis

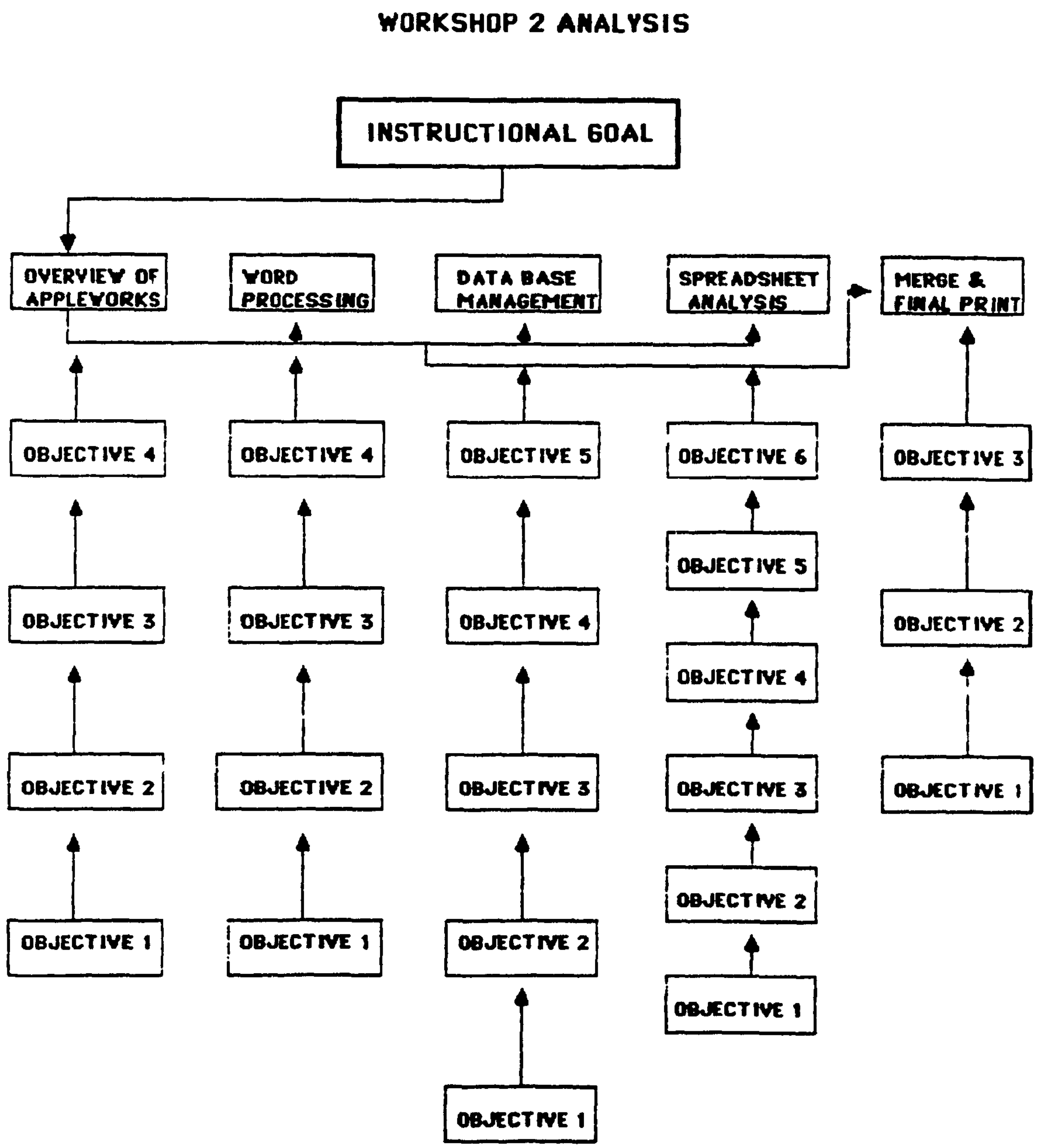
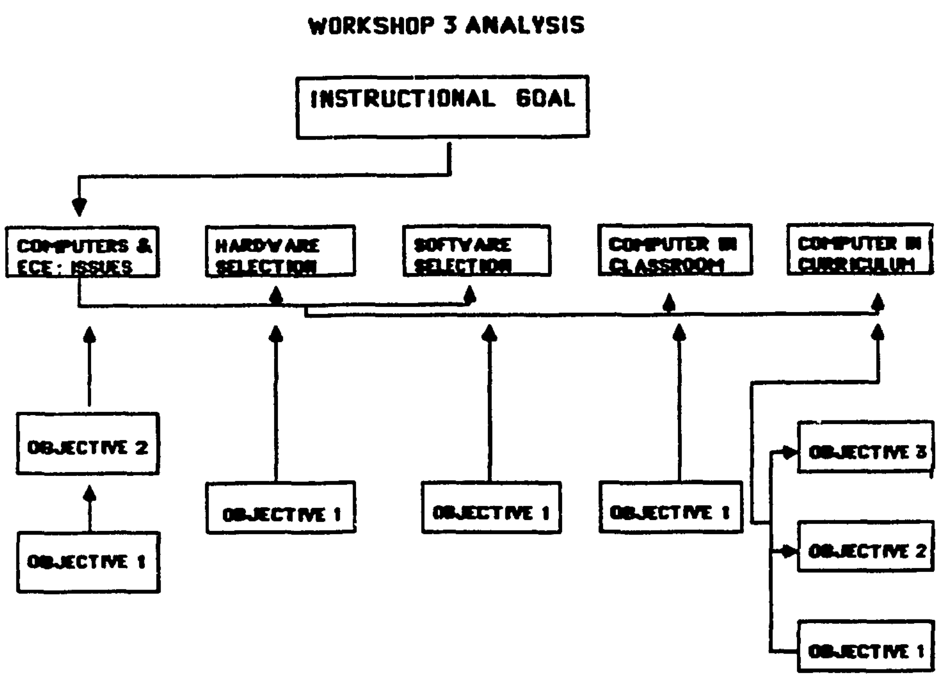


Figure 5 Workshop 3 Analysis



Step 3 The characteristics of the target population were analyzed. The data from this analysis together with the informal pre-assessment conducted by the participants when registering for the workshops constituted this phase of the design process. The early childhood educators who make up the target population are predominantly anglophone females ranging in age from 19 to 60 years. Approximately 40% of these are certified early childhood educators either by virtue of a B.A. in Early Childhood Education (about 5%), a D.E.C. in Early Childhood Education (about 20%) or an Attestation in Early Childhood Education (about 15%). Early childhood educators tend to be practice-oriented rather than theory-oriented and say that they learn best by doing, very much as they believe young children learn best. They prefer to learn in a collaborative group setting which provides opportunity for presentation, discussion and hands-on activities. The A.E.C.E. provided space at its annual conference in March, 1991 for this researcher to advertise the computer training workshops (large-group testing). When individuals expressed an interest in training they were invited to read and discuss a large prominently-displayed poster which constituted an informal pre-assessment of skills (Appendix B). Based on knowledge of what the workshops would entail, the individuals were able to determine which combination of workshops they needed. They were then invited to sign up and they paid a nominal fee (almost sufficient to cover the cost of the manuals they would receive). There were 63 individuals who signed up for the workshops (Workshop 1 N=20, Workshop 2 N=22, Workshop 3 N=23).

Step 4. Based on steps *2 and 3, objectives for each of the subskills identified per module of instruction were written in Mager's behavioral terms, including; conditions of performance, participants' expected performance and criteria for establishing successful outcome (CBC model). Successful outcome, most frequently meaning acquisition of understanding is somewhat difficult to operationalize, particularly because the terminal goal addresses comfort level as well as perceived competence. Behaviorally-stated objectives do, however facilitate the development and evaluation aspects of training systems design.In circumstances where pre-establishing exact criteria (pre-setting limits) was contra-indicated, the Gagné/Briggs model for writing instructional objectives was adopted. The models vary only in that Gagné & Briggs eliminate the specific criterion statement in the objective.

The objectives resulting from the completion of the Design Phase are listed below by workshop and by module. The following conditions statement applies for all objectives: Given sufficient information and opportunity for hands-on experience where applicable, the participants will be able to...

WORKSHOP 1: Introduction to Computers

Module 1: The Evolution of Computers

Objectives.

-briefly describe the rapid evolution of computers

-differentiate among generations of computers

-explain the trend toward greater miniaturization and speed of execution

Module 2. Computer Applications

Objectives:

-define the three categories of computer applications and give examples of each

-define the term computer and describe its functions

Module 3: Computer Concepts and Terms

Objectives.

-List the basic components of a computer

-diffe entiate between the terms "hardware" and "software"

-define and list a few commonly used peripherals

-define the term "program"

-define the term "supportware"

-discuss various programming languages and explain how they are understood by the computer

-start up ("boot") the computer

-key enter a simple BASIC program

-run a BASIC program

Module 4. Disk Management

Objectives:

-discriminate between floppy and hard disks

-summarize the procedures for taking care of disks

-explain the purpose for the following disk procedures: FORMAT, WRITE-PROTECT, and BACK-UP

Module 5: File Management

Objectives:

-explain how information is stored on a disk

-differentiate between a bit and a byte

-list the different steps in the file structure hierarchy

-explain by way of example, the types of information which would appear in each of these steps

WORKSHOP 2: Information Management

Module 1: Overview of Appleworks

Objectives:

-understand the underlying logic of the Appleworks program

-load the Appleworks program

-format a blank disk

-differentiate among the three (3) applications

Module 2: Word Processing

Objectives.

-create a new document

-type and edit information

-format a document

-save and print a document

Module 3: Data Base Management

Objectives.

-create a new data base file

-insert a number of records into the data base file

-organize the layout of the records

-design a report format

-save and print out a specific report from the data base

Module 4: Spreadsheet Analysis

Objectives:

-create a new spreadsheet file

-format the spreadsheet

-establish standard values

-input data into the spreadsheet

-make standard calculations

-save the spreadsheet file

Module 5: Merge and Print final document

Objectives:

-cut and paste from the data base and spreadsheets files

-merge the three documents and format appropriately

-print out the final document

WORKSHOP 3: Computers and Young Children

Module 1:Issues in Computers and Early Childhood Education

Objectives:

-discuss personal concerns around the issue of computers and young children

-discuss relevant research related to the issue of computers and young children

Module 2: Selecting Appropriate Hardware

Objectives:

-explain how to go about purchasing the appropriate hardware system for the early childhood classroom

Module 3: Selecting Appropriate software

Objectives:

-list the criteria for the selection of developmentally appropriate software for young children

Module 4: The Computer in the Classroom

Objectives:

-explain how to introduce the computer into the classroom

Module 5. The Computer in the Curriculum

Objectives.

-explain using examples, how computer activities can be incorporated into a developmentally-appropriate curriculum

-design a comprehensive experience for young children, using both computer and non-computer activities

-evaluate a variety of available early childhood software

DEVELOPMENT PHASE

Step 5 Based on the behavioral objectives established in step #4, assessment instruments were designed to match the criteria for established objectives. These included an informal pre-assessment of entry skill, a post self-assessment questionnaire and attitude questionnaires (learners' and trainer's) on the workshops themselves. The post self-assessment questionnaires were desinged to match the pre-established behavioral objectives. The intent here was to assess for the percieved competence aspect of the terminal goal. The attitutude questionnaire was intended to gather feedback on comfort levels. It is hoped that together, these data will provide sufficient information on the acquisition of the terminal goal. All evaluation tools can be found in Appendix B. Anecdotal comments were collected throughout all phases of evaluation.

The original intent (terminal behavior) of the training was to allow early childhood educators to feel both comfortable and competent with computers in early childhood education. Because of the nature of the target population and the original intent of the training package, this researcher decided to allow both pre and post-testing to take the form of self-assessment. If the population felt they had little or no prior knowledge coming into a workshop and left that workshop feeling comfortable and competent with the subject matter, then the goal of the training would have been met. Besides, given the nature of the population, the use of strict, content-based criterion-referenced items was determined to be inappropriate, and potentially counterproductive.

Step 6 Instructional strategies were developed for each module of instruction, including: pre-instructional activities to motivate the learner, systematic presentation of information, practice, feedback and follow-up activities. The trainer's manual was designed in such a way as to include these activities with appropriate prompts for the trainer (See Appendix C). Based on the analysis of the target population, certain training protocols were established to allow maximum participation. For example, the participants' manuals included summaries of trainer's presentation of information, but suggested that the visual pages (copy of trainer overhead with space provided for recording personally relevant information) be used to follow along with the trainer. Time for discussion, whether trainer or participant-initiated and group work was provided. This presupposed some difficulty for the designer in establishing specific time frames for each module, but it was hoped that by the time large group evaluative testing was conducted, times would be better established. When at the computer, the participants worked in pairs and discussion, problem-solving and self-selected breaks were promoted.

Step 7 Using the strategies established in step *6 and the objectives determined in step *4, the instructional modules were designed. The participants manuals were produced first and as one workshop was completed, the corresponding section of the trainer's manual was designed together with all instructional materials (visuals, exercises, other supportware), and testing instruments for that workshop. The Trainer's manual and the participants' manuals are found in Appendices C and D, respectively.

After some consultation with various departments at Vanier College, an appropriate testing site was found. The Apple Computer lab in the Audio-Visual Department was booked (at no charge) for both the small and the large group testing (March 14, and April 16, 18 and 23).

The room can accomodate up to 30 people and has 15 stand-alond Apple computers along the periphery of the room. Group seating is provided in the center of the room and audio-visual hardware and an overhead screen are provided in the front of the room with a desk and small display tables for the trainer's use. Audio-visual equipment (LCD unit and VCR) was reserved and a technician hired for technical support during the workshops.

The participants were asked for any suggestions they might have on revision, the assumption being that the evaluation tool may not be addressing all relevant issues.

The following is a summary of the feedback received through one-to-one evaluation.

One-To-One Evaluation Feedback

Design

Although the design of instruction was generally consistent, one obvious flaw was pointed out. There was general inconsistency in the presentation of participant visuals. Sometimes the visual appeared before the text it was meant to represent and at other times, the visual appeared after the text. In the Appleworks tutorials, the format changed from one tutorial to the next (font size, capitalization of RETURN to indicate the return key, and actual page layout).

Generally, the information was clear and both language and content geared to the population.

Content In workshop 1, the module on computer applications was not clear. It needed to be reorganized for clarity. The vocabulary was found to be generally well geared to the population but five (5) occurrences of overly-complex computer terminology (not yet explained) were found and revision suggested.

EVALUATION PHASE

Step 8 Formative Evaluation

Traditionally, formative evaluation involves three (3) phases and this researcher followed these phases in the following manner.

PHASE I: One-to-One Evaluation

To identify major and obvious problems which existed in the first draft of the instructional materials, one-to-one evaluation was done from two perspectives. This researcher was teaching a third-year D.E.C. in E.C.E. course called "Technology and the Young Child" and used a number of students (N = 5) for the initial evaluation. These students were graduating that semester and four of them intended to be early childhood educators by the month of June, while one planned to begin the E.C.E. Bachelor of Arts program at Concordia University the upcoming fall. They were representative of the target population to a large degree, but tended to be younger and more academically oriented. Part of the course entailed the use of computer technology with young children (approximately 20 hours) and the students were able to generally evaluate this aspect of the course (through course evaluation) as well as offer feedback on the materials used. Two subject-matter experts were sought to read over the material and offer suggestions for revision on those aspects of the material that related to their expertise. One was a college professor specializing in early childhood education and had done research in the use of computers for young children. The other was a training systems consultant who had at one time been a kindergarten teacher. This expert was selected as the independent trainer for the field test. It was determined that although the training package is self-instructional, training would be optimized and the trainer more at ease if the selected trainer has computer expertise, training experience and a background in early childhood education.

A draft copy of the materials (in fairly rough form) was distributed to each of these two groups, individually. They were informed that the materials were in rough format and would be revised based on their recommendations. The students actually went through the participants' manuals, did the exercises and tutorials, and were presented with all the visuals, demonstration materials, and video presentation. The subject matter experts did likewise, but used the trainer's manual along with the participants' manuals as reference. Throughout this evaluation stage, this researcher recorded anecdotal comments offered and noted specific errors. Of particular interest at this time were major problems in sequencing, formatting, language difficulty level, lack of clarity, misinformation and the more mundane errors in typography, grammar and spelling. The participants in this phase of evaluation were asked to complete the revision table (Appendix B) and anecdotal comments were recorded throughout the training.

It was suggested that there was too much information on the history aspect of workshop 1 (modules 1), and 4 of the respondents indicated that history was not really relevant to them. They suggested offering a summary for those who might be interested.

In workshop 2, the amount of information was found to be appropriate and more information was required in workshop 3, particularly in the area of "how to" implement the computer into the classroom.

Information was fairly-well sequenced, but it was recommended that the section of computer concepts and terms be offered before disk and file management, and that how to implement the computer into the classroom come before how to incorporate the computer into the curriculum. As a rule, the examples given were seen as helpful and appropriate. One recommendation was that all examples and analogies used relate directly to the field of early childhood education. The example cited (discussion on file management) referenced the hierarchy as being explained, using a business analogy.

Visuals For the most part, the visuals were seen as well-designed, attractive, correct, clear and useful. Two suggestions were that the visual on computer applications be redesigned and that the one depicting computer components was out-of-date.

Tutorials These were seen as well-designed and appropriate but not always clear and correct. Six (6) occurrences of misinformation were pointed out and two (2) of poor sequencing of information.

Anecdotal comments

Students remarked that

-This was fun

-I don't feel technophobic any more (3 responses)

-I really enjoyed having space to write down how I was hearing the the information (2 responses)

-I particularly like the hands-on. That's how I learn (4 responses)

-The teacher was fun...informed... helpful (4 responses)

-Too much history. This can be boring (3 responses)

-I am looking forward to using computers with young children (2 responses)

-Good job

-Too heavy

-The video was really helpful (2 responses)

Subject Matter Experts remarked that

-Well-designed but some components too complex and lengthy. Example history, and introduction to Appleworks.

-The visuals and audio-visual presentations very helpful

-Keep examples relevant to the population

-Check timing. I believe you may have underestimated the amount of time required for each segment. Have you built in break times, evaluation periods, student-initiated questions and discussions?

-A couple of the visuals need revision. The computer applications overhead needs refinement and the computer demonstrated on the overhead on computer components is out-of-date.

-Interesting analogies

General Observations

There were 12 occurrences of spelling errors, 5 punctuation mistakes, 3 typographical errors and 4 grammatical errors. Students generally enjoyed the course and felt they had a lot of input and a wide variety of hands-on experiences which they value. The subject matter experts offered some valuable insight, and felt that it was a product worth working on.

<u>PHASE II</u> Small-Group Evaluation

Twelve (12) educators from Garderie de Mount Royal in the Town of Mount Royal were used for the small-group evaluation. Testing took place on a Saturday in March at the same site selected for the large group testing and lasted 10 hours. The subjects were given the revised version of the participants' manuals (as one large manual) and this researcher acted as the trainer. The two subject-matter experts used in the one-to-one evaluation, acted as observers and took copious notes. They were asked to complete a revision table to suggest changes to the participants' manuals.

The training proceeded as planned. Data were collected on time on task, on self-assessment of learning outcomes, from attitude questionnaires, and from general anecdotal data from participants and observers. See the evaluation tools: Observer Revision Table, Self-Assessments per workshop and Attitude Questionnaires in Appendix B.

Of the 12 participants,10 agreed to submit the evaluations forms. As a general rule, all self assessment checklist data were analyzed using the following set of criteria:

For revision attend to all of the following

-all objectives which received a percentage score of .85 or less

-all not relevant items

-all not well items

-all items scoring higher in fairly well than in very well

Attitude questionnaire data were analyzed using the following rule of thumb:

-At a minimum, any item which received a percentage score of .85 or less, was attended to

The following is a summary of the small group testing data.

Table 1 Workshop 1-Self-Assessment of Learning Outcomes

Small Group Trial N = 10

objective	very well (x 3)	fairly well (x 2)	not well (x 1)	not relevant (x 0)	% score
1	2	7	0	1	.66
2	3	7	0	0	.78
3	3	3	3	1	.60
4	5	5	0	0	.84
5	4	6	0	0	.80
6	8	2	0	0	.94
7	9	1	0	0	.97
8	8	2	0	0	.94
9	5	4	1	0	.80
10	6	3	1	0	.84
11	1	5	4	0	.57
12	4	3	3	0	.70
13	5	5	0	0	.84
14	2	4	4	0	.60
15	1	7	2	0	.64
16	1	8	1	0	.67
17	8	2	0	0	.94

Table 2 Workshop 2-Self-Assessment of Learning Outcomes

Small Group Trial N = 10

objective	very well (x 3)	fairly well (x 2)	not well (x 1)	not relevant (x 0)	% score
1	9	1	0	0	.97
2	7	3	0	0	.90
3	2	8	0	0	.73
4	5	5	0	0	.84
5	4	6	0	0	.80
6	4	6	0	0	.80
7	4	6	0	0	.80
8	5	5	0	0	.84

Table 3 Workshop 3-Self-Assessment of Learning Outcomes

Small Group Trial N = 10

objective	very well (x 3)	fairly well (x 2)	not well (x 1)	not relevant (x 0)	% score
1	5	5	0	0	.84
2	4	6	0	0	.80
3	5	4	1	0	.80
4	5	3	2	0	.77
5	4	6	0	0	.80
6	4	6	0	0	.80
7	3	6	1	0	.73

Table 4 **Attitude Questionnaire Small Group Trial**

N = 10

ITEM	1	2	3	4	5	6	7	% score
1	0	0	0	0	3	4	3	.86
2	0	0	0	0	2	5	3	.87
3	0	0	0	0	6	4	0	.77
4	0	0	0	0	3	3	4	.87
5	0	0	0	0	3	2	5	.89
6	0	0	0	0	1	4	5	.91
7	0	0	0	0	2	4	4	.89
* 8	0	0	0	6	3	2	1	.85
9	0	0	0	0	1	5	4	.90
* 10	0	0	0	6	3	1	0	.88
* 11	0	0	1	5	3	1	0	.85
* 12	0	0	2	6	2	0	0	.90
13	0	0	0	0	1	2	7	.94
14	0	0	0	0	1	5	4	.90
15	0	0	0	0	1	4	5	.91
16	0	0	0	0	3	4	3	.86
17	0	0	0	0	2	4	4	.89

Note: * indicates items where a score of 4 is the highest rating

Percentages reflect this difference and were calculated accordingly

COMMENTS AND SUGGESTIONS

Comments #1-4 from Attitude Questionnaires are summarized here.

1. -Preferred workshop 2 (5 occurrences) and workshop 3 (5 occurrences)
2. -History section was of least value (9 occurrences)
3. -need more practise time (8 occurrences)

   -not enough air circulation in the lab (2 occurrences)

   -we need more time for each module of each workshop (7 occurrences)
4. -excellent performance (5 occurrences)

   -really enjoyed (8 occurrences)

   -would really have liked some hands-on experience with the computer (3 occurrences)

   -creative design (2 occurrences)

GENERAL OBSERVATIONS

Participants

The site. It was cold in the room and so windows were closed. The door was also closed. Eventually, the lack of air circulating around the room caused some people to feel badly. For workshops in April, windows and door will be kept open .

Time measures: The participants, observers and the trainer felt that there was not sufficient time to allow topics to be well covered and tutorials to be satisfactorily completed.

Materials: The manuals were well received. The participants were pleased with the design, the use of visual pages to allow for note-taking and felt that the manuals would make for good future reference.

Content: The overall rating of satisfaction for content was 85%

Training strategies: received an overall rating of 88%. The participants would have appreciated more discussion time and less actual lecture time.

Trainer rating. The trainer received an overall rating of 92% on preparedness, mastery and general quality of presentation.

Self-satisfaction: The participants gave an overall rating of 87.5% on general satisfaction with the course.

Trainer and observers

The questionnaires should be revised such that the items which are differently scaled (8,10,11 and 12) should be grouped together. Item *16 should be broken down into attitudes toward and knowledge about attained results. It might be a good idea to build in some type of computer tutorial for Module 1 which is long and trainer directed. More time is definitely needed for the training. This will have to be verified when three separate workshops are given (31/2 hours each). There were some problems with sequencing of information and revisions were suggested.

Data from revision table completed by observers and trainer were analyzed and summarized as follows.

Design

Design is excellent. Keep type font and size consistent. Visuals need re-ordering. Repaginate overall. Workshop 3 does not have sufficient information for the participant.

Content

-Table of Contents	History of Computers - misspelled File Management - typographical error

<u>Workshop 1</u>

-page 2	last item on page - typographical error
-page 11	examples should be related to E.C.E.
-page 22	re-write: unclear, out-of-date
-page 25	problem with definition of "software" re-define to clarify

-page 28	rewrite: unclear, unnecessary
-page 32	definition of "fixed disk" out-of-date call it a "hard disk" and re-define
-page 39	use examples related to E.C.E.
-page 41	rewrite: overly complex
Glossary	print to light-darken in printing

<u>Workshop 3</u>

-page 4	need criteria for hardware selection
-pages 5-10	keep same font and format style
Generally	more information needed. This area too scant

Visuals

-page 10	computer applications - boring
-page 19	graphic is out-of-date
-page 20	tape storage is out-of-date
-page 21	these are all input devices. show variety
-page 24	give examples of each
-page 30-31	print is too small

Tutorials

tutorial 1: page 2	differentiate between 1 and 2 disk drives and explain how to proceed with each
page 3	"You'll receive the message formatting successf··' should read "OK to destroy contents"
page 4	title: "gotten" should be "come" line 5: "other key" should read "other letter key"

	Most Frequently Used Commands: Open-Apple C definition should begin "Place your cursor at the beginning of text to be copied"
tutorial 2: page 9	line "the records set-up form will appear" should appear slightly lower in column
page 10	#6 "press Open-Apple Z" add "You can toggle back and forth with this key
page 11	#11 unclear. rewrite
page 12	#12 line 1 should begin "Press ESC to get back to Main Menu"
tutorial 3:	Differentiate between "Values" and "Labels" Differentiate more clearly between columns and rows. Overall, a better introduction to spreadsheet analysis is required
page 18	Explain how to get Main Menu on screen
page 19	#10 needs to be rewritten: unclear

REVISION PLAN

Based on the feedback received from Self-Assessments, Attitude Questionnaires, anecdotal comments and suggested revision tables completed by the trainer and observers, the following revisions will be completed in preparation for the field trial:

Table 5 **Objectives to be Revised (based on Self-Assessment criteria) See Self-Assessments for each workshop Small Group Trial in Appendix B**

WORKSHOP	OBJECTIVES	RECOMMENDED REVISIONS
1	1-3	Reduce the amount of instruction and offer a historical time line for those who would enjoy having the reference. Call this section the evolution of computers and simplify.
1	4-5	In defining the three categories of computer applications, use examples from the field of Early Childhood Education. Change the visual for computer parts by updating the computer shown

1	9-10	Define more carefully, allowing time for discussion.
1	11	Expand on the discussion and use examples from the field of Early Childhood Education
1	12	Re-define and simplify. Instead of flexible and fixed disks, use floppy and hard disks.
1	13-14	Require more discussion.
1	15-16	Require more discussion and examples should be used from the field of Early Childhood Education
2	3-8	In all cases, there was insufficient time to experiment, to revise, and to produce the types of documents they would have liked. Build in at least 40% more time for this workshop in field trial.

3	1-7	Definitely too little time for discussion, and the hands-on evaluations of software were rushed. Double the time for this workshop.

Table 6 Suggested Revisions based on Attitude Questionnaire criteria. See Attitude Questionnaire-Small Group Trial in Appendix B)

ITEM	RECOMMENDED REVISIONS
3	More time must be provided to cover subjects adequately
8 & 11	These (borderline) items were related to time again. More time needs to be built to cover the material adequately

These suggestions, together with accumulated data from anecdotal comments and trainer and observer comments, constituted the list of revisions required for the final field trial. This researcher revised all the materials, divided them into three comprehensive workshops and developed three participant manuals and a trainer's manual. The visuals were edited and new visuals developed. All arrangements were made for the field trial and an independent trainer, hired for this phase was given the materials to pre-view.

<u>PHASE III</u>: **Field Trial Evaluation**

The materials were revised based on the collected data, divided into separate workshops and printed in final draft format. Having determined that the materials were appropriate and that it was still feasible to use the materials in the intended setting and with the intended target population, the field trial went ahead as scheduled (April 16, 18 and 23, 1991).

All the materials to be used in the instruction, including trainer's manual, participants' manuals (3), hardware, etc. were collected. All materials were in polished form, closely approximating what would be considered the final marketable product (see Appendix C-Trainer's manual and Appendix D- Participants' manuals). The independent trainer had approximately three days to familiarize herself with the materials. Having been one of the subject matter experts in the small group test, she had prior knowledge of the materials. This researcher became the observer for the field trial. Of the 63 who had signed up for the training, the final numbers were as follows:

Workshop 1 N = 15 Workshop 2 N = 17 Workshop 3 N = 13

The 3 workshops were conducted over a period of one week and each ran for 3 1/2 hours, including evaluation time. Data were collected in the form of attitude questionnaires, self-assessment questionnaires and anecdotal comments. Formal evaluation was also done by the trainer to determine if the trainer's manual was effective as a self-instructional package.

The following is a summary of the field test data (trainer's, participants' and designer's) and the list of recommended revisions necessary to make the product marketable. Some revisions had been made to the Attitude Questionnaire (refinement and regrouping of items) and Self-Assessment Questionnaires (additioon of a column "Already Known"). The same criteria were used for evaluating the Self-Assessments and the Attitude Questionnaires as were used for the small group trial, with the following addition: All objectives marked "Already Known" were attended to.

Table 7 Workshop 1 - Self-Assessment of Learning Outcomes
Field Trial N = 15

objective	very well (x=3)	fairly well (x=2)	not well (x=1)	already known (x=0)	not relevant (x=0)	% score
1	4	9	0	0	2	.67
2	4	8	1	1	1	.65
3	6	9	0	0	0	.80
4	9	6	0	0	0	.87
5	10	3	0	2	0	.80
6	8	6	0	1	0	.80
7	10	4	0	1	0	.85
8	11	2	0	2	0	87
9	10	4	0	1	0	.85
10	10	4	0	1	0	.85
11	6	6	3	0	0	.73
12	7	4	1	3	0	.67
13	8	6	0	1	0	.80
14	4	8	1	2	0	65
15	10	5	0	0	0	.89
16	8	6	0	1	0	.80
17	8	6	0	1	0	.80
18	5	8	1	0	0	.71
19	5	9	1	0	0	.76
20	10	5	0	0	0	.89

Table 8 Workshop 2 - Self-Assessment of Learning Outcomes
Field Trial N = 17

objective	very well (x=3)	fairly well (x=2)	not well (x=1)	already known (x=0)	not relevant (x=0)	x score
1	7	10	0	0	0	.80
2	10	5	0	2	0	.79
3	9	6	0	2	0	.78
4	8	6	1	2	0	.73
5	11	5	0	1	0	.85
6	11	5	0	1	0	.85
7	17	0	0	0	0	1.0
8	9	8	0	0	0	.84
9	7	8	2	0	0	.77
10	5	9	3	0	0	.76
11	10	5	2	0	0	.82
12	10	5	2	0	0	.82
13	10	5	2	0	0	.82
14	10	5	2	0	0	.82
15	9	6	2	0	0	.80

Table 9 Workshop 3 - Self-Assessment of Learning Outcomes
Field Trial N = 13

objective	very well (x=3)	fairly well (x=2)	not well (x=1)	already known (x=0)	not relevant (x=0)	% score
1	10	3	0	0	0	93
2	7	6	0	0	0	.85
3	13	0	0	0	0	1.0
4	12	1	0	0	0	.97
5	11	2	0	0	0	.95
6	12	1	0	0	0	.97
7	12	1	0	0	0	.97
8	13	0	0	0	0	1 0
9	11	2	0	0	0	95
10	10	3	0	0	0	.92

Table 10 Attitude Questionnaire: Training Course Evaluation
Field Trial N = 15

ITEM	1	2	3	4	5	% score
1	0	0	5	6	4	.79
2	0	0	1	6	8	.89
3	0	0	1	4	10	.92
4	0	0	1	9	5	.83
5	0	0	0	0	15	1.00
6	0	0	2	4	9	.87
*7	4	7	3	0	0	.60
*8	1	0	10	4	0	.85
*9	1	1	11	2	0	.89
*10	0	4	9	2	0	.87
11	2	5	4	4	0	.54
12	0	0	1	7	7	.88
13	0	0	0	3	12	.96
14	0	0	0	5	10	.94
15	0	0	0	5	10	.94
16	0	0	2	7	6	.85
17	0	0	0	2	13	.97
18	0	0	0	3	12	.96

Note: * indicates items where a score of 3 is the highest rating. Percentages reflect this difference and were calculated accordingly

COMMENTS AND SUGGESTIONS

(items # 19-24 from Attitude Questionnaires Field Trial)

19. -the computer knowledge. (2 occurrences)

    -how to work with computers and children (3 occurrences)

    -the hands-on activities (2 occurrences)

    -all was new and interesting information

    -criteria for selecting appropriate software

    -everything (4 occurrences)

    -information on computers in the classroom

    -thanks for the checklists

20. -I have an I.B.M. so...

    -history, interesting but too long (9 occurrences)

    -theory

    -all of value

21. -anything hands-on (8 occurrences)

    -working with children (4 occurrences)

    -How to set up the classroom to incorporate a computer. More discussion on appropriate software and perhaps a list of what the designer would consider appropriate ece software

    -computer in the classroom

22. -where the computer originated from

-history (7 occurrences)

-everything was an integral part of the whole

-just right (2 occurrences)

23. -more time (7 occurrences)

-content great. Instructional approach excellent. More animated delivery needed. Facilities satisfactory

-I would enjoy an 8-week instructional period, so I could really get it all

-More play and experimenting time. This is how I learn best

-The theory was great, interesting and important but there wasn't enough time for the hands-on aspects of the course

-all aspects excellent

24. -I really enjoyed these workshops. Congratulations. When's the follow-up?

-Manuals well-designed

-more time

-I felt that the workshops really carried out their objectives. I would have liked more time to digest the material. Great but rushed

-All material clearly explained. I love our manuals. Not a lot of writing and writing. Good resource. I came in knowing nothing I'm walking away all excited and dying to apply before forgotten

-This was great. I'm not afraid of computers now and feel I can go out of here more confident to work on my own in the centre. Great manuals. Well-designed and easy to work your way through. Good step-by-step approach

-Manuals are excellent

-I really enjoyed the course. I learned a lot and am less intimidated by computers. Well done.

-Thank you. When will you give this again. There are a lot of us out there who need it

-Thanks for the manuals, thanks for the course

-Excellent workshops. There should be follow-ups in the near future

-The manuals are a great resource for me and will be used again It was valuable information, well-presented. I'll put in a good word with the A.E.C.E. This needs to be offered to a wider range of those of us in the field

-Nice to have manuals written by people who know how people learn

-Excellent course. How can you afford to offer it for this price

-Great start to my beginning in Technology. Workbooks are excellent can use as a good reference and resource. Teachers very approachable.

Trainer's Manual Evaluation

The independent trainer was asked to complete A Trainer Evaluation Questionnaire and a Revision List for each workshop (Appendix B) within the Training Manual. This was to facilitate evaluation of the Trainer's Manual as an effective self-instructional training tool. The questionnaires and Revision Lists were summarized and anecdotal comments from the trainer and observer were collected.

The following is a summary of combined anecdotal data and trainer feedback. This data, together with participant feedback constituted the final list of suggested revisions.

Table 11 Trainer Evaluation Questionnaires

Field TriaL

S.A. = STRONGLY AGREE A.G. = AGREE IN GENERAL

R.N. = REVISION NEEDED

	WORKSHOP 1			WORKSHOP 2			WORKSHOP 3		
ITEM	S.A.	A.G.	R.N.	S.A.	A.G.	R.N.	S.A.	A.G.	R.N.
1	x			x			x		
2		x			x			x	
3		x			x		x		
4		x			x		x		
5			x			x	x		
6	x			x			x		
7	x			x			x		
8		x				x	x		
9		x			x		x		
10	x			x			x		
11			x			x	x		
12	x				x		x		
13		x			x		x		
14			x			x		x	
15	x			x			x		
16		x			x		x		
17		x			x		x		
18		x			x		x		
19	x			x			x		
20		x		x			x		
21		x			x		x		
22	x			x			x		
23		x			x		x		
24		x		x			x		
25	x				x		x		

Table 12 **Trainer's Revision List**

ITEM #	PAGE #	RECOMMENDED REVISION
5	4	more information required about Leonardo De Vinci. Perhaps talk about the flying machine
	5	define millisecond and picosecond refer to participant manual
	18	give more information about the standared commands in "BASIC". Explain how to revise an error line
	27	give a better explanation on what a "hard disk" is
	37	explain the "stereo system" analogy more fully
8	48	loading the Appleworks program does not work this way if you have double disk drives. Give instruction for both single and double disk drives

	49	no explanation made of what happens if the disk to be formatted already has information on it
11	3	too much information on the history of computers.
	8	more in-depth definition of multi-tasking required
	15	more information required on what constitutes a peripheral. Use the example of the disk drive as an I/O device
	16	define the three categories of software more explicitly
	19	more information is required to understand the "BASIC" commands for revision of an error line
	32	suggest examples for explanation from the field of E.C.E.

	33	more explanation required to explain what a file directory is
	37	a more thorough explanation required for the term "integration"
	47	remind participants to read the information pages carefully and in order of presentation to avoid later revisions
14	2	30 minutes
	6	30 minutes
	11	70 minutes
	30	30 minutes
	36	training time 40 minutes tutorials 4 hours
	65	90 minutes

Table 13 Objectives to be Revised (based on Self-Assessment criteria) See Self-Assessments for each workshop Field Trial in Appendix B

WORKSHOP	OBJECTIVES	RECOMMENDED REVISIONS
1	1-3	Cut back on information on the history and evolution of computers
	5-7	Allow more discussion time. Offer more examples
	9-12	Define more thoroughly and allow more time for discussion
	13	Needs more information on introduction of "BASIC"
	14	Needs explanation on how to revise an error line

	16	More explanation on definition of hard disk. A hard disk as demo material might be a good idea
	17	more time and more explanation needed
	18-19	more relevant examples need to be used, specifically examples from the field of early childhood education
2	1-4	More explanation is needed in the front-end trainer presentation
	8-15	Much more time is required for participants to complete the hands-on activities successfully
3	2	More time is required in discussion. Solicit information from the participants in order to make this objective more relevant

Table 14 Suggested Revisions based on Attitude Questionnaire criteria. See Attitude Questionnaire-Field Trial in Appendix B

ITEM	RECOMMENDED REVISIONS
1	Participants felt that there was more in the course than they had expected. The pre-assessment of skill should be more complete
4	A larger room would be recommended for a group of this size. Perhaps a classroom for presentation and a computer lab for hands-on activities
7	Definitely more time is needed to accomplish the objectives successfully and with a minimum of stress.
8	Because time was limited, participants felt there was too much actual lecturing
11	A definite time problem. Build in lots of time for hands-on activities
16	Given sufficient amount of time, participants would feel more positive about the amount of learning they were able to accomplish

GENERAL OBSERVATIONS

-workshop 3 ran most smoothly in respect to timing, amount of information and hands-on activities

-workshop 1 needs the most revision in respect to amount of information, and presumption of trainer's prior knowledge

-the design of the trainer's manual is helpful and quite easy to use

-to a large extent, the visuals are very good. Visual #4 in Workshop 1 needs to be re-designed. It has no value as a visual. The visuals should all be either horizontal or vertical. A mix is confusing.

-Lack of time was the greatest problem. Think about offering this course over a 15 hour period. The modular design should facilitate this nicely.

DISCUSSION

The training package was very well received. Participants felt pleased to be receiving professional training and were generally positive about the learning outcomes of the workshops. This researcher feels that it will be necessary to revise the self-assessment of learning outcomes instrucment. The fact that the participants felt comfortable and competent was gleaned from anecdotal data and training attitude questionnaires and not specifically from the self-assessment. The instrument will be revised by changing the preface statement from "I believe that I ahve learned the following..." to "I believe that I have a better understanding of...". Some of the objectives will be revised to be less behaviorally stated. The data collected would then be a better indication of comfort level and perceived competence.

The most obvious problem was time. It is strongly suggested that the modularly-designed training package be given over a period of 15 hours, in whatever way suits the clientele.

The design, development and evaluation of this training package took 5 months from its original inception. The total cost of the entire project was approximately $25,000. This included the designer's time, payment for the trainer and technician, costs for supplies, materials production and photocopying and binding.

The A.E.C.E. has asked that the course be made available in the near future to a wider range of practitioners in the field of Early Childhood Education. The Association feels that even in its present state, it serves the needs of its membership.

It is believed that if the revisions are made as recommended, the training package would be an efficient and a timely product for the professional development of practitioners in the field of Early Childhood Education.

REFERENCES

Beaty, J. J., & Tucker, M. H. (1987). The computer as paintbrush, creative uses for the personal computer in the preschool classroom. Ohio: Merrill Publishing.

Bonner, P. (1984). Toward a more thoughtful use of computers in education. Personal Computing, 46(2), 12-24.

Borgh, K. & Dickson, W. (1986). Two preschoolers sharing one microcomputer: creating prosocial behavior with hardware and software. InP. Campbell & G. Fein (eds.) Young children and microcomputers. Englewood Cliffs, New Jersey: A Reston Book, Prentice-Hall.

Briggs, L. J. (1977). (Ed.). Instructional design, principles and applications. Illinois: Dryden Press.

Buckleitner, W. (1989). 1989 Survey of early childhood software. Ypsilanti, Michigan: High Scope Educational Research Foundation.

Campbell, P., & Fein, G. (1986). (Eds.). Young children and microcomputers. Englewood Cliffs, New Jersey: A Reston Book, Prentice-Hall.

Chadwick, E. Claire. (1986). Differential group composition and children's problem solving using logo. Unpublished Masters Thesis, Concordia University, Montreal.

Clements, D. M. (1986). Computers in early and primary education. Englewood Cliffs, New Jersey: Prentice-Hall.

Clements, D. M. (1987). Computers and young children: A review of research. Young Children, 42(11), 34-44.

Davidson, J. I. (1989). Children and computers in the early childhood classroom. New York: Delmar Publishers, Inc.

deBono, E. (1970). Lateral thinking, a textbook of creativity. Ontario: Penguin Books.

deBono, E. (1972). Children solve problems. New York: Harper & Row.

Dick, W., & Carey, L. (1985). The systematic design of instruction (2nd ed.). Illinois: Scott, Foreman & Company.

Eliason, C. J., & Jenkins, L. T. (1986). A practical guide to early childhood curriculum. Columbus, Ohio: Merrill Publishing.

Flavell, J. H. (1976). Metacognitive aspects of problem solving. In L. B. Resnick (Ed.), The nature of intelligence. Hillsdale, N. J.: Lawrence Erlbaum Associates.

Gagne, R. M., Wager, W., & Rojas, A. (1981). Planning and authoring computer-assisted instruction lessons. Educational Technology, 12(9), 42-51.

Gagne, R. M. (1974). Essentials of learning for instruction. Illinois: Dryden Press.

Gagne, R. M., & Briggs, L. J. (1974). Principles of instructional design. New York: Holt, Rinehard and Winston.

Geisert, G. (1983). Keys to computer literacy. Early Years, 36(10), 41-43.

Glaser, R. (1986). The design of instruction, from Fundamentals of instructional design. 18-36.

Grimes, L. (1981). Computers are for kids: designing software programs to avoid problems of learning. Teaching Exceptional Children,9, 49-53.

Haughland, S. W. & Shade, D. D. (1990). Developmental evaluations of software for young children - 1990. New York: Delmar Publishing, Inc.

Hohmann, C. (1990). Young children and computers. Ypsilanti, Michigan: High Scope Press.

Hoot, J. L. (1986). Computers in early childhood education, issues and Ppactices. Englewood Cliffs, New Jersey: Prentice-Hall.

Hyson, M. C., & Eymann, A. (1986). Approaches to computer literacy in early childhood teacher education. Young Children, 41(9), 54-59.

Kemp, J. E. (1985). The instructional design process. New York: Harper and Row, Publishers.

Kemp, J. E. & Dayton, D. K. (1985). Planning and producing instructional media. (5th ed.). New York: Harper and Row, Publishers.

Lipinski, J. M., Nida, R. & Watson, A. (1986). The effects of microcomputers on young children: An examination of free-play choices, sex differences, and social interactions. Journal of Educational Computing Research, 2, 147-168.

Lipinski, J. M. & Nida, R. (1984). Competence, gender and preschoolers' free play choices when a microcomputer is present in the classroom. North California University, Greensboro: Family Research Center. (Eric Document Reproduction Service No. 243609).

Mager, R. F. (1962). Preparing instructional objectives. Palo Alto, California: Fearon Publishers, Inc.

Margolis, N. (1989). Making the manual work: Techniques for validating computer documentation. Performance and Instruction, 28(6), 1-9.

Markle, S. M. (1989, July). The ancient history of formative evaluation. Performance and Instruction, 28(7), 27-29.

Marion, M. (1987). Guidance of young children. Ohio: Merrill Publishing.

Moyer, J. (1986). (ed.). Selecting educational equipment and materials for school and home. Wheaton, Maryland: Association for Childhood Education International.

Munro, S. (1983, June). Computer programming by kindergarten children using logo. Paper presented at AMTEC/ADATE Confluence '83. Montreal.

Munro, S. (1984). Microcomputers and the problem-solving skills of young children. Unpublished Masters Thesis, Concordia University, Montreal.

Munro, S. & Engel, B. (1986). The computer goes to preschool. Unpublished Research Project, E.C.E. Department, Vanier College, Montreal.

Papert, S. (1980). Mindstorms: children, computers and powerful ideas. New York: Basic Books.

Romiszowski, A. J. (1981). Designing instructional systems. New York: Kogan Page, London/Nichols Publishing.

Rubens, T. M., Poole, J., & Hoot, J. L. (1984, Spring). Introducing micro-computers to micro-learners through play. Daycare and Early Education, 11(3), 29-31.

Rubin, K. H., & Hayvren, M. (1981). The social and cognitive play of preschool-aged children differing with regard to sociometric status. Journal of Research and Development, 14(3), 116-122.

Shade, D. D. & Daniel, G. E. (1983). Microcomputers: A close look at what happens when preschool children interact with age-appropriate software. Cat Children and Technology Project. University of North Carolina. (Eric Document Reproduction Service No. ED 243608).

Solomon, C. (1982, August). Introducing logo to children. BYTE. Byte Publications, Inc.

Sullivan, G. (1985, April). Competency based computer education. Paper presented at ECOO/AEDS Conference. Toronto: OISE.

Swigger, K. (1984). Social patterns and computer use among preschool children. AEDS Journal, 17(3), 35-41.

Thiagarajan, S. (1976). Learner analysis: Why, who, when, what and how. NSPI Journal, 40(12), 19-21.

Wright, J., & Samaras, A. S. (1986). Play worlds and microworlds. in Patricia Campbell and Greta Fein (eds.) Young Children and Microcomputers. Englewood Cliffs, New Jersey:

Ziajka, A. (1983). Microcomputers in early childhood education? A first look. Young Children, 38(5), 61-67.

APPENDIX A (10 pages)

SURVEY OF EARLY CHILDHOOD EDUCATORS

LETTERS OF SUPPORT

MICROCOMPUTER NEEDS ASSESSMENT

Although it would be helpful, it is not necessary to fill in your name and centre, should you wish to remain anonymous. Please feel free to comment at greater length on any of these questions, using the backside of the sheet if necessary.

Name: ______________________________
Centre: ____________________________

1. Do you see a need to introduce the microcomputer as a technological tool, to an early childhood centre?

   _____ YES   Comments: ________________________________
   _____ NO   ____
                 ____

2. Would you feel it worthwhile to allocate financial resources to the acquisition of a microcomputer?

   _____ YES   Comments: ________________________________
   _____ NO   ____
                 ____

3. Do you presently have a microcomputer in your agency?

   _____ YES
   _____ NO -----> Please go to question #8

4. What type of microcomputer do you have?

   Make: __________________________   How many?_______
   Model: _________________________

5. How is the microcomputer used in your agency?

   _____ Educationally   Comments: _____________________
   _____ Administratively ______________________________
                           ____

6. If the microcomputer is used educationally in your agency please describe the educator teaching with it:

   _____ Full-time employee
   _____ Part-time employee
   _____ Hired especially for computer education

   Qualifications: ____________________________________

7. If the microcomputer is used administratively in your agency, please indicate in which capacity:

_____Word Processing
_____Database Control
_____Spreadsheet Application
_____Other -----> explain:___________________________

8. Would you feel it worthwhile to allocate funds for the purchase of appropriate software?
_____YES
_____NO Comments:___________________________________

9. Would you like to see educators trained in developmentally-appropriate practice, particularly in the use of the computer with children?
_____YES
_____NO Comments:_________________________________

10. Would you allocate funds for personnel training in the use of the microcomputer?
_____YES
_____NO Comments:_________________________________

11. If special funding were available, I would take advantage of assistance in: (please check any or all)
_____ Software selection and purchase
_____ Hardware selection and purchase
_____ Personnel Training
_____ Other: specify:___________________________________

Could you now rank order these, from highest to lowest priority (where 1 is highest priority).

12. Do you feel you would personally benefit from computer training?
_____YES
_____NO Comments:___________________________________

* Is there any other issue that we haven't considered, that you feel is important in this area? Please specify:

____
____
____

THANK YOU

Association of Early Childhood Educators, Inc.

L'Association des Educatrices et Educateurs de la Petite Enfance, Inc.

November 9, 1989

To Whom it May Concern,

The Association of Early Childhood Educators is pleased to sponsor this request for CCIF funding. We feel that it is very important for non-profit associations such as ours to provide professional services to its members, and to the Early Childhood community as well.

The Data Base will be a key basic resource for educators in the future. As our society changes, becoming more complex and demanding, it is important to be able to adapt to a new reality. More and more childcare centres are buying computer technology, which is at present underutilized. The AECE sees a need to help educators use this technology to expand their skills and knowledge. At present no such resource is available.

We thank you for your consideration of this proposal, and we hope that you find this project as important and interesting as we do.

Lawrence DePoe

Lawrence DePoe
President

Association de l'Ouest de l'Ile pour
l'Education des jeunes enfants

West Island Association for
Early Childhood Education

October 3, 1989

To whom it may concern:

We, as a non-profit association of educators and caregivers of young children, are writing to express our support for the project being proposed by the Association of Early Childhood Educators.

Since we have a strong concern with the professional development of early childhood educators as a means of providing quality care for young children, we see the development of courses in computer literacy specifically for early childhood educators as a necessity in order for them to be effective in terms of pedagogy and educational management. The development of a database of curriculum resources and the availability of other computer resources would provide our educators with a powerful tool for curriculum planning.

We strongly support the Association of Early Childhood Educators in its request for funding from the Child Care Initiatives Fund, and ask you to give it every consideration.

Very sincerely,

Carol Jonas

Carol Jonas,
Chairman

Vanier College

June 1989.

TO WHOM IT MAY CONCERN:

The Early Childhood Education Department at Vanier College is in support of the request for funding submitted by the Association of Early Childhood Educators. The establishment of a data base which includes curricular resources will be an invaluable addition to the Early Childhood community. Further, the addition of a Resource Centre and the availability of courses tailored to the immediate needs of educators within the field, as well as day care directors, will serve a well-established requirement of this region, which serves a very large number of young children and their families.

Should you wish to contact me regarding this endorsement, please feel free to do so.

Sincerely,

Bev Engel Kay
Coordinator,

Early Childhood Education Department.
514-744-7709.

821 Ste-Croix Boulevard, St-Laurent, (Quebec), Canada H4L 3X9, Telephone (514) 333-3811

Association of
Early Childhood Educators, Inc.

L'Association des
Educatrices et Educateurs
de la Petite Enfance, Inc.

November 9, 1989

To Whom it May Concern,

The Association of Early Childhood Educators is pleased to sponsor this request for CCIF funding. We feel that it is very important for non-profit associations such as ours to provide professional services to its members, and to the Early Childhood community as well.

The Data Base will be a key basic resource for educators in the future. As our society changes, becoming more complex and demanding, it is important to be able to adapt to a new reality. More and more childcare centres are buying computer technology, which is at present underutilized. The AECE sees a need to help educators use this technology to expand their skills and knowledge. At present no such resource is available.

We thank you for your consideration of this proposal, and we hope that you find this project as important and interesting as we do.

Lawrence DePoe

Lawrence DePoe
President

Association de l'Ouest de l'Ile pour
l'Education des jeunes enfants
West Island Association for
Early Childhood Education

October 3, 1989

To whom it may concern:

We, as a non-profit association of educators and caregivers of young children, are writing to express our support for the project being proposed by the Association of Early Childhood Educators.

Since we have a strong concern with the professional development of early childhood educators as a means of providing quality care for young children, we see the development of courses in computer literacy specifically for early childhood educators as a necessity in order for them to be effective in terms of pedagogy and educational management. The development of a database of curriculum resources and the availability of other computer resources would provide our educators with a powerful tool for curriculum planning.

We strongly support the Association of Early Childhood Educators in its request for funding from the Child Care Initiatives Fund, and ask you to give it every consideration.

Very sincerely,

Carol Jonas

Carol Jonas,
Chairman

Vanier College

June 1989.

TO WHOM IT MAY CONCERN:

The Early Childhood Education Department at Vanier College is in support of the request for funding submitted by the Association of Early Childhood Educators. The establishment of a data base which includes curricular resources will be an invaluable addition to the Early Childhood community. Further, the addition of a Resource Centre and the availability of courses tailored to the immediate needs of educators within the field, as well as day care directors, will serve a well-established requirement of this region, which serves a very large number of young children and their families.

Should you wish to contact me regarding this endorsement, please feel free to do so.

Sincerely,

Bev Engel Kay

Bev Engel Kay
Coordinator,

Early Childhood Education Department.
514-744-7709.

821 Ste-Croix Boulevard, St-Laurent, (Quebec), Canada H4L 3X9, Telephone (514) 333-3811

GARDERIE DORVAL DORVAL DAY CARE CENTRE
865 Bord du Lac, Lakeshore Drive, Dorval, Qué. H9S 2C7 — Tél.: 631-6884

November 6, 1989

The Association of Early Childhood Educators is one of the few available groups who, in the past, have helped promote the well being and on-going training of early childhood educators in their field.

The development of a database of curriculum resources would assist educators in the planning and implementing of their program. The Computer Literacy aspect of this project would provide the support to educators to better understand the computer technology.

The Computer Database project would be a great asset to all the members of the Early Childhood Association.

As a member of the Board of Executives of the Association and as a Director and previously an educator in the Early Childhood field, this is a project I strongly recommend and support.

Sincerely,

Luisa Iglio

Luisa Iglio
Director

LI/np

GARDERIE DORVAL DORVAL DAY CARE CENTRE
865 Bord du Lac, Lakeshore Drive, Dorval, Qué. H9S 2C7 — Tél.: 631-6884

November 6, 1989

The Association of Early Childhood Educators is one of the few available groups who, in the past, have helped promote the well being and on-going training of early childhood educators in their field.

The development of a database of curriculum resources would assist educators in the planning and implementing of their program. The Computer Literacy aspect of this project would provide the support to educators to better understand the computer technology.

The Computer Database project would be a great asset to all the members of the Early Childhood Association.

As a member of the Board of Executives of the Association and as a Director and previously an educator in the Early Childhood field, this is a project I strongly recommend and support.

Sincerely,

Luisa Iglio

Luisa Iglio
Director

LI/np

APPENDIX B (22 pages)

Revision Table One-To-One Evaluation
Self-Assessment of Learning Outcomes Small Group Trial
Training Course Attitude Questionnaire Samll Group Trial
Pre-Assessment Form Field Trial
Workshop 1 Self-Assessment Field Trial
Workshop 2 Self-Assessment Field Trial
Workshop 3 Self-Assessment Field Trial
Attitude Questionnaire Field Trial
Trainer Evaluation Questionnaires (3)
Trainer Revision Lists (3)

CRITERIA	PAGE NUMBER AND SPECIFY
DESIGN: 1. consistent 2. clear 3. geared to population 4. strategies appropriate 5. helpful	
CONTENT: 6. correct 7. clearly expressed 8. vocabulary appropriate 9. amount of information is appropriate 10. information is well-sequenced 11. examples are helpful 12. estimated times are correct 13. examples are appropriate	
VISUALS: 14. attractive 15. correct 16. clear in message 17. useful 18. well-designed	
TUTORIALS: 19. well-designed 20. appropriate 21. clear 22. correct 23. well-sequenced	

REVISION TABLE ONE-TO-ONE EVALUATION

TRAINING COURSE EVALUATION
ATTITUDE QUESTIONNAIRE
SMALL GROUP TRIAL

A. For each of the statements below, circle the number that comes closest to expressing your opinion. Please notice that the extreme choices are not always the same. Read each choice carefully.

1. Was the course content what you expected it to be ?

1	2	3	4	5	6	7
not at all						exactly

2. Did you have enough practice with new skills ?

1	2	3	4	5	6	7
not at all						definitely

3. How thoroughly were the subjects covered ?

1	2	3	4	5	6	7
not at all						completely

4. What is the overall value of this course to you ?

1	2	3	4	5	6	7
not at all						extremely valuable

5. Did you receive accurate information about the course before coming?

1	2	3	4	5	6	7
not at all						completely

6. What was the quality of the handouts you received ?

1	2	3	4	5	6	7
poor						excellent

7. What was the quality of the training facilities ?

1	2	3	4	5	6	7
poor						excellent

8. What do you think of the length of time taken for this course ?

1	2	3	4	5	6	7
too short			just right			too long

9. Did the instructional methods keep you interested ?

1	2	3	4	5	6	7
not at all						extremely

10. How suitable was the amount of lecturing ?

1	2	3	4	5	6	7
not enough			just right			too much

11. How suitable was the amount of discussion ?

1	2	3	4	5	6	7
not enough			just right			too much

12. How was the speed of presentation ?

1	2	3	4	5	6	7
too slow			just right			too fast

13. Course leader's organization and preparation was:

1	2	3	4	5	6	7
poor						excellent

14. Course leader's mastery of subject was:

1	2	3	4	5	6	7
poor						excellent

15. Overall quality of instruction was:

1	2	3	4	5	6	7
poor						excellent

16. Were you satisfied with the results you achieved on this course?

1	2	3	4	5	6	7
not						extremely

17. Would you recomment this course to your colleagues ?

1	2	3	4	5	6	7
not at all						highly

B. COMMENTS AND SUGGESTIONS

1. Which information was of most value to you ?

2. Which information was of least value to you ?

3. What suggestions could you make to improve the course ?

4. Additional comments would be appreciated

SELF-ASSESSMENT
LEARNING OUTCOMES

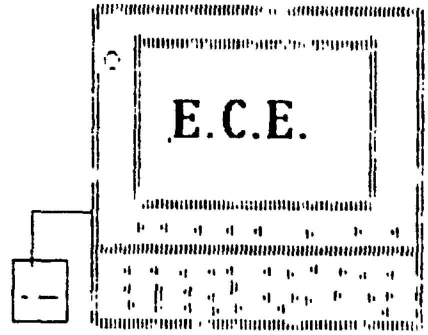
Based on my participation in this training program, I believe that I have learned the following...

OBJECTIVES	VERY WELL	FAIRLY WELL	NOT WELL	NOT RELEVANT
I am able to... WORKSHOP 1				
1. Briefly describe the history of computers				
2. Differentiate among generations of computers				
3. Explain computer miniaturization and speed of execution				
4. Define the term "computer" and describe its function				
5. Define the three categories of computer applications and give examples of each				
6. List the basic components of a computer				
7. Differentiate between "hardware" and "software"				
8. Define and list a few commonly used peripherals				
9. Define the term "program"				
10. Define the term "supportware"				
11. Discuss various programming languages and explain how these are understood by the computer				
12. Discriminate between "flexible" and "fixed" disks			✓	
13. Summarize the procedure for taking care of disks				
14. Explain the terms "format", "write-protect" and "back up"				
15. List the steps in the file structure hierarchy				
16. Explain the type of information in each step of the hierarchy				
17. Differentiate between a "bit" and a "byte"				

	VERY WELL	FAIRLY WELL	NOT WELL	NOT RELEVANT
WORKSHOP 2				
1. Load the appleworks program				
2. Format a blank disk				
3. Understand the three different applications				
4. Produce a word processed document				
5. Produce a small data base				
6. Produce a spreadsheet				
7. Use the "cut and paste" process successfully				
8. Print out a final document				
WORKSHOP 3				
1. Discuss relevant issues in relation to young children and computers				
2. Explain the criteria for hardware selection				
3. List a number of criteria for developmentally-appropriate software for young children				
4. Evaluate a number of selected software products				
5. Discuss how to incorporate the computer into the classroom				
6. Discuss how computer activities can be incorporated into the early childhood curriculum				
7. Design an appropriate experience for young children incorporating pre-activities, computer activities and post-activities				

COMPUTER TRAINING WORKSHOPS

WHICH WORKSHOPS DO YOU NEED ?



WORKSHOP 1: Introduction to computers

Can you...

-relate the history and evolution of computers over the last 50 years
-define a variety of computer concepts and terms
-apply principles of computer disk and file management
-design a simple program in BASIC

WORKSHOP 2: Computer managed information

Can you...

-Explain data base, word processing and spreadsheet management
-design, develop and print out a word processed document
-design, develop and print out a data base file
-design, develop and print out a spreadsheet
-print out a merged document

workshop 3: COMPUTERS IN EARLY CHILDHOOD EDUCATION

Can you...

-discuss relevant issues such as gender differences divergent thinking, preliteracy needs, social development and computers for children with special needs
-incorporate the computer into a developmentally appropriate
-curriculum
-select appropriate hardware and software
-evaluate software for appropriateness

CHOOSE THE WORKSHOP YOU NEED

COMPUTER TRAINING
WORKSHOP 1
SELF-ASSESSMENT

Based on my participation in this training workshop, I believe that
I HAVE LEARNED TO

WORKSHOP OBJECTIVES	VERY WELL	FAIRLY WELL	NOT WELL	ALREADY KNOWN	NOT RELEVANT
1 Briefly describe the rapid evolution of the electronic computer					
2 Differentiate among generations of computers					
3 Explain what is meant by computer miniaturization					
4 Describe how speed of execution has changed over the generations					
5 Define the term "computer" and describe its three functions					
6 List the three categories of computer applications and give an example of each					
7 List the basic components of a microcomputer					
8 Differentiate between "hardware" and "software"					
9 Name and describe a few more-commonly used peripherals					
10 Define the term "program"					

WORKSHOP OBJECTIVES	VERY WELL	FAIRLY WELL	NOT WELL	ALREADY KNOWN	NOT RELEVANT
11. Define the term "supportware					
12. Name a couple of programming languages and explain how these are understood by the computer					
13. Understand a number of simple **BASIC** procedures and commands					
14. Successfully key enter and run a simple **BASIC** program					
15 Summarize the procedure for the handling and care of disks					
16 Discriminate between a floppy and a hard disk					
17 Explain the following **format**, **write-protect**, and **back-up** procedures					
18 List the steps in the file structure hierarchy					
19 Explain the types of information found in each step of the hierarchy					
20 Differentiate between a **bit** and a **byte**					

THANK YOU

COMPUTER TRAINING
WORKSHOP 2
SELF-ASSESSMENT

Based on my participation in this training program, I believe that

I HAVE LEARNED TO:

WORKSHOP OBJECTIVES	VERY WELL	FAIRLY WELL	NOT WELL	ALREADY KNOWN	NOT RELEVANT
1 Explain why Appleworks is called an "Integrated computer program"					
2 Briefly explain what a word processor allows me to do					
3 Briefly explain what a data base allows me to do					
4 Briefly explain what a spreadsheet allows me to do					
5 Start up (boot) the computer					
6 Differentiate between the "start up" disk and the "program" disk					
7 Load the "Appleworks" program					
8 Format a disk					
9 Briefly explain how to move around among the menus in the program					
10 Use a number of page formatting options					

WORKSHOP OBJECTIVES	VERY WELL	FAIRLY WELL	NOT WELL	ALREADY KNOWN	NOT RELEVANT
11. Produce a word processed document					
12. Produce a small data base					
13. Produce a spreadsheet					
14. Cut parts of a data base and a spreadsheet and paste these to a word processed document					
15. Print out a final document					

WERE YOU A PARTICIPANT IN WORKSHOP 1 ? YES_____
NO_____

THANK YOU

COMPUTER TRAINING
WORKSHOP 3
SELF-ASSESSMENT

Based on my participation in this training program, I believe that
<u>I have learned to</u>

WORKSHOP OBJECTIVES	VERY WELL	FAIRLY WELL	NOT WELL	ALREADY KNOWN	NOT RELEVANT
1 Discuss a number of issues in relation to computers and young children					
2 Discuss some new breakthroughs in computer technology and how they relate to young children and children with special need					
3 Discuss the advantage of using computers with young children					
4 Discuss how to incorporate the computer effectively into the classroom					
5 Explain how to plan an experience for young children which incorporates both computer and non-computer activities					
6 Explain how to introudce new software to the children					

7. Discuss criteria for the selection of appropriate hardware					
8. List the criteria for selection of developmentally appropriate software for young children					
9. Evaluate a number of software packages for young children using the established criteria.					
10. Generate a plan on how to incorporate these ideas into the early childhood classroom					

WERE YOU A PARTICIPANT IN WORKSHOP 1 YES_____ NO_____

WORKSHOP 2 YES_____ NO_____

THANK YOU

1

ATTITUDE QUESTIONNAIRE

TRAINING COURSE EVALUATION

For each of the statements below, circle the number that comes closest to expressing your opinion.

1. Did you receive accurate information about the course before coming?

   1 — 2 — 3 — 4 — 5

   not at all ... completely

2. Was the course content what you expected it to be?

   1 — 2 — 3 — 4 — 5

   not at all ... exactly

3. Was the course content of value to you?

   1 — 2 — 3 — 4 — 5

   not at all ... very valuable

4. What was the quality of the training facilities?

   1 — 2 — 3 — 4 — 5

   poor ... excellent

5. What was the quality of the handouts you received?

   1 — 2 — 3 — 4 — 5

   poor ... excellent

6. Did the training methods keep you interested?

   1 — 2 — 3 — 4 — 5

   not at all ... extremely

PLEASE NOTE: #'s 7, 8, 9 and 10 USE THE ENDS OF THE SCALE FOR EXTREME RESPONSES.

7. What do you think of the length of time taken for this workshop?

1	2	3	4	5
too short		just right		too long

8. How suitable was the amount of actual lecturing?

1	2	3	4	5
not enough		just right		too much

9. How suitable was the amount of discussion?

1	2	3	4	5
not enough	just right			too much

10. How was the speed of presentation?

1	2	3	4	5
too slow		just right		too fast

11. Did you have enough practice with new skills?

1	2	3	4	5
not at all				definitely

12. How thoroughly were the subjects covered ?

1	2	3	4	5
not thoroughly				completely

13. Trainer's organization and preparation was:

1	2	3	4	5
poor				excellent

14. Trainer's mastery of the subject matter was:

1	2	3	4	5
poor				excellent

15. Overall quality of the training was:

1	2	3	4	5
poor				excellent

16. Are you satisfied with the amount of learning you have accomplished?

1	2	3	4	5
not at all				very much

3

17. **Were the hands-on activities of value to you**

1	2	3	4	5
not really				definitely

18. **Would you recommend this course to your colleagues?**

1	2	3	4	5
not at all				highly

19. **Which information was of most value to you?**

____

20. **Which information was of least value to you?**

____

21 **What topics should the workshop have covered in more depth?**

____

22. **What topics should the workshop have covered in less depth?**

____

23. **What suggestions could you make to improve the course? (in respect to content, instructional approach and facilities)**

____

24. **Please add any additional comments that might be helpful**

____

THANK YOU

TRAINER EVALUATION
QUESTIONNAIRE
WORKSHOP 1

For each of the items below, please indicate whether you strongly agree, agree in general or recommend revision. Where revision is indicated, please specify by filling in the section titled "REVISION LIST". Finally, a general overview and suggestion list on the entire package would be appreciated.

WORKSHOP 1	STRONGLY AGREE	AGREE IN GENERAL	REVISION NEEDED
DESIGN:			
1. facilitates ease of use			
2. is clear and understandable			
3 is consistent in design			
4. facilitates self-instruction			
5 assumes correct prior knowledge			
6 provides appropriate strategies			
7 provides helpful suggestions			
CONTENT:			
8. information is correct			
9 information is clearly expressed			
10. vocabulary is appropriate			
11. amount of information is appropriate			
12 information is well-sequenced			
13 examples provided are helpful			
14. suggested timing is correct			
15. imbedded questions are helpful			
VISUALS:			
16. are attractive			
17. are correct			
18. are clear and comprehensive			
19. are useful			
20. are well-designed			
TUTORIALS:			
21. are well-designed			
22. are appropriate			
23. are clear			
24. are correct			
25. are well-sequenced			

TRAINER EVALUATION
QUESTIONNAIRE
WORKSHOP 2

For each of the items below, please indicate whether you strongly agree, agree in general or recommend revision. Where revision is indicated, please specify by filling in the section titled "REVISION LIST". Finally, a general overview and suggestion list on the entire package would be appreciated.

WORKSHOP 2	STRONGLY AGREE	AGREE IN GENERAL	REVISION NEEDED
DESIGN:			
1 facilitates ease of use			
2 is clear and understandable			
3 is consistent in design			
4 facilitates self-instruction			
5. assumes correct prior knowledge			
6 provides appropriate strategies			
7 provides helpful suggestions			
CONTENT:			
8 information is correct			
9 information is clearly expressed			
10 vocabulary is appropriate			
11. amount of information is appropriate			
12 information is well-sequenced			
13 examples provided are helpful			
14 suggested timing is correct			
15. imbedded questions are helpful			
VISUALS:			
16 are attractive			
17. are correct			
18. are clear and comprehensive			
19. are useful			
20 are well-designed			
TUTORIALS:			
21. are well-designed			
22 are appropriate			
23 are clear			
24 are correct			
25 are well-sequenced			

TRAINER EVALUATION
QUESTIONNAIRE
WORKSHOP 3

For each of the items below, please indicate whether you strongly agree, agree in general or recommend revision. Where revision is indicated, please specify by filling in the section titled "REVISION LIST". Finally, a general overview and suggestion list on the entire package would be appreciated.

WORKSHOP 3	STRONGLY AGREE	AGREE IN GENERAL	REVISION NEEDED
DESIGN:			
1. facilitates ease of use			
2. is clear and understandable			
3. is consistent in design			
4. facilitates self-instruction			
5. assumes correct prior knowledge			
6. provides appropriate strategies			
7. provides helpful suggestions			
CONTENT:			
8. information is correct			
9. information is clearly expressed			
10. vocabulary is appropriate			
11. amount of information is appropriate			
12. information is well-sequenced			
13. examples provided are helpful			
14 suggested timing is correct			
15. imbedded questions are helpful			
VISUALS:			
16. are attractive			
17. are correct			
18. are clear and comprehensive			
19 are useful			
20 are well-designed			
TUTORIALS:			
21. are well-designed			
22. are appropriate			
23. are clear			
24. are correct			
25. are well-sequenced			

REVISION LIST WORKSHOP I

ITEM #	PAGE #	SPECIFY

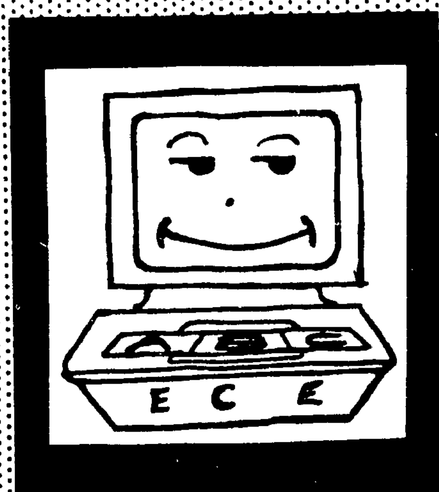
APPENDIX C (125 pages)

Trainer's Manual

COMPUTERS

IN

EARLY CHILDHOOD EDUCATION



TRAINER'S MANUAL

COMPUTERS

IN

EARLY CHILDHOOD EDUCATION

TRAINER'S MANUAL

NOTES TO THE TRAINER

The trainer's manual includes training instruction for three different workshops:

- **INTRODUCTION TO COMPUTERS**
- **INFORMATION MANAGEMENT**
- **COMPUTERS AND YOUNG CHILDREN**

You have been specifically selected as trainer because of your expertise in stand-up training, computer technology and Early Childhood Education. As such, this manual is intended as a guide to your workshop presentations and not as a set of rigid rules to follow. Suggestions are made on how to sequence the instruction, on the probable amount of time needed for each module of each workshop, and on when to present overhead visuals and demonstration materials.

It has been designed to include three distinct sections corresponding to the three different workshops. Each workshop has been divided into modules of instruction. Each module includes; a cover page indicating the learning objectives, proposed time allotment, list of overheads to be used and demonstration materials to be shown. The cover page is followed by the content pages which suggest the order of presentation of instruction. The content pages are followed by the overheads to be used for this module.

Space is provided on the right-hand side of each content page to allow you to make "notes to yourself" (prompts, reminders, asides, etc.). Feel free to use the space in whatever way suits you. Included in that space are suggestions as to when to present the overheads, when to ask relevant questions and a few of the designer's asides

GENERAL PROCEDURE

BEFORE THE WORKSHOP BEGINS

Have the participants' manuals located at their places along with plastic name tags, which they will label on entry

Make sure that the overhead projector has been tested and is placed at an appropriate distance from the screen Test it out with your visuals to ensure good visibility and that your position at the projector will not interfere with the participants' viewing range

Have your videos ready at the location on the cassette where viewing will take place Test out both the video machine and the videos you are planning to use Any other hardware should be tested, ready and software readily available

Demonstration materials such as disks, circuit boards, textbooks, and software packages should be neatly and attractively displayed

AT THE BEGINNING OF THE WORKSHOP

Welcome each participant on entry and direct them to their seats Introduce yourself (if the workshop organizer is present, he/she should introduce you). Have the participants introduce themselves as well You may wish to solicit information from them, for example, why they have decided to take this workshop, how they feel about computers, etc

Discuss the timing of the workshop, the location of bathrooms, where snacks might be purchased (or where they are being provided), and how breaks will be organized

Have them fill out their name tags. Discuss how the manuals have been designed. with text for reading and graphics with space for recording notes. This allows for individual learning styles. You might suggest that they follow with the visuals as you display them on the projector and write down what they feel it relevant to them At a future date, they may wish to read all the text in way of review

DURING EACH WORKSHOP

These workshops have been designed for the adult learner. It is important to remember that the participants will learn to the extent that they are active in the learning process. Ask questions, solicit ideas, suggestions and reactions frequently. Provide as much hands-on experience as possible, either at the computer or in the handling of demonstration materials.

FOLLOWING EACH WORKSHOP

Thank the participants for their attendance and input. Do a general review by soliciting their feelings about what they have learned. Please ensure that the participant evaluation forms are completed at the end of each workshop and submitted to the workshop organizer. 30 minutes have been allotted for participant feedback.

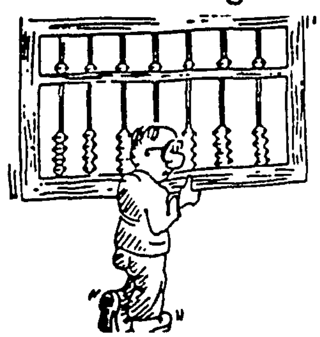
You will find at the end of the manual, a set of trainer evaluation forms. These are intended to provide feedback for the revision of the training materials. Please complete these forms with care and return them to the workshop organizer

WORKSHOP 1

INTRODUCTION TO COMPUTERS

COVER PAGE

WORKSHOP 1	
MODULE 1	EVOLUTION OF COMPUTERS
OBJECTIVES	-Briefly describe the rapid evolution of computers -Differentiate among generations of computers -Explain the trend toward greater miniaturization and speed of execution
TRAINING TIME	20 minutes
TRAINING AIDS	OVERHEADS * 1-3 sample 80-column punch card mother Board & circuit board

INSTRUCTION	AIDS
A LITTLE HISTORY	
Where did it all start? To help us with our understanding of computer technology, we should have a little knowledge of how it all began. Over the next 20 minutes or so, we'll try to get a brief view of the history and evolution of computer technology.	
In the beginning, people felt the need to collect data and somehow keep records of this data I would imagine that at the start they used their fingers to keep an account of quantities. When this was no longer enough, perhaps rocks and sticks were used. Sometime around 3000 years BC, the Chinese came up with a mechanical means of doing arithmetic.	**ex: # of cattle**
	**O/H 1**
It was called an **abacus** and comprised rows of beads which could be quickly manipulated to give a mathematical answer. It is still used today and in the hands of an expert, is said to be faster that most modern calculators.	**ask if anyone knows how it works**
Nothing much happened in the next 5000 years or so but by the **1600's** we see a number of new inventions. Blaise Pascal invented an adding machine designed with pinwheel gearing and numbered disks. Addition and subtraction was now a little easier. All mechanical calculators designed over the next 300 years followed Pascal's design.	**a computer language was named after Pascal**
There were some interesting innovations in the **1800's**. A mathematician by the name of Charles **Babbage** invented a machine which he called the **Difference Machine**. It was designed to produce very complex and accurate mathematical tables.	**remember logarithms from H.S.**

He also conceived of a machine with the following components: a memory unit, a control unit, an arithmetic unit and input/output capabilities He called it an analytical engine. It would have been the first real computer had the technology of the time been sophisticated enough to produce it	**ex: Leonardo De Vinci**
Later in the 19th century, the United States Census Bureau had a problem It took the Bureau almost 10 years to tabulate the results of the 1870 census. They hired Herman Hollerith to find a solution He came up with the 80 column punch card which was fed into a tabulating machine where electrical contacts sensed the pattern of holes and recorded the results. With this new equipment the 1890 census took only a little over 2 years to tabulate Hollerith went on to form his own company which in **1924** changed its name to "International Business Machines" **IBM**.	**DEMO A PUNCH CARD**
<u>GENERATIONS OF COMPUTERS</u>	
Until the **1940's** all calculating devices were mechanical. In **1942**, the military comissioned Mauchly and Eckert to design a computer to calculate firing tables. They developed the **ENIAC** (Electronic numerical integrator and computer). It is considered the very first **electronic computer**. It was completed in 1946 and was made up of 30 separate units each weighing over a ton Its source of power was the vacuum tube, the technology of the day The ENIAC needed 18,800 of these tubes We are now into the **dawn of computers...the first generation**.	when powered-on, all lights in Philadelphia dimmed.
First Generation — 1940's, vacuum tubes, ENIAC Second Generation — 1950's, transistors Third Generation — 1960's, *integrated circuits* Fourth Generation — 1980's, large scale integration Fifth Generation — 1990's, VLSI	**O/H 2**
In **1958**, William Shockley "shocked" the world with the invention of the **transistor**. With this new source of electrical power, **the second generation** of computers is born The transistor is much smaller and of course, more efficient. Computers were now smaller, faster and cheaper. They could process more than 30,000 instructions a second.	

In **1964**, Bell Northern Labs developed the **integrated circuit**. They were able to connect many transistors onto one small silicon chip which meant that computers were now considerable smaller and faster...the **third generation** of computers is born. Information is being processed at millions of instructions per second.

demo
-circuit board
-motherboard
explain

The development of computers has gone from using tubes to transistors to integrated circuits to large scale integration to very large scale integration. Speed of execution has gone from processing information in a millisecond to processing information in a picosecond

At present **sixth and seventh generations** of computers are being built by big industry which can mirror the human mind. They are becoming **intelligent**. Computers are now capable of incredible speeds of execution, are quite small and are smart. Entire computers can now be put onto one silicon chip.

1947-1960	The Dawn of Computers
1961-1970	Computers In Space
1971-1980	Computers In Business
1981-	Computers In the Home

O/H 3

Who are using computers?
Computers went from being used by the military (where the money seems to be), to big business, to small businesses, to the home Where can you find them now? Where will they be found in the 21st century?

solicit
discussion

For those of you who love history, a brief review of the history can be found at the end of this module in your manuals. You might want to read it at your leisure.

COVER PAGE

WORKSHOP 1	
MODULE 2	COMPUTER APPLICATIONS
OBJECTIVES	-Define the three categories of computer applications and give examples of each -Define the term **computer** and describe its functions.
TRAINING TIME	20 minutes
TRAINING AIDS	OVERHEADS * 4-6

INSTRUCTION	AIDS
Every day we come face-to-face with computers in one form or another They are at the bank, supermarket, and even in our own cars Have you been confronted with a computer today?	**ask for some suggestions**
Computers are doing a wide variety of jobs...very sophisticated jobs as well as mundane, everyday kind of jobs. It doesn't really matter what job the computer is doing, but whatever it is is called an **APPLICATION**.	
An application is a **specific job or task that the computer is given to do**. Writing out pay cheques, doing inventory control, playing Nintendo games are all applications	
Traditionally all computer jobs are classified in one of three categories Business applications, Scientific applications and Process control applications.	
COMPUTER APPLICATIONS : **- BUSINESS** **- SCIENTIFIC** **- PROCESS CONTROL**	**O/H 4**
BUSINESS This type of application is designed to receive information and process it in some way or another. Cash registers, instabank machines, and microwave ovens are examples The traditional example is the types of office applications we know about, like word-processing.	
SCIENTIFIC: When huge numbers needing to be computed in special ways are fed into a computer, a scientific application is in order . An example of this might be the scientist needing to calculate an accumulation of years of data. Scientific applications doing what is frequently called "number crunching" for numbers can be manipulated in some very sophisticated ways.	

PROCESS CONTROL: These applications monitor a specific process in a system. The computer has been programmed to keep the system in balance. It monitors the processes and will make any necessary adjustments to keep the system in balance	**think of your thermostat at home**
A number of tasks the computer is programmed to accomplish involves **multi-tasking,** that is to say, its job is to accomplish more that one type of application.	**modern word processors**
Let's think of some of our own -space exploration -data base management -medical research -spreadsheet analysis -assembly lines -automatic radar -education -geographical mapping -accounting	

what is a computer?

use the computers in the room as demo

a computer is **any device, mechanical, electrical or a combination of both, which is capable of accepting information, processing that information and supplying a result**

It's basically a very simple machine. It will accept information from you if it is in the form the computer can understand and do to that information whatever you ask it to do. After processing that information it will give you a result of its work.

The definition itself tells us that the computer has three basic functions It doesn't matter what particular application it is accomplishing, it will do so by going through three (3) separate functions

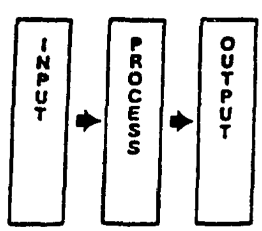
It will... *accept information*
process it
supply a result

In "computerese", this means that the three (3) functions are:

input
process
output

These functions are interrelated in the following way:

O/H #5



SYSTEMS	
A system is made up of a number of parts. These parts, though complete within themselves, need each other to survive effectively. Let's think of a few examples of things that are considered systems. Think of the human body...made up of a number of systems. All parts must be functioning properly for the entire system to function well.	**Initiate discussion** **-the digestive system** **-braking system on car**
Most of us have stereo systems. How do they work?	**draw analogy**
Let's look at a system that includes these three computer functions: **input, process and output**	
* A B C * Universal Product Code	**O/H #6**
The bar code on an item we purchase has a very important function. It is the input device which the computer's optical scanner reads (one box of Kellogg's Corn Flakes). It feeds this **input** into the computer which then **processes** the information: identifies the item, finds its price, and updates the inventory. This information becomes the **output**.	
What happens when you go to a bank? If you go to a teller? If you go to the automated teller?	**initiate discussion**
How are the functions the same?	
REVIEW	

COVER PAGE

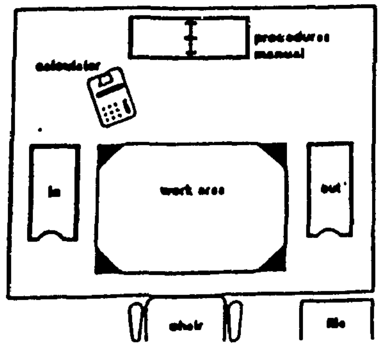
WORKSHOP 1	
MODULE 3	**COMPUTER CONCEPTS AND TERMS**
OBJECTIVES	-List the basic components of a computer -Differentiate between the terms "Hardware" and "software" -Define and list a few commonly used peripherals -Define the term "program" -Define the term "supportware" -Discuss various programming languages and explain how they are understood by the computer -Start up ("boot") the computer -Key enter a simple **BASIC** program -Run a **BASIC** Program
TRAINING TIME	60 minutes
TRAINING AIDS	OVERHEADS #7-13 Demonstrate hardware set-up Demonstrate various peripherals DOS System Master

INSTRUCTION	AIDS
Computers are manufactured in many shapes and sizes. As with cars, there is a lot of competition among different manufacturers I'm sure you have heard of all kinds of different computers Just as a car is a car is a car, so there is not that much difference among computers. They have the same functions, but do them in varying degrees of speed and sophistication	**Macintosh Plus IBM XT, etc.** **the Ford & the Porsche**
We tend to think that computers are somehow magical...and have minds of their own This is not so. Computers do what they are told to do. Computer experts may have a language of their own, but then again so do most experts. Think about it. Computer Science is a basically straightforward Science. Computers are only machines which are as bright and efficient as their programmers are Although we talk about **intelligent** machines, which can think, make decisions, etc., they are only reflecting the programmer's intelligence.	**no real mystique**
If a programmer makes an error in programming the computer the computer will reflect that error and have difficulty functioning properly I can think of any number of times I got angry at the computer and began yelling at it out of real frustration because it wouldn't do what I **wanted** it to do. It in fact, was doing what I **told** it to do.	**do what I want,not what I say**
An aura of mystery seems to surround computers in the minds of many people not really familiar with the technology. Computers are really less romantic, less fearsome and more dependant than sci-fi novelists would lead you to believe. A computer processes data which is fed into it, and then simply makes a conclusion, facilitates a decision, or simply records a fact	**just a machine**

It is powerful, however. It has vasts stores of memory which are easily accessible and it calculates incredibly quickly, but remember... it is only a machine.

Although modern computers are very advanced, complex and sophisticated, the basic components of any computer **system** are the same.

review "system"

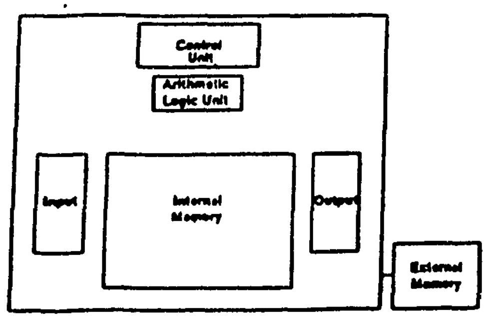


O/H #7

Let's compare an office clerk's desktop with a computer. The clerk's desk has an in-basket for work needing to be done. The central part of the desk is reserved for the space and tools to do the work. When completed the work can be put into the out-basket. Where do you think the completed work will go when there is no more room in the out-box?

draw analogy

I have used the clerk's desk as an analogy, because I believe it is exactly like the parts (components) of a computer. Let's see if the example works.



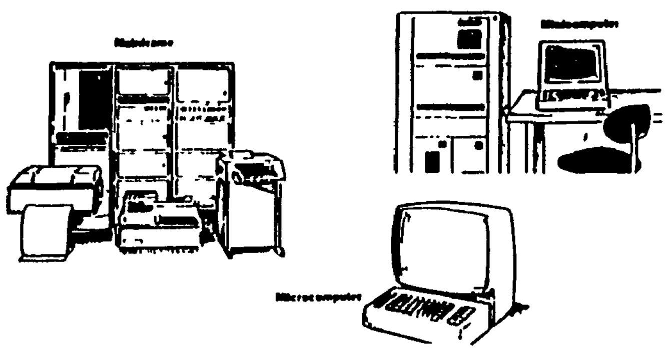
O/H #8

Like the in-box, the computer has an input device to tell the computer what work has to be done. The central part or brain of the computer is the **Central Processing Unit (CPU)**. It is the work area, the process part of the computer. In many systems, the CPU stands alone, but is hooked-up to its input and output devices. Some sophisticated systems of today are quite small and you may find that the CPU and its I/O devices are contained in the same "box".

use one of the computers in the room to demonstrate

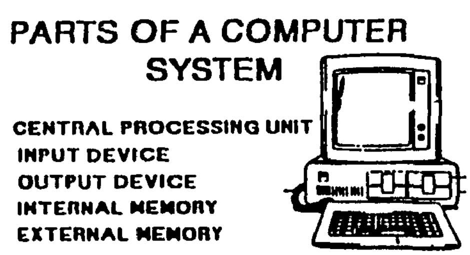
The **CPU** has internal memory (work area). It has a Control Unit (procedures manual) to make sure the work is done properly and an Arithmetic Logic Unit (calculator) to perform necessary calculations. Because the internal memory as in the out-box, cannot store all the resultant work indefinitely, we have external memory, in the form of disks. Remember the filing cabinet for getting the completed work off the desk.

the clerk's desk analogy



O/H #9

There are many kinds of computers in respect to size and portability. Here are the main categories: Mainframe, mini and our more familiar microcomputer. They all have the same essential parts:



O/H #10

the CPU, input and output devices and internal and external memory.

Demo with a computer in the room

These components of a computer system are referred to as the **HARDWARE**. Hardware is **all the physical equipment which make up the computer along with any peripherals**.	**define and demonstrate**
Peripherals can be input, output or I/O devices. Just as we have peripheral vision, the computer has peripherals on the side to help its function. There are a number of types of peripherals: the keyboard is an input peripheral, a mouse is, too. **PERIPHERAL DEVICES** • Keyboard • Light Pen • Mouse • Digitizing Pad (Tablet) • Optical Character Readers • Joystick	**O/H #11**
Remember the Universal Bar Code. That's a type of peripheral. Can you recall how it works? These are input peripherals, but of course there are output peripherals as well, such as printers, fax machines, etc. Printers vary in size, shape and speed. Some print slowly, one character at a time, while others can print full pages, one at a time	**discuss**

We have just said that the hardware is the physical equipment, that which is tangible, can be seen and touched. **Software** on the contrary, cannot really be seen and touched. Yes, we have a disk But the disk itself, is not software. It is the vehicle which carries the software Think of an audio cassette. Is the cassette the music? Can you see the electrical impulses on the tape which will be converted to music?

Demonstrate with a floppy disk

The only hard evidence that we have to indicate that some software is present on disk is to ask the computer to print out the series of instructions which it can read from the disk.

Software therefore is **all the instructions, programs, rules and relevant information necessary to run the computer**.

There are 3 kinds or categories of software:

3 CATEGORIES OF SOFTWARE

1. Operating System
2. Programming Language
3. Application Software

O/H #12

At the top level, we have operating systems. These are basic instructions to the computer on how to organize the informatior Computers only understand machine language which is made up of 0's and 1's and so there are Programming languages to tell the computer how to translate and read the information to be input. Application software is preorganized programmes that a programmer has developed to make our lives easier.

When we buy a software package, it usually includes various supports to help us: a reference manual, perhaps some visuals, and related non-computer activities. These are called **SUPPORTWARE** and are anything in the package that is not a disk

What is a **program**? A program is **a set of instructions necessary to complete a specific task. A program is not the software, but part of the software.** We have a pretty good idea now how programmers make a living He/she is that person who writes, codes and sequences a seriesof instructions or programs so the computer can know what it is expected to do. Remember that computers only know **machine language**, that is only 0's and 1's. Programmers used to have to design what they wanted done on paper in their mother tongue, say English, and then code each instruction using the 0's and 1's. As you can imagine this was extremely tedious. Would you have liked being a programmer then?. Of course, programming had to be simplified Programming languages were developed which had more in common with say the English language and therefore easier to learn and manipulate Translators were built into computers to do the job of converting these programming (symbolic) languages into binary code Symbolic or programming languages are those which were designed to make life easier as a programmer. Some examples of programming languages are **COBOL, C, FORTRAN, BASIC.** Each has different coding systems and different application purposes, but in the final analysis, you don't necessarily have to be a senior programmer to use them. Let's take a look at the **BASIC** language. It is basic and so, fairly easy to use.	**define** **discuss**

BASIC is a computer programming language which is an acronym for Basic All Purpose Symbolic Code. It is a user language which means that it is somewhat easier than the others in respect to degree of sophistication in coding.

Because this segment has been designed as a tutorial, you won't hopefully need my help, but feel free to ask for help when you need it. We always recommend people work in pairs at a computer. sharing ideas and frustrations. Before we begin, let me give you an overview of what a programme might look like and what type of things Basic will allow you to do

remind that their feedback is essential to the course designer

```
10 PRINT "WHAT'S YOUR NAME?"
20 INPUT N$
30 PRINT "THAT'S A GREAT NAME"
40 PRINT N$
50 PRINT "HOW OLD ARE YOU?"
60 INPUT N
70 PRINT N
80 PRINT "IS A FINE AGE TO BE"
90 GOTO 10
100 END
RUN
```

O/H #13

GOOD LUCK

Review for the participants the various commands and important keys used in programming in Basic.
A letter by itself as input denotes a number. Words are denoted by a letter followed by a dollar sign **N$**
Whenever a new programme is begun, remember to tell the computer this by typing in **NEW**.

THE FOLLOWING PAGES ARE EXCERPTS FROM THE PARTICIPANT'S MANUAL. GO AROUND, HELPING WHERE YOU CAN TAKE NOTE OF AREAS OF OMISSION, COMISSION AND FAULTY INFORMATION. THIS WILL BE HELPFUL FOR FUTURE REVISIONS.

Suggest that they share programmes with each other. "Come see what I've programmed. Try it."
Commend the participants on their programming skills and refer to them as **junior programmers**.

BASIC TUTORIAL

Go to a computer with a partner. It is more fun and very helpful to have someone with you, for sharing ideas and frustrations.

Some important commands and keys you will need:

Left arrow (<-) — allows you to move backward over previous typing so that you can change it by typing over.

Return key — Immediate execution. The computer will do what you have told it to do immediately.

Print — whenever you type the word PRINT, whatever you have written after it within quotation marks will print out on the screen.

Let's try it...

PROCEDURE	YOU DO THIS	THIS HAPPENS
Loading the system disk	Pick up the system disk with thumb on the label If you have 1 disk drive: Insert the disk, label up into the disk drive and close the door. If you have 2 disk drives: Insert the disk, label up into the disk drive with the number 1 or the letter A on it.and close the door Switch on the monitor (screen). The switch is usually found on the top right. Switch on the computer (CPU) . Reach behind the left bottom of the CPU and find the switch. In some models there is a fan switch attached to the left front of the CPU. If so, switch it on as well.	You will notice some sound and the red light of the disk drive will come on, indicating that the CPU is reading the disk. Make sure caps lock key is down A flashing cursor appears
Beginning writing BASIC	The flashing cursor is an indication that the computer is awaiting your command	

Learning to print out	Type the following: PRINT 1259 + 783 Press the **return** key	**notice** there is a space between each word and set of characters The answer appears quickly **2042**
Doing more complex calculations	These are the symbols the computer understands for mathematics: + = addition - = subtraction * = multiplication / = division Try this: You type: PRINT 23 * 8 + 44 - 12 Press **return** key	The computer quickly prints out the answer: 216
Printing out words	Just like in English, if you put words in quotation marks the computer will literally **quote** you. Try this: You type: PRINT "Hot fudge sundae" Press **return** key	**note:** no space between the quotation mark and the word It prints out exactly what you had in quotes.

Writing a mini program	If you want to write a little program containing a few statements and store them to run together later, this is called **deferred execution**. You have to type a number in front of each statement so that the computer knows there will be a number of such statements. Let's try it You type 10 PRINT "Roses are red" Press **return** key If you want it printed out you type: RUN	 nothing happens. The computer is storing it for later your statement is printed out
Writing a program	Try this: You type the following: **remember to press the return key at the end of each line** 10 PRINT "MY NAME IS JO" 20 PRINT "HOW DO YOU DO" 30 PRINT "I AM FINE" 40 END RUN	 This says program done Shows you your program

Pretty basic, huh !!!

Needless to say, BASIC can do more sophisticated work than this. As a programmer, you can instruct the computer to accept **input** and then print it. This input can be numbers, symbols or words. If input is to be words you must use the $ symbol.You can cause the programme to repeat certain lines indefinitely **(recursion)** by giving it the **GOTO** command.

Just for fun, you may want to try a few slightly more complex programmes. Here are a few. Try a couple if you like. You may also want to get creative and design a programme of your own.

INTRODUCTION

type the following:
Remember to press **return** after each line

```
NEW
10 PRINT "WHAT IS YOUR NAME?"
20 INPUT N$
30 PRINT "HELLO, "N$
40 END
RUN
```

CONVERSION

```
NEW
10 PRINT "CONVERT INCHES TO CENT
    IMETERS"
20 PRINT
30 PRINT "INCHES" ;
40 INPUT I
50 LET C = I * 2.54
60 PRINT C; " CENTIMETERS"
70 END
RUN
```

THE FUNNY TWOS

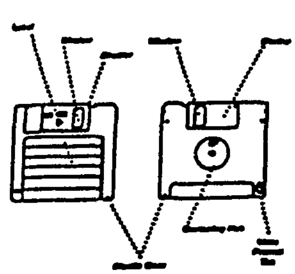
```
NEW
10 PRINT "I CAN COUNT BY TWOS"
20 LET A = 0
30 LET A = A + 2
40 PRINT A
50 GOTO 30
60 END
RUN
```

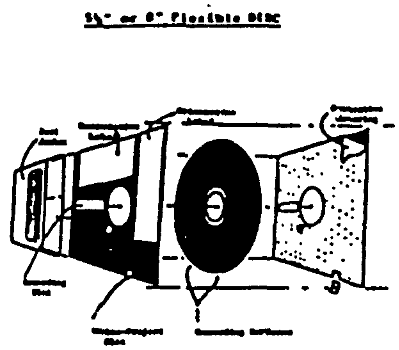
THE YEAR 2000

```
NEW
10 PRINT "FIND OUT HOW OLD YOU W
     ILL BE IN THE YEAR 2000"
20 PRINT
30 PRINT "HOW OLD ARE YOU NOW?"
40 INPUT A
50 PRINT "WHAT YEAR IS IT NOW?"
60 INPUT Y
70 LET T = 2000 - Y + A
80 PRINT "IN THE YEAR 2000 YOU W
     ILL BE "T
90 END
RUN
```

COVER PAGE

WORKSHOP 1	
MODULE 4	DISK MANAGEMENT
OBJECTIVES	-Discriminate between floppy and hard disks -Summarize the procedures for taking care of disks -Explain the purpose for the following disk procedures: FORMAT, WRITE-PROTECT, and BACK-UP
TRAINING TIME	20 minutes
TRAINING AIDS	OVERHEADS #14-16 demonstration disks write-protect tab covers

Disks are called many things: disks, discs, diskettes, floppies. For our purposes we will refer to them as disks and consider all disks we handle as floppy disks. A disk is **a thin, flat, circular piece of flexible <u>mylar</u> (rigid aluminum) which is covered with a magnetic surface**. It is used to store information coded magnetically onto its surface(s).	**demonstrate 5 1/4"disk which has been taken apart. Pick up the mylar with tweezers, discuss and pass around. Show dust cover (jay cloth) discuss**
As we discussed earlier, the information can include any combination of programs, files, or data. The information can be retrieved by the computer through the **read/write** heads of the disk drive. Information that is stored on the disk can be in various forms, including	**explain how this works**
	review
Operating systems Computer languages Application software	**solicit examples**
	**O/H #14 discuss parts of the 3 1/2 "] disk. Hard but floppy. It's the content**

A disk is enclosed in a square plastic case, more or less rigid, that is designed to keep the recording surfaces clean, to keep the disk flat when it is in the the disk drive, and to protect the recording surfaces form physical damage.	
	**O/H #15** **discuss parts** **compare similarities between the two sizes**
The 3 1/2" disk has a large capacity than does the 5 1/4" disk though it is smaller. Does this remind you of our discussion of hardware getting smaller at the same time it gets better and faster.	
The typical disk can accomodate anywhere from 40 to 200 pages of type, given about 4000 characters per typewritten page.	
I'm sure you have heard about the **hard disk** It used to be called a Winchester and is made of rigid aluminum. It is much larger and has much greater storage capacity than the floppy. It is permanently stored inside the computer and cannot be handled as we do with floppies.	
Some hard disks can accomodate 40 megabytes of information	
That's a lot of millions of bytes. We'll be taking about what a byte is later.	

Disks must be properly handled. Although they are fairly dependable, it is possible to damage a disk. When a disk is damaged, you could lost some or all of the information on it. Remember that you could have hundreds of pages of information on one disk That's a lot to lose. Here are some guidelines on the **DO'S AND DONT'S OF HANDLING DISKS.** **DO** -use a filt tip pen when you label a new disk. Ball point pens or pencils may scratch the disk's surface -Keep your disks away from any type of magnetic material -Keep your disks in a room where the temperature is moderate. The freezer or oven are not safe environments -Keep disks stored in an upright position away from the drives -Avoid getting smoke, dust, eraser particles, food, liquids, fingerprints on your disks. Disks do not like these things -Invest in an appropriate disk storage container **DON'T** -Touch the exposed surfaces of the magnetic disks -Open the disk drive door when the indicator light is on -Put your disks on top of the disk drive -Try to clean the disks -Fold, bend or otherwise warp your disks -Leave your disk exposed to the sun	**O/H #16**

Here are a few extra bits of information you might like to have:

YOU JUST BOUGHT A NEW DISK

A new blank disk is not like a blank cassette recorder. You can't just put one in a disk drive and write information onto it. Before you use a new disk, it must be formatted. **Formatting** is a provess which prepares the disk to understand the kind of information it will be getting. Once it knows this, it can receive and store data in a format it understands.

DISK LIFE SPAN

Flexible disks last about a year or two depending on frequency of use Record the date on which you begin using a new disk on the disk label This will give you an idea of when to think about making a copy of it and discarding the original

WRITE-PROTECT DISKS

There are some disks which you will use regularly to write information onto This information may be in the form of a letter, a data base, or your budget You will want to update these regularly, that is write onto the disk Some of your disks however are intended to be kept just as they are. In order to insure that no one writes onto these, possibly deleting or changing your valued information, you want to write protect your disk All information on a write-protect disk can be read by the computer but cannot be written onto. To write-protect your disks, cover the write-protect slots or tabs with covers provided when you buy your disks.

demonstrate

BACKING-UP DISKS

Since it is possible to damage or lose a disk, you should get into the habit of regularly making back-up copies of important disks. The procedure is fairly simple and involves copying your files from one disk to another. You can either make a copy of an entire disk which copies all files from one disk to another, or you can make a copy of one file at a time.
The important thing is to protect yourself at all times.
When working on a file at the computer, remember there could be power failures So **Save** your files regularly to disk.

COVER PAGE

WORKSHOP 1	
MODULE 5	FILE MANAGEMENT
OBJECTIVES	-Explain how information is stored on a disk -Differentiate between a bit and a byte -List the different steps in the file structure hierarchy -Explain by way of example, the types of information which would appear in each of these steps
TRAINING TIME	20 minutes
TRAINING AIDS	OVERHEADS *17-20

How is information understood by a computer?

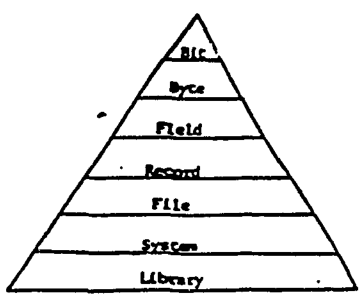
Remember we talked about **bits and bytes**. The computer only understands machine language which is composed of 0's and 1's. That is exactly all the computer understands.

a **BIT** is a binary digit, either a zero or a one (0 or 1).

a **BYTE** is a combination of eight of these bits, and represents one character, like a letter or a number or a symbol.
An A would be understood by the computer as a byte or as 8 bits.

There is however, life after bytes. Characters are linked together to form words, words to make sentences and so on....and so on.

A special hierarchy or file structure has been created to further organize this data and explain to how how information is understood by the computer.



O/H #17

go through each asking for possible examples from their life experience

THE HIERARCHY

BIT	a binary digit, either a 0 or a 1
BYTE	a grouping of eight digits which represents a character, either a letter or a number
FIELD	a combination of characters (bytes) to create a larger more meaningful piece of information, such as a name or address
RECORD	can be compared to a form, such as a job application. The record contains related pieces of information such as, name, SIN, address, etc.
FILE	a grouping of related records such as your daycare's waiting list application file
SYSTEM	a grouping of related files. You may have a Registration file which would include children's personal files, developmental files and health records.
LIBRARY	a grouping of related systems. All the systems in your daycare including finance, personnel, children, etc.

FILES

A file is a collection of information on a disk. It is always stored under a filename. A file on a disk is very similar to a file in a drawer of a filing cabinet.

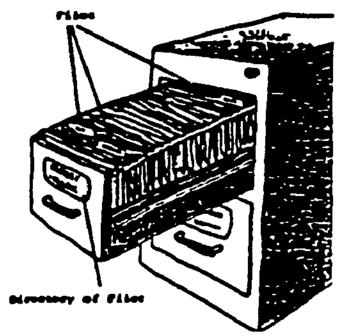
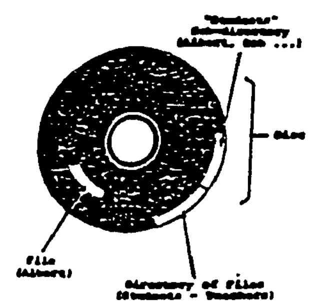
SAVING FILES

An index on the front of the file drawer will give you a guide to the files kept in the drawer. On a disk, the disk directory will tell you what files are on the disk. Almost all of the operations performed on a computer involve reading from or writing to files on a disk.

As information held in the computer's memory is erased when the computer is shut down, you must save your information as a **file** on your disk. Once you have saved a file to disk, you can later instruct the computer to copy it back from the disk into the computer's memory (sometimes called **desktop** memory) Once in the computer, you can make changes and then save your new version of the file, either instead of or in addition to your old version.

FILE DIRECTORY

A directory is a group of files on a particular disk. Every disk has at least one directory, the main one called the **root** directory. Some directories contain one or more sub-directories. This is usually found on hard disks where more information can be stored. A directory is always present on your formatted disk. You cannot remove it.

Let's go back to the clerk's office. Remember. This will help us understand how information is stored on a disk and understood by a computer	
	O/H #18
And now to the computer disk...	
	O/H #19
AND THIS IS THE END OF WORKSHOP 1 INTRODUCTION TO COMPUTERS	O/H #20

GLOSSARY OF COMPUTER TERMS

Glossary

Janice J. Beaty and W. Hugh Tucker

Accessing The process of bringing information into the working memory of the computer from an attached device. For example, accessing the keyboard allows the computer to read the characters being typed. Accessing the disk drive turns on the disk drive and reads information (data) from the disk drive.

Artificial intelligence Consists of programs that make computers do things that appear to be intelligent, such as making decisions, carrying on meaningful conversations, or translating from one language to another. The earliest research on artificial intelligence was done at M.I.T.

Assembly language (Assembler) Programming language that requires the least amount of translation by the computer into the instruction switches built into the computer's central processing unit (chip). Many programs using complex graphics or animation are written in Assembler. Another name for assembly language is machine language programs. Writing assembly language programs requires a great deal of skill.

Backup A second copy of a program or disk that can be used if the original program or disk is damaged. Backups can be either a copy of the disk made by the purchaser or a second disk purchased at a reduced rate from the publisher of the software.

BASIC A common computer language built into most home computers. Most preschool programs are written in BASIC or a combination of BASIC and Assembler. BASIC stands for Beginners All-purpose Symbolic Instruction Code.

BASIC was originally derived from another computer language, FORTRAN. *See* Assembly language.

Beta site A term used for a person or place where software is tested before commercial release to the general public.

Boot the system Refers to loading the Disk Operating System (DOS) instructions from the disk into the memory of the computer The Disk Operating System must be in memory before any program on the disk can be used The term boot (or booting) comes from the saying "pulling yourself up by your bootstraps," because the Disk Operating System loads itself into the computer The instruction built into the computer itself simply tells the computer to go to the first sector on the first track of the disk and do what ever it says *See* DOS

Bug A logical mistake in a computer program that must be found and corrected before the program will run properly The term comes from the early days of computers when a problem in a large computer was traced to a dead moth that had short-circuited the machinery Debugging is the process of removing bugs from a computer program Seymour Papert's *Mindstorms Children, Computers, and Powerful Ideas* (New York Basic Books, 1980) has an extensive discussion of debugging as a learning strategy

Cap lock key A key on a computer keyboard that changes all letters to capitals It does not affect any other keys such as number and punctuation keys Some older computers such as the APPLE II+ use a Teletype keyboard that has only capital letters and no cap lock key This is the same keyboard found on Teletype machines in telegraph offices *See* Shift lock key

Cathode-ray tube (CRT) The picture tube in a computer monitor or TV set Sometimes computer books will refer to the computer monitor or television connected to a computer as a CRT *See* Monitor

Cartridge A plastic box containing a single computer program When the cartridge is plugged into a computer or video game terminal the program can be accessed by the computer The program itself is on a computer chip connected to the plug end of the cartridge Cartridges are not available for all computers *See* Accessing

Central Processing Unit (CPU) The chip that contains the logical functions of the computer It is usually the largest chip in the computer The power of the computer depends on how many pieces (bits) of binary (base two) arithmetic the CPU can handle in calculations The first generation of personal computers were eight-bit CPUs Examples are the Motorola 6502 series (used in the Apple II, Commodore 64, and Atari 800 series) and the Zilog Z80 (used by most CP/M computers and the Radio Shack TRS-80s) The second generation of personal computers uses sixteen-bit processors (examples are the Intel 8086, 8088, and the 286i used in IBM PCs and IBM-compatibles and the Motorola 68000 used in the Apple Macintosh, the Commodore Amiga, and the Atari 620ST) The term CPU sometimes refers to the complete logic board(s) of the computer, including memory.

Chip A complex electronic circuit placed on a tiny piece of silicone. The term sometimes refers to the plastic or ceramic cases that contain a chip and provide the wires to connect the chip to larger electronic circuits

Command A direction given by the computer user (or a program) to perform an action. For example, typing in DIR next to an A > prompt will list the files on the disk in drive A (on CP/M and MS DOS computers) Programs are made up of a series of commands that are performed automatically by the computer

Compatible A computer that will run programs designed for another brand of computer for which a programming standard has been developed. For example, the Compaq Computer is IBM-compatible and the Franklin Computer is Apple-compatible

Computer A machine that translates commands into electronic instructions that create a predictable outcome This outcome may involve sound through a speaker, pictures on a cathode-ray tube (CRT), symbols on a printer connected to the computer, or instructions to an automobile engine The computer is perhaps the most flexible machine ever developed based on the breadth of its applications

Computer literacy Represents a minimum level of computer knowledge and skills that a computer user should have The computer-literate person knows the names of the parts of a computer the function of each of the keys on the keyboard and how to use common disk operating system commands The goal of computer literacy is to build knowledge that will allow the computer-literate user to be comfortable with using computer software on a variety of computers

Copy protected disk A computer disk which has been altered by the software manufacturer to make it difficult for a user to copy

Cursor An electronic marker on the monitor that indicates where any input from the keyboard or external devices will be placed on the screen

Disk A round piece of magnetically coated material that can be formatted by a disk drive to store computer programs in the form of magnetic patterns A formatted disk consists of magnetic tracks divided into magnetic sectors Information can be stored in each sector and retrieved by the disk operating system which looks up the number and sector of the track Information is stored by file name in a directory or catalog track *See* Floppy disk Hard disk

Disk drive A device for writing on and reading disks Disk drives consist of a motor which turns the disk, a magnetic head which moves across the disk reading the magnetically coded signals, and electronic circuits which control the mechanical parts of the disk drive and transmit the magnetic code to the computer for storage in working memory Disk drives can either be contained in a separate box or built into the main housing of the computer

Disk Operating System (DOS) The program that gives directions to the computer for accessing the disk drive *See* Accessing, Boot the system.

Dot matrix printer A computer printer that forms letters or graphic images on paper by extending wires from the printer head to press against the printer ribbon The dots in the wire correspond to the dots (pixels) creating a letter on the monitor or disk file

File A program or set of information used by a program that is stored on disk or tape and can be listed by name when a directory or catalog command is given Files may be written in high-level language, such as BASIC or LOGO, as machine language binary files, or as text files that must be read by a program.

First-generation program A program that does not reflect sophisticated design or programming techniques A first-generation program is usually sequential in design (it brings up one screen at a time in a given order with a single task assigned to the screen) and assumes that the learning task is unpleasant and, therefore, should be rewarded. First-generation programs often use low-resolution graphics, which are easy to create in BASIC

Floppy disk A computer storage disk consisting of a magnetically coated, round piece of mylar plastic (the same plastic used in recording tape) enclosed in a square protective envelope Preschool programs would use either $5\frac{1}{4}$-inch disks or the newer $3\frac{1}{5}$-inch microdisks which have a rigid plastic housing with a metal shutter protecting the magnetic disk from fingerprints

Format a disk The process of placing magnetic tracks and sectors (or blocks) on a blank disk so that the computer can store and locate information on the disk The program needed to format disks may be built into the disk drive (as in the case of the Commodore 64), it may be built into the Disk Operating System (Apple DOS 3 3), it may be a separate program (IBM PC DOS), or it may be included in a utility program (Apple ProDOS) No computer can read or write to an unformatted magnetic disk

Function keys A special set of keys found on some computers such as IBM compatibles and Commodore which correspond to a program command and operate when a single function key is pressed They are usually marked F for function and followed by a number (F8)

Game cartridge *See* Cartridge

Game cartridge port A connection on the side or back of the computer designed to hold a game cartridge

Graphics Designs created by a computer program and printed on the screen or on a printer They may be in color

Hard disk A sealed, metal disk used for program storage The hard disk is usually installed permanently in the disk drive attached to the computer and cannot be removed One hard disk can replace fifty to 400 floppy disks of the same size Information can be stored more reliably on a hard disk than on floppy disks because the magnetic head that reads a hard disk does not touch the surface of the disk and the rigidity of the disk eliminates any vibrations. Hard disks are normally used for business applications that require large files *See* Floppy disk

Hardware The physical components of a computer—the electronic circuits, chips, disk drives, keyboard, printer, or the computer itself. *See* Software

High-resolution graphics Pictures on the screen or printer that are created by individual, colored dots Pictures of people or animals are usually more realistic looking in high-resolution than in low-resolution but are more difficult to program *See* Low-resolution graphics

Icon A pictoral representation often used to represent choices on a program menu *See* menu.

Interactive stories Computer programs that allow the user to determine the direction of the story by making a choice presented by the program

Joystick An external device for controlling cursor position on a computer screen It consists of a rod extending from the top of a small box that is connected to the computer by a long cord Most joysticks also have two buttons that can be pushed to initiate simple commands Most arcade games use joysticks for program control.

Joystick port The place on the computer where the joystick is plugged in. It is usually found on the back or side of the computer

Language A set of instructions that can be placed into the computer's memory and used by a programmer to write programs Examples of computer languages are BASIC Pascal Assembler FORTRAN, C and COBOL There are two types of languages compiled and interpreted A compiled language is translated into computer code so that it does not have to be present in memory for the computer to understand the program Among small computers Assembler is the most common compiled language Interpreted languages must be present in the computer s memory because each command must be converted into the computer s machine code BASIC is the most common interpreted language Compiled languages execute much faster than interpreted languages and thus are more appropriate for games and animated graphics *See* Assembly language BASIC

Light pen A device that looks like a ball-point pen with a cord connecting it to the computer The light pen has a light sensitive tip that can read its position on a computer screen Light pens are used for drawing on the screen or for making choices from a menu

Load the program Refers to moving a computer program from a storage medium, such as a cartridge, tape, or disk, into the memory of the computer When you save a program, a copy of the magnetic code is made on the disk or tape Once a program is loaded, the disk or tape is no longer needed, unless the program is loaded in multiple stages.

LOGO A computer language developed at M I T It is perhaps the only computer language in which commands that create graphics are easier than commands that manipulate words. Although LOGO is a very powerful computer language, it is sometimes thought of as a children's language.

Low-resolution graphics Graphic images made up of small squares or rectangles of color. They are sometimes referred to as block graphics. Because they require less memory than high-resolution graphics, more colors can be used. The larger size of the color blocks makes low-resolution graphics easier to program than high-resolution graphics. *See* High-resolution graphics, First-generation programs

Memory The chips in the computer that hold computer programs There are two kinds of memory Random Access Memory (RAM), which is the working memory of the computer, and Read Only Memory (ROM) When a program is loaded into memory, it is placed in RAM ROM contains computer programs that are a permanent part of the computer hardware When you turn off a computer, a program in RAM will disappear, but a program in ROM will still be present in the computer BASIC is often in ROM in personal computers

Menu A set of choices presented on the screen that allows the user to choose functions in the program by pressing a key Preschool programs may have pictorial menus, and the child chooses an option by pressing the space bar or by using the cursor when the picture appears on the screen Other programs allow menu selection with number keys *See* Icon

Monitor A TV screen attached to a computer Monitors are sometimes referred to as CRTs Monitors come in a number of choices monochromatic composite color and RGB A monochromatic monitor usually consists of a monitor with white green or amber letters on a black background The Macintosh computer has black letters on a white background A composite monitor receives a TV-like signal from the computer through a thin cord Composite monitors with sound capability can also be used as monitors for videotape machines RGB monitors allow the computer to access directly the red green and blue ' guns in the picture tube for more precise control of the picture

Mouse A small box connected to the computer by a long cord Rolling the mouse on a flat surface moves the cursor position on the screen The mouse may have one to three buttons on top for giving simple commands to the computer

Moving menu A menu that automatically changes screens on the monitor Each screen provides one choice When the desired picture comes on the screen, it is chosen by pressing a key, such as the space bar *See* menu

Off-computer activity An activity related to the curricular goals of a computer program that does not require a computer Examples of off-computer activities are games, toys, a typewriter, or a storybook

Orphan computer A computer no longer manufactured

Paddle A cursor-control device consisting of a knob on a small box with a single button Paddles usually come in a set of two that connect to a single plug. The knob controls cursor movement One paddle controls the horizontal movement of the cursor while the other paddle controls vertical movement The joystick has replaced the use of paddles on most computers because it combines the function of the two paddles *See* Joystick.

Pascal A computer language developed by Nicolas Wirth of Zurich, Switzerland. It is named after the French philosopher and mathematician, Blaise Pascal A common variation of the language was developed at the University of California at San Diego and is called UCSD Pascal. *See* Language

Pixel A single dot on a monitor screen Combinations of pixels are used to form letters or high-resolution graphics *See* High-resolution graphics

Power light A light on the keyboard or front of the computer that indicates when the computer is turned on. On older Apple II computers, the power light looks like a key on the keyboard

Print Has a number of meanings in the language of computers One is to use a printer to make a paper copy (hard copy) of what would normally appear on the screen It can also mean to show something on the screen, that is, print the data to the screen Print is also a command in BASIC meaning print the outcome of a formula or phrase to the screen A printout always refers to hard copy

Recursion The ability of a command to repeat itself A computer language that allows recursion may be referred to as a recursive language LOGO and Pascal are examples of recursive languages

Save Refers to storing a program or information on a disk or tape

Second-generation program A program that should allow the user to move directly to various aspects of the program rather than having to move through a previously defined sequence Second-generation programs for preschools generally use high-resolution graphics and animation in the presentation of material Second-generation programs have many of the characteristics of first-generation programs but show greater sophistication in the design and flow of the program and in the use of graphics *See* First-generation program Third-generation program

Shift lock key A key that changes all letter keys to uppercase and all other keys to the symbols on the top half of the key *See* Cap lock key

Software A computer program stored on a medium such as a magnetic disk, tape or cartridge that can be read by the computer It is called software because while it represents a great deal of labor, it is not tangible property but rather ideas stored in a machine-readable format *See* Hardware

Sound-generation chip A computer chip that holds and can execute the instructions in a program for creating various sounds on a speaker connected to (or part of) the computer Some sound-generation chips are capable of creating understandable spoken words as well as four-part harmony in a music program.

Speech-generation software Uses the sound-generation chip to translate written words into spoken words, sometimes known as speech synthesizing *See* Sound-generation chip

Storage The medium used for saving programs for later use. *See* Disk drive.

Stylus A pointed stick shaped like a pencil and used for drawing on touch pads, magic slates, or cuneiform tablets. *See* Touch pad

System file Commands on a disk that are used by the computer to keep track of commands available for any program used during the time the computer is turned on An example of a system file is the Disk Operating System (DOS). System files keep track of printer commands, what kind of monitor is being used, or the type of storage medium (disk drive, tape) attached to the computer

Tape Recording tape used for storing and retrieving programs. Most personal computers use a high-quality cassette tape Tape storage is cheaper than disk, but it is harder to use and requires a significantly longer period to find and load programs

Third-generation program Usually written in a compiled language and allows a great deal of flexibility Most third-generation programs use a simple programming language to allow maximum user control

Touch pad An electrically sensitive pad attached to the computer by a long wire leading to the joystick port Pressing on the pad with a stylus or a finger will move the cursor on the screen to a corresponding position *See* Joystick port

Touch screen A transparent touch pad placed over the monitor *See* Touch pad

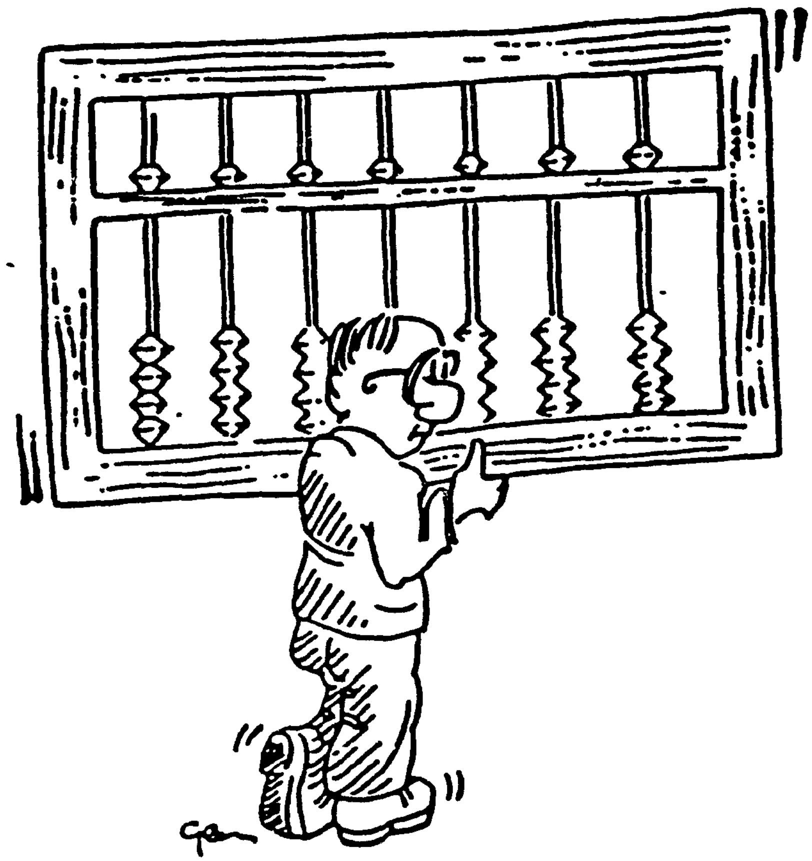
Turnkey program A program that starts automatically as soon as the disk is booted The advantage of turnkey programs is that they do not require a knowledge of Disk Operating System commands to load and run the program *See* Boot the system

Turtle Either a turtle-shaped robot controlled by a LOGO program or a triangle-shaped cursor on the graphics screen of a LOGO program

Turtle graphics Graphic designs created by LOGO graphic commands While turtle graphics were originally developed as part of LOGO, they have been incorporated into programs such as *Delta Draw* and dialects of other computer languages such as UCSD Pascal *See* Pascal

Word processing Using the computer as a typewriter The advantage of word processing is that all changes to a document are made electronically Corrections and additions can be made without manually retyping the manuscript for each major change Word processing also allows the user to use a spelling checker to identify misspelled words and typing mistakes. Preschool word processors are available that say the word aloud when it is entered.

Write protect notch A square notch on the side of $5\frac{1}{4}$-inch floppy disks. When the notch is covered, the computer can read from the disk but it can not write to the disk. When it is uncovered, the computer can both read from the disk and write to it. The notch on the original disk should be covered when copying disks.



BEFORE MINIATURIZATION

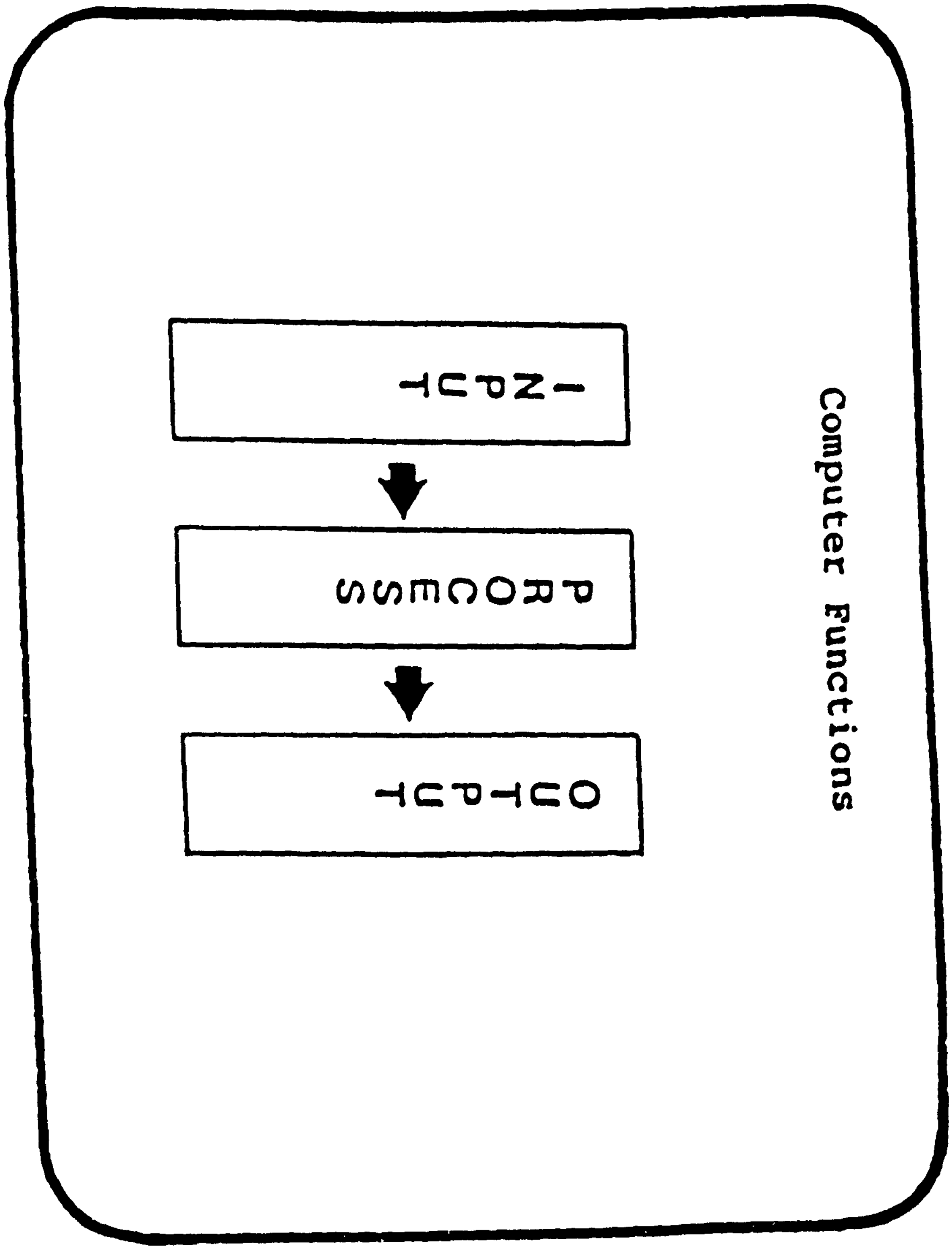
First Generation	1940's vacuum tubes ENIAC
Second Generation	1950's transistors
Third Generation	1960's integrated circuits
Fourth Generation	1980's large scale integration
Fifth Generation	1990's VLSI

HISTORY OF COMPUTERS

1947-1960	The Dawn of Computers
1961-1970	Computers in Space
1971-1980	Computers in Business
1981-	Computers in the Home

COMPUTER APPLICATIONS :

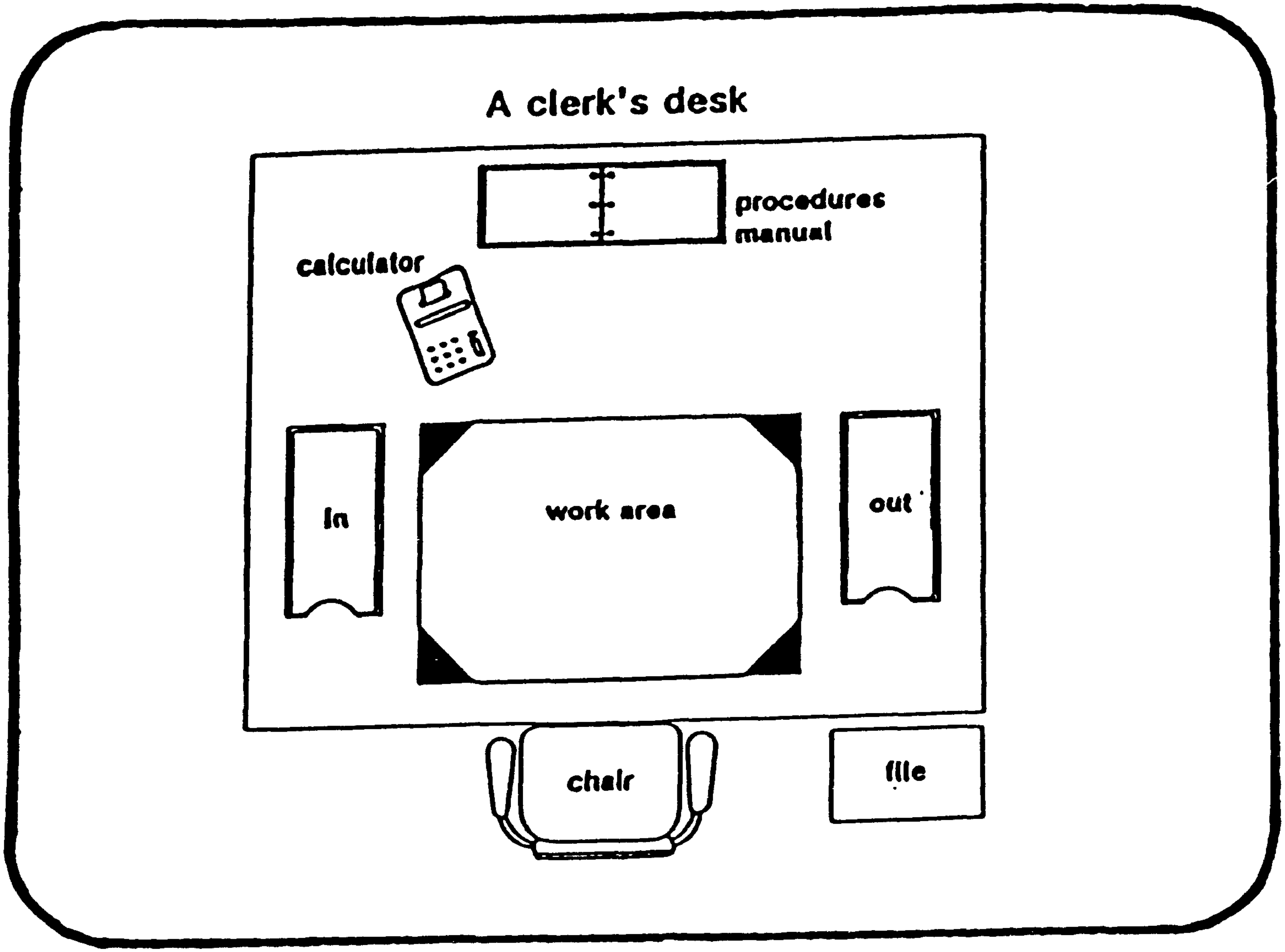
- BUSINESS
- SCIENTIFIC
- PROCESS CONTROL



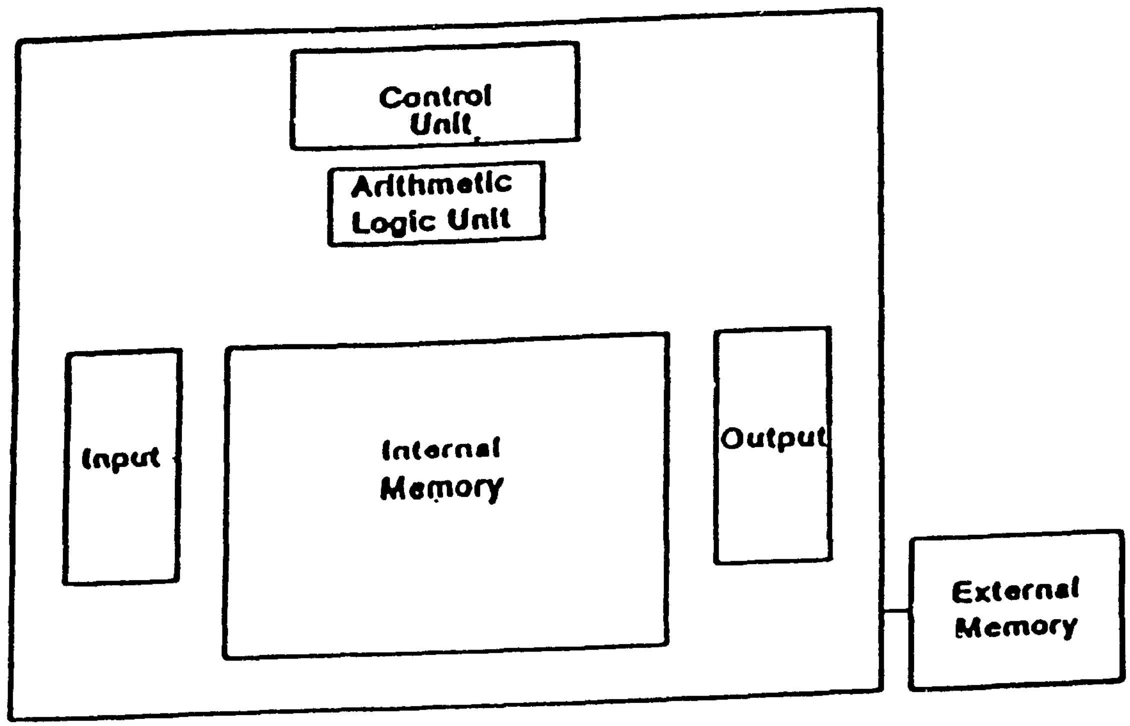
Computer Functions

* A B C *

Universal Product Code


A clerk's desk
procedures
manual
calculator
In
work area
out
chair
file

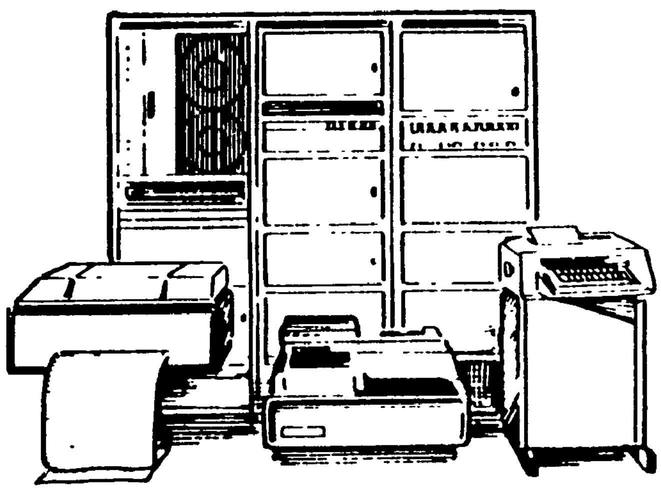
The Basic Components of a Computer



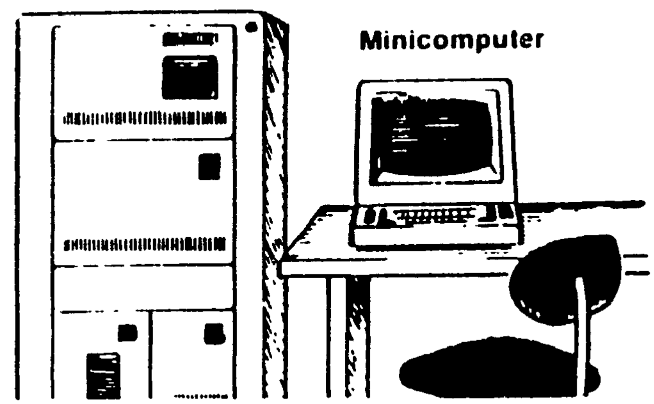
A Computer Is-3

MAINFRAMES, MINIS, AND MICROS

Mainframe



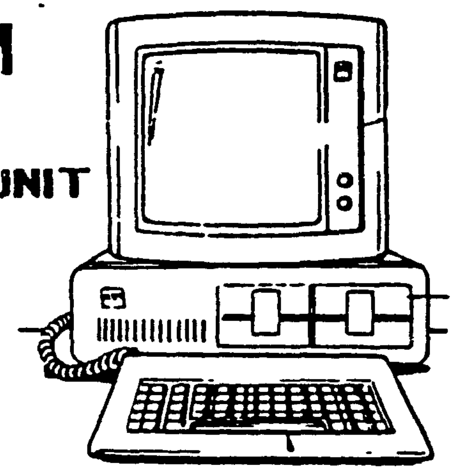
Minicomputer



Microcomputer

PARTS OF A COMPUTER SYSTEM

CENTRAL PROCESSING UNIT
INPUT DEVICE
OUTPUT DEVICE
INTERNAL MEMORY
EXTERNAL MEMORY



PERIPHERAL DEVICES

- Keyboard
- Light Pen
- Mouse
- Digitizing Pad (Tablet)
- Optical Character Readers
- Joystick

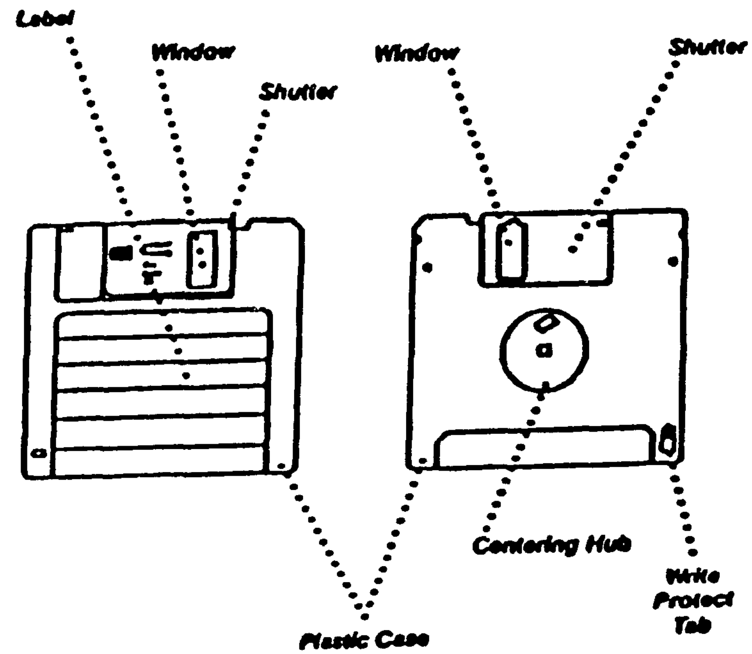
3 CATEGORIES OF SOFTWARE

1. Operating System
2. Programming Language
3. Application Software

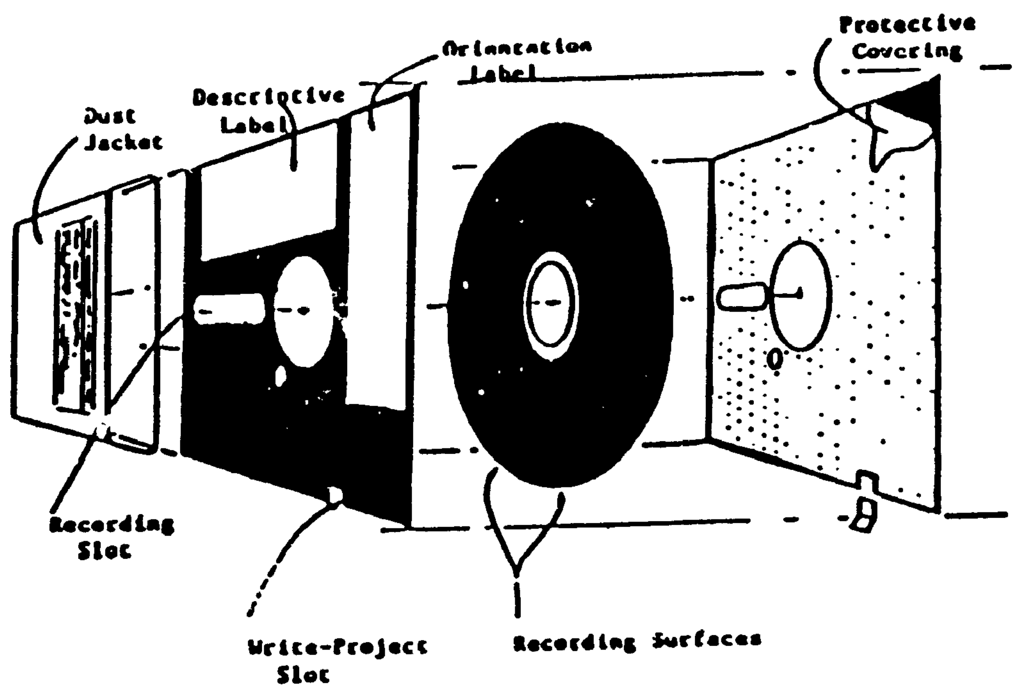
```
10 PRINT "WHAT'S YOUR NAME?"
20 INPUT N$
30 PRINT "THAT'S A GREAT NAME"
40 PRINT N$
50 PRINT "HOW OLD ARE YOU?"
60 INPUT N
70 PRINT N
80 PRINT "IS A FINE AGE TO BE"
90 GOTO 10
100 END
RUN
```


13

3½" Flexible DISC



5¼" or 8" Flexible DISC



DISKETTE CARE AND HANDLING INFORMATION

Protect | Proteger
Proteger | Schützen

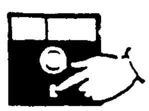
保護

No | No
Non | Falsch

注意

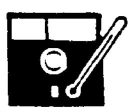
Insert Carefully | Insertar
Inserer avec soin | Sorgfältig Einsetzen

挿入注意

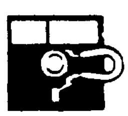


Never | Nunca
Jamais | Nie

絶対禁止

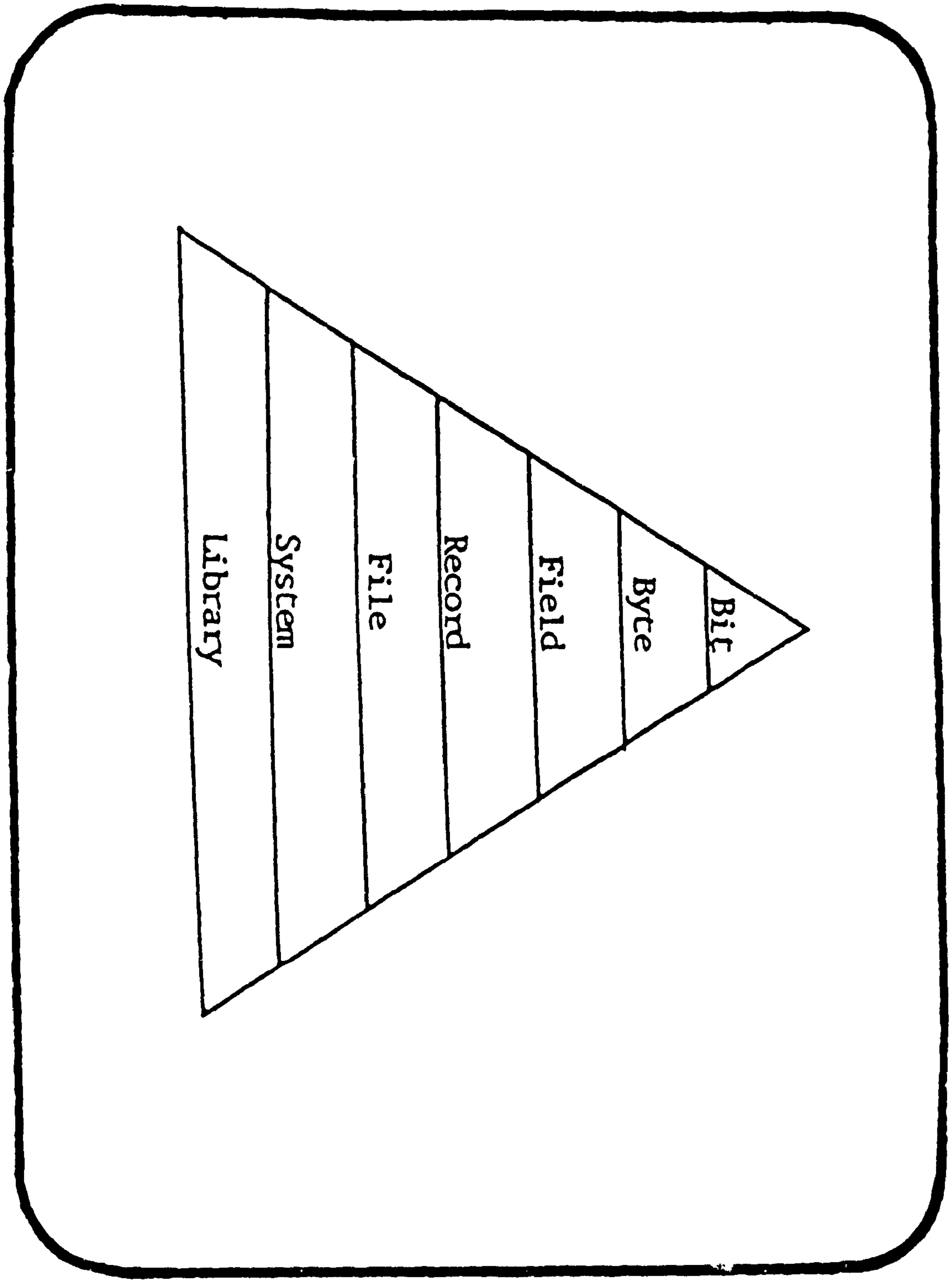


10°C – 52°C
50°F – 125°F

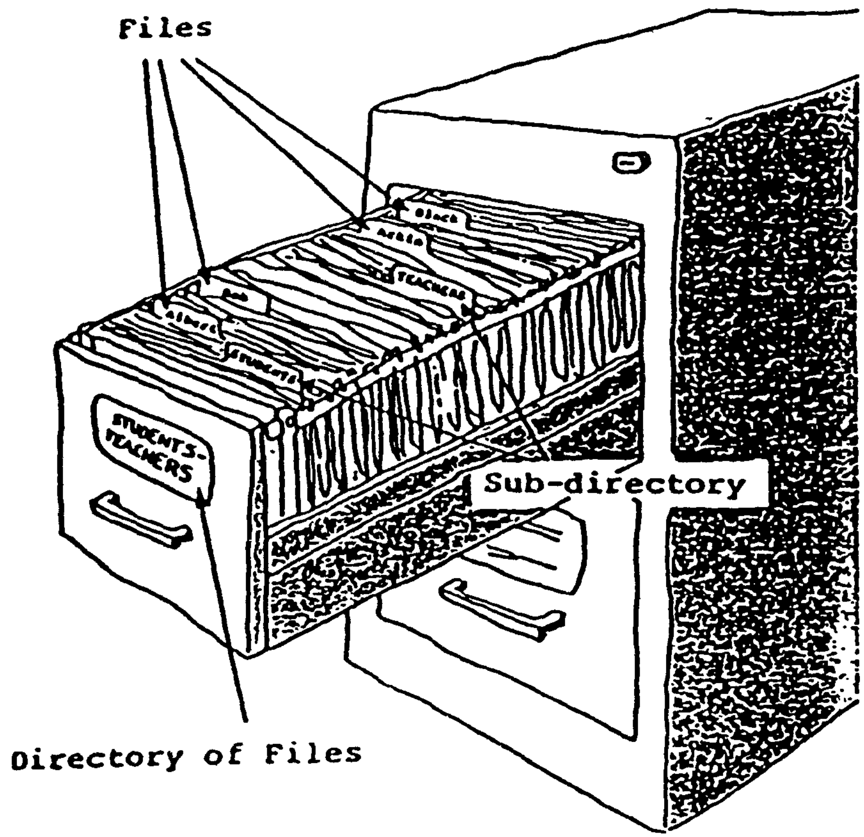


Never | Nunca
Jamais | Nie

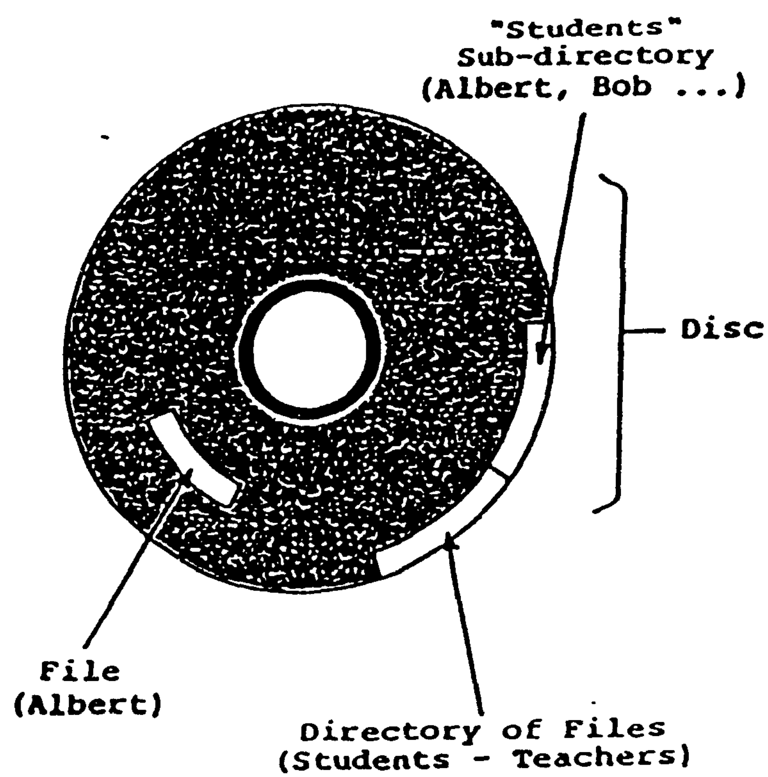
絶対禁止

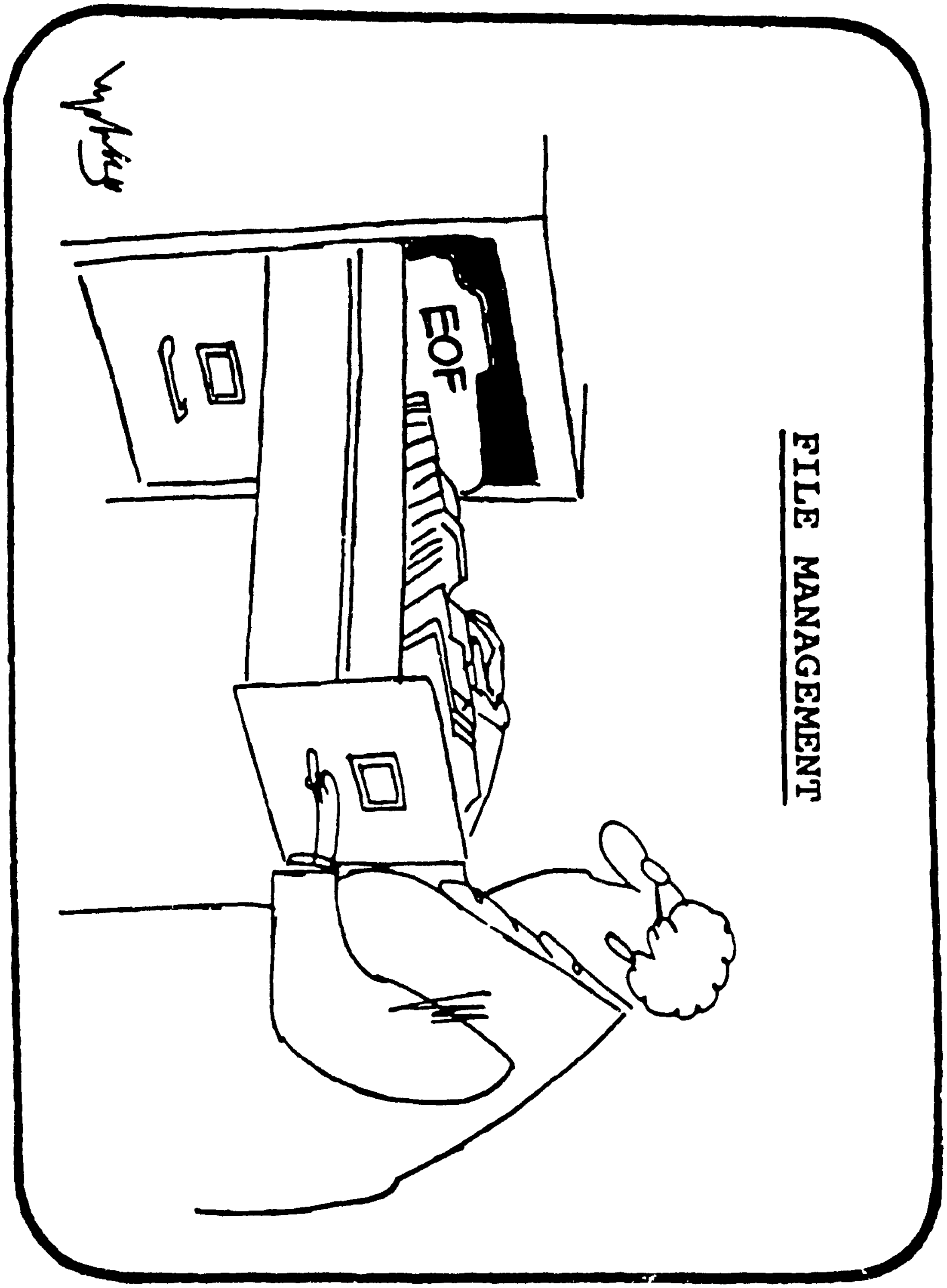

Bit
Byte
Field
Record
File
System
Library

Manual Files



Disc Files


"Students"
Sub-directory
(Albert, Bob ...)
Disc
File
(Albert)
Directory of Files
(Students - Teachers)


FILE MANAGEMENT
EOF

WORKSHOP 2

INFORMATION MANAGEMENT

APPLEWORKS INTEGRATED PROGRAM

COVER PAGE

WORKSHOP 2 INFORMATION MANAGEMENT WITH APPLEWORKS INTEGRATED PROGRAM	
OBJECTIVES	*load the APPLEWORKS program *format a blank disk *differentiate among 3 applications *produce a word processed document *produce a small database *produce a spreadsheet *cut and paste among the 3 *print out a final document
TRAINING TIME	30 minutes
TRAINING AIDS	OVERHEADS *1-11 Appleworks disks per pair Data disks per pair Hardware available

INSTRUCTION	AIDS
WHAT IS INFORMATION MANAGEMENT?	
When you write letters, organize your finances, keep your recipes in order, or keep your address book updated, your are managing information The **computer** can help you manage this information in an easy and efficient manner There are many computerized Information Management systems on the market **IBM**, for instance has designed software programs such as "**Word Perfect**", and "**Lotus 1-2-3**" to help **IBM** computer users manage their information efficiently.	**briefly explain** **most of us here, use apples**
The **APPLE** Company designed **APPLEWORKS** as an integrated computer software program for the Apple user It is a program that integrates the three forms (applications) of information management	
word processing **data base management** **spreadsheet analysis**	**stereo system is integrated components**
What do we mean by integration?	
The three forms of information management are not three separate programs, but three different applications which are interrelated They can communicate together. For example, you may wish to send a newsletter home to the parents giving them general information about upcoming events, etc, but also wish to include some financial records. You can do this by **cutting out** part of your financial record and **pasting** it into your newsletter.	**think of how we often use scissors and scotch tape**

THE THREE APPLICATIONS: The three applications are computerized and so can be saved to disk for easy access When you write a letter, do your accounts or organize your recipes **manually**, you have one copy When you change it, you essentially have to start from scratch. A computerized system allows you to edit your files regularly, keeping the original and the new version if you wish	**when you edit you scratch out, white out and generally make a mess**
<u>**WORD PROCESSING**</u>: The word processor allows you to write documents such as letters, memos, reports, newsletter the kind of work, one would use a typewriter to do	
<u>**DATA BASE MANAGEMENT**</u> Data Base management allows you to take related types of information and organize them in some efficient manner This is information usually kept in lists like address books, recipes, inventory lists, etc	**ask for examples of things they have done in these 3 capacities.**
<u>**SPREADSHEET ANALYSIS**</u>: Spreadsheet Analysis allows you to create information normally put on a spreadsheet and manipulate with a calculator Some examples might be budget sheets, income tax calculations, inventory control forms, etc	
In the next 15 minutes or so, I will be showing you a number of overheads, which will explain this integrated program The program is user-friendly, that is to say it talks you through the process in ways you can understand It is **menu-driven** This means that you begin with a main menu and then go through various sub-menus, depending on what you have selected	**in the restaurant, you choose the main course from the menu and then find out what comes with that selection**

You have 5 visuals in your manual The generally describe the menu-driven process. I will be showing you more than 5 but only to give you more information Follow along with me and take notes to yourself on anything I say you feel is relevant. Tutorials are very difficult to write The designer must try to predict every little bit of information you may need, but because he/she already knows the system, there could be problems with certain assumptions made Please take note of any problems you encounter and inform the observer or trainer These might include omissions, unnecessary information, or actual errors. This feedback will be used for future revisions to the materials	**solicit help**
You will be given the **APPLEWORKS** disk, which is two-sided. One side is labelled **start-up** and is only used once, at the very beginning when you start up the computer This tells the computer the language we will be using to do the work and the computer can do the necessary translation The other side is called **PROGRAM** and will be used for the rest of the time Because the software is **user-friendly**, that is to say leads you through each step of the process fairly easily, you will be prompted when to change disk sides	**demonstrate**
Once you have access to the disk, remember: · **use pincer fingers** ·**thumb on label** ·**insert disk into drive 1** ·**load (boot up) the system**	**read to them and demo**

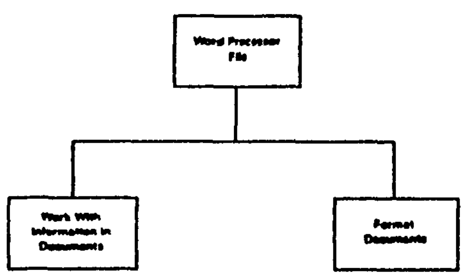
Once the **APPLEWORKS** system is loaded, you will be presented with the **main menu**.

```
Disk: Drive 1                    MAIN MENU
.....................................................................
  Main Menu

     1. Add files to the Desktop
     2. Work with one of the files on the Desktop
     3. Save Desktop files to disk
     4. Remove files from the Desktop
     5. Other Activities
     6. Quit
.....................................................................
Type number, or use arrows, then press Return          A-? for Help
```

O/H #1

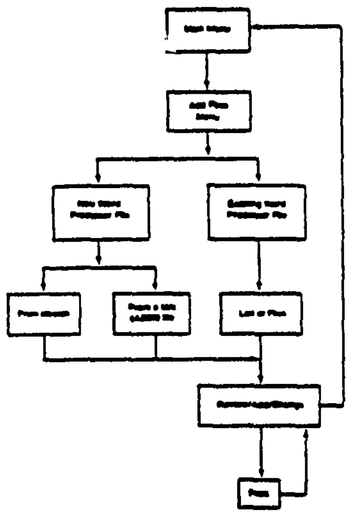
The menu allows you to select a number of different options These are chosen by using the arrow key or typing the number and then the RETURN key Because we don't have any files on the desktop (inside the computer's internal memory), we would chose 1 or 5 depending on what we want to do. In fact, we'll be using #5 to do some formatting later Let's assume we want to open a new files, we would select #1 and choose whether we wish to open a file for a word processor, data base, or spreadsheet We choose word processor.

This will take us into a series of sub-menus will allow us to:



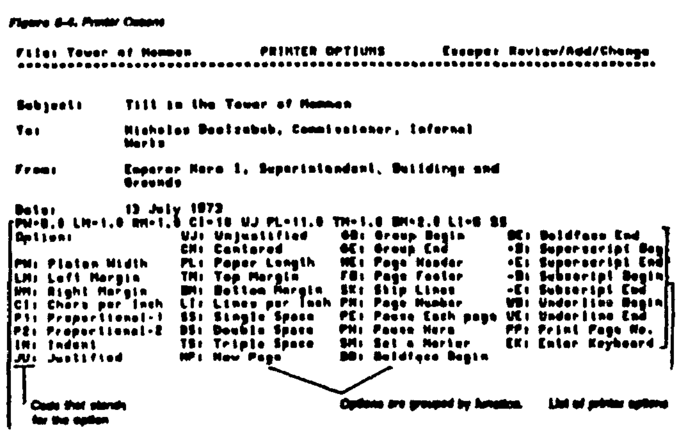
O/H #2

We can run down the work-processing menu in a number of ways:



O/H #3

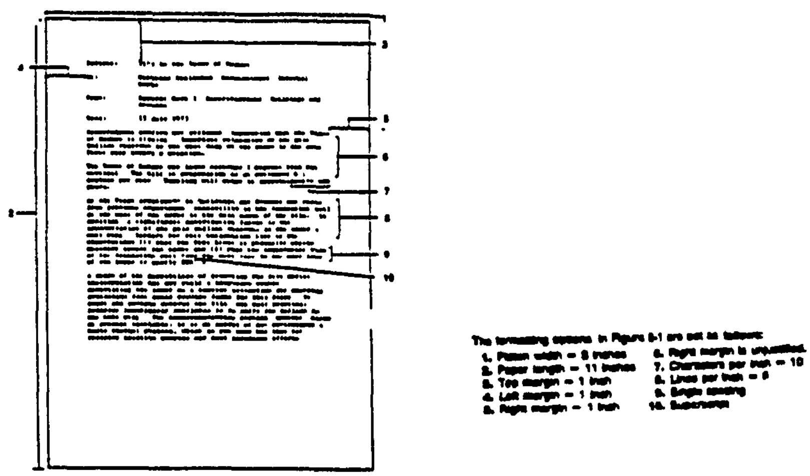
The final step is selecting to print your document. You can select printer options that look like this:



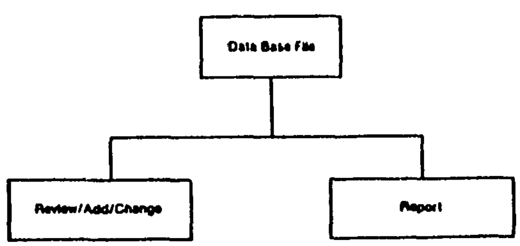
O/H #4

Let's take a look at a document as it might look when printed out and see how the printer options apply.

O/H #5

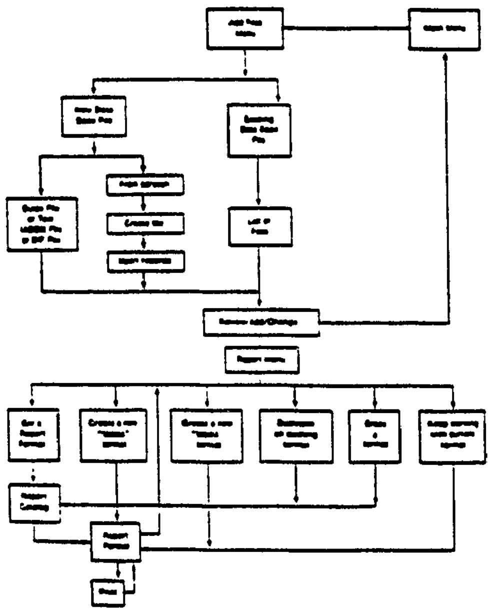


Remember the **MAIN MENU**. Had we chosen to open a new files for a **data base**, then we would access:



O/H #6

There's certainly a lot we can do here...quite a pathway Let me lead you around it:



O/H #7

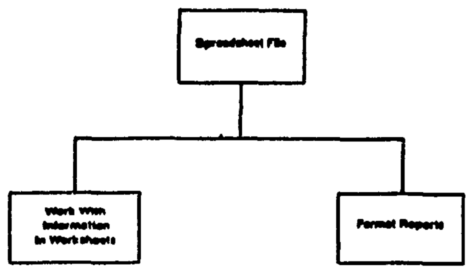
Once you have created a data base file, you have a number of records which might include the following entries.

Item	DateBought	Where	DeprecVal	Price	Warranty
Copy Mach.	Jan 03 83	Fred's Off.Sup.	1500.00	$299.95	3 years
Answering Mach.	Nov 15 82	Sam's WholSl	0.00	159.95	1 year

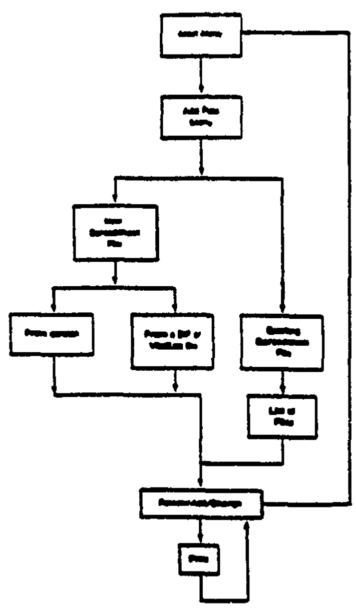
Records Entries Categories

O/H #8

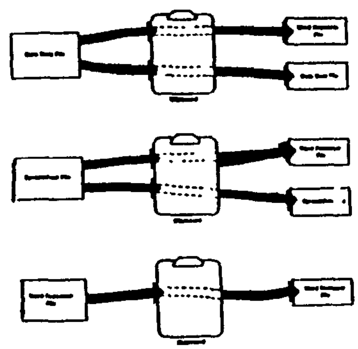
What if we had originally chosen to open a spreadsheet file. We would be led down the following pathway:



O/H #9



O/H #10

CUT AND PASTE An interesting concept we discussed earlier. Allowing the different applications to interact is a real help. Let's see how this process works  We'll be trying all of this at the end of the tutorials. But how about if we get started now and really experiment with the possibilities **enjoy....have fun....** **REMINDER: for future reference...frequently save your file** remember how to handle the disk. The procedure for booting the system is fairly simple. Let me share a little finger play I use with children to help them remember how to boot. ONE FOR THE DISK TWO FOR THE SCREEN THREE TO GO..	O/H # 11

APPLEWORKS

TUTORIAL 1

WORD PROCESSING

TUTORIAL 1 : WORD PROCESSING

This tutorial is self-instructional. It is always a good idea to work in pairs at the computer when learning a new program. Two brains are better than one and it's nice to have someone to share frustrations with. Follow the instructions together. Perhaps one can read while the other does the keyboarding, and then you can alternate roles. This will give you both experience on the computer.

The following tutorial will allow you to:

-create a new document
-type and edit information
-format your document
-save and print your document

REMEMBER:

It is important to regularly save your document Should there be a power failure or if you unintentionally delete some of your work, then the document, as last saved, can be recalled This is far better than losing all of your work.

As you go through the tutorial, don't be afraid of experimenting. We say that children learn through active exploration and discovery of their environment. Maybe we all learn that way. Before we begin, look at your computer system. Does it have one disk drive or two disk drives? This is important to know. The computer must be told so it knows which disk drive to go to to read from and write to. If you have **2** disk drives the one on the bottom is disk drive **A** and the top one is disk drive **B**. **A** is used for the start-up and program disk, and **B** for your data disk. If you have only one disk drive you will have to use the same disk drive for both disks, removing and replacing as the system prompts you to do so.

NOTE: When the red light on your disk drive is on, do not do anything as the CPU is in the process of reading from or writing to disk.

The system disk is two-sided. Side 1 is the start-up and side 2 is the program disk. The start up disk is used only once at the very beginning to load the system and then the program disk is used for the rest of the time. It is the program with all the rules, that you will be using most of the time. A data disk is used as external memory, to save your personal data.

ENJOY

Check out the way the tutorial has been designed. The first two columns indicate the Procedure we will working on The next column tells you step-by-step what is to be done and the final column indicates what has happened.

It is best to go step-by-step. If there is a problem don't hesitate to ask for help, from your partner, the trainer, or anyone else who happens to be around.

PROCEDURE		YOU DO	THIS HAPPENS
1.	loading the Appleworks program	Insert the *start-up* disk into disk drive A Turn on the monitor usually found on top right Switch on the C.P.U. There is a switch at the very back left of the CPU. If your system comes with a fan switch found on the left of the computer, switch it on as well. Insert the *program* disk and press *RETURN* key Type in the date as directed You can use the arrow keys to move around the date. Press the *RETURN* key	the disk will load the set up and you will be instructed to remove it and insert the *program* disk. You will be prompted for the date. Appleworks Main Menu will appear

2.	format a blank disk	select option 5. Press the *RETURN* key	sub menu appears.
		select option 6 to inform the computer whether you are using one or two disk drives. Select 1 or 2.	"Disk drives you can use
		Press *ESCAPE*	back to sub menu
		select option 5. Press the *RETURN* key	format process appears
		name your disk don't leave any spaces Press *RETURN* key and follow instructions.	the name will appear at the bottom of the screen
		insert the data disk into the appropriate drive. This disk will now be referred to as your file disk	
		press *RETURN*	formating begins
		If it is a completely blank disk, no problem but if there is already information on it	You will be asked if its okay to destroy it. If so type "yes"
		Type yes.and Press *RETURN*	When complete you will get a message "formatting successful"
		Follow instructions	
		press *ESCAPE*	back to sub menu
		press *ESCAPE*	back to main menu

3.	add a file to desktop	select *ADD FILES* *RETURN* select option 3 *RETURN* select *from scratch*	add files menu appears new file menu appears prompts for a name
		name your file (for example: Newsletter) Press *RETURN*	 file is now opened

CONGRATULATIONS: YOU'VE GOTTEN THIS FAR.

Before going on to work on the document, let's look at some of the most frequently used commands that you will want to play with as you go on.

To manipulate information around the screen Open-Apple () commands are used The Open-Apple key is found on the immediate left of the spacebar. You press down the open-apple key, and while holding it down press another key simultaneously. A complete list of these keys (Appleworks quick reference) is provided at the end of tutorial 3. Refer to this as often as you need to ' As you type information into your document, experiment with these commands until you feel comfortable with them Perhaps while one of you is typing, the other can read from the Quick Reference sheet Alternate until you are both comfortable. **Have fun**...don't worry about making mistakes. It's very difficult to mess up, especially if you are saving your file frequently.

You are to write a one-page newsletter to the parents of the children in your early childhood classroom. Make up a fictitious daycare name and address. Be creative...you are to talk about some of the upcoming activities for the month of May, indicating that a birthday party will be held for all the children having a birthday in May You will also notify them about the recent fundraising campaign Some of these funds will be used for a field trip to a "cabane a sucre" and the birthday party being planned Sign your letter as the two educators of that class.

Before you begin typing your document, go into printer options (Open-apple-O) to become familiar with the various options for setting up your document. The set up of margins, spacing, etc. has already been established for you. Try it this way but later on you may wish to experiment.

MOST FREQUENTLY USED COMMANDS

Open-apple-S	saves your file to disk
Open-apple-C	copies any part of your information to another place in the document, or copies to a clipboard (memory) where you can get it later to put into another spot or into another document. None of the original information is lost from the document. Your cursor must be at the beginning of the area you want copied.
Open-apple-M	moves any part of your information to any place else in your document or into the clipboard. When moved, the original information if erased from its original spot.
Open-apple-D	deletes a line at a time. You use the arrow keys to determine how many lines you want to delete.
Control-Y	deletes from the cursor to the end of the line
Open-apple-E	toggles from one cursor type to another. There are two kinds of cursors: the blinking bar and the blinking rectangle. The blinking bar allows you to insert characters from the cursor position. The blinking rectangle is the overstrike cursor, which allows you to type over existing characters.
Open-apple-1	brings you immediately to the very beginning of your file.
Open-apple-9	brings you immediately to the very end of your file
Open-apple-Q	shows you the desktop index which shows all your files presently in memory.
Open-apple-T	allows you to rearrange the tab setting.
arrow keys	move the cursor around the screen
escape key	brings you back to the last menu
shift key	allows you to capitalize a letter

Caps lock	allows you to capitalize all letters
return key	begins a new line, or adds empty lines
tab key	moves the cursor 5 spaces to the right

Once you are happy with the layout of your document, make sure you *SAVE* it. You can now print it out...

setting up your document for printing	Open-apple-1 will take you to the beginning of your document
choosing printer options	open-apple-O will display all the printer options available to you. Play around with the different choices in spacing, line length, boldfacing, etc.
Print	Press Open-apple-P select from the "beginning" select printer type
Make sure the printer is on	select 1 copy Press *RETURN*

Why don't you type your document now. Have **fun** with it. **experiment**.

How did it go?? There are fancier things Appleworks can do, but you have learned the basics of word processing. If you are interested in learning more, an Appleworks manual will give you the information you need.

Now, on to DATA BASE MANAGEMENT

APPLEWORKS

TUTORIAL 2

DATA BASE MANAGEMENT

TUTORIAL 2: DATA BASE MANAGEMENT

The following tutorial will allow you to:

- **-create a new data base file**
- **-insert a number of records into the data base file**
- **-organize the layout of your records**
- **-design a report format**
- **-print out a specific report from the data base**

REMEMBER TO SAVE YOUR WORK FREQUENTLY

	PROCEDURE	YOU DO	THIS HAPPENS
1.	loading the Appleworks program	If the system is not loaded, do so now using the procedure from Tutorial 1	
2.	creating a data base file	choose "ADD FILES TO THE DESKTOP" press RETURN	add files menu will appear
		choose "MAKE A NEW FILE FOR THE DATA BASE press RETURN	you will be asked "from where"
		choose "from scratch" press RETURN	you will be prompted to type a name for this file.

3.	Naming your file	Type in the name for your file noting that you can use up to 15 characters (letters, numbers, periods and spaces) Remember not to leave blank spaces. Try to give your file a name that will indicate the type of information it will include as a memory trigger for the next time you wish to access that file. for example: classlist.data press RETURN	the name will appear at the bottom of the screen the records set-up form will appear
4.	setting up your categories	type in the following categories: use the overstrike cursor (see open-apple-E pg.5) to type over category 1. Press RETURN after each category name, including the last name (last first) date of birth address city phone number gender press "Escape" when you are satisfied with the filename and category names. press "space"	category names will appear as typed. You wil be prompted that the file doesn't contain any information and that you can begin inserting new records by pressing "space". first blank record appears

5.	inserting records into the data base file Note: type last name first, then a comma followed by the first name. ex: Jones, Mary	type information for each entry and press RETURN. Just press RETURN if you wish the entry to be blank make up the data as you go along. (Give three of the children a birhtday in MAY) After the last entry, press RETURN Continue in this way until you have 5 or 6 different records (children). When completed, press the "escape" key.	your entries will appear as typed you are presented with the second blank record. You will be presented with all the new records displayed in Multiple-record layout.
6	Viewing your records	Using the "Open-apple-z allows you to zoom into single-record layout and out of it to multiple-record layout for different perspectives. press open-apple-You can toggle back and forth between the two layout types	presents you with the single record layout format.

7.	arranging your records	there are a number of ways to organize or reorganize your file. Let's try arranging them alphabetically. place the cursor on the last name Press open-apple-A choose the way you want the records arranged	 You will be asked how you wish arrangement to take place this will be done automatically
8.	creating a report	Make sure you are in the Review/add/change screen press open-apple-P choose create a new "tables" format. type the name of the report and press RETURN	the report menu appears prompted for the name of the report you are presented with the Report Format display
9.	selecting certain records	you only want to select those records in your file which include MAY birthdays. Press open-apple-R This command allows you to select only specific records. Select only those records which include the word "MAY"	 these will be selected for you

10.	saving your file and your report format	Press Open-apple-S	your work will be saved to disk.
11.	Printing your report to the clipboard (so you can paste it in your word processor document later.	Press open-apple-P (tc indicate you want to print the report Choose "clipboard", press RETURN type the report date, press RETURN Press ESCAPE until you get back to the main menu	you will be prompted as to the desired destination you will be prompted for the date a message is displayed that the report is on the clipboard

12.	pasting DB information to your word processor document	go to Appleworks Main Menu choose "Add files to the desktop" choose the current disk (if you're using 1 disk drive. or choose a different disk (if you're using 2 disk drives. select your previously designed document (Newsletter) Move your cursor to the place in your document where you would like your data base report to appear Press open-apple C choose "from clipboard"	main menu appears you are asked where to get the files from all files displayed your file appears. prompted as to where to copy from the copying is complete (cut and paste)
13,	Saving your document changes	press open-apple-S	your document has been saved, with the new addition.

PRINT YOUR DOCUMENT OUT .SEE WHAT IT LOOKS LIKE.

Now on to Spreadsheet Analysis

APPLEWORKS

TUTORIAL 3

SPREADSHEET ANALYSIS

TUTORIAL 3: SPREADSHEET ANALYSIS

The following tutorial should allow you to:

-create a new spreadsheet file
-format the spreadsheet
-establish standard values
-input data into the spreadsheet
-make standard calculations
-save your files
-cut and paste from your file
-print out your new document

REMEMBER TO SAVE YOUR WORK FREQUENTLY

A spreadsheet is divided into cells. Cells are intersections of rows and columns. Rows are labelled numerically and columns are labelled alphabetically. Whatever you type goes into a cell. You will notice at the bottom left of your screen "A 1" which indicates the cell your cursor is on. Arrow keys move you from cell to cell.

Words are considered **labels** and numbers are considered **values**. As you type in a word or a number, the bottom left of the screen will indicated which mode you are in. Please feel free to experiment. **HAVE FUN.**

PROCEDURE	YOU DO	THIS HAPPENS
1. Loading the system (IF YOU'RE STARTING AGAIN)	follow directions from Tutorial 2 (loading)	The main menu will appear
2. Opening a new Spreadsheet file	Choose "Add files to the Desktop" and Press Return Choose "Make a new file for the spreadsheet and Press Return Choose from scratch Press RETURN Type in "DC. FUNDS" Press RETURN	Add files menu appears Spreadsheet menu appears You will be prompted to typ a name for your new file SPREADSHEET appears
3. Saving your new file	Press Open-apple-S and follow the instructions	your file will be saved to d
4. Setting up your spreadsheet format	Use the following diagram to help you Notice the cells into which the labels are types	

```
File: dka                               REVIEW/ADD/CHANGE                   Escape: Main 
========A========B========C========D========E========F========G========H===
  1!                                    So and So Day Care Centre
  2!                                    Fund-raising Account
  3!
  4!          Donations                 Booksale            Bottledrive          Totals
  5!
  6!December
  7!
  8!January
  9!
 10!February
 11!
 12!
 13!
 14!
```

5. Establishing standard values	Press Open-Apple-V choose value format and press RETURN choose dollars and press RETURN choose decimal to 2 places and press RETURN	standard values menu appea at the bottom of the screen value format menu appears dollar format appears
6 Inputting your data	use the following diagram to insert the correct numbers in each cell	

```
File: dka                          REVIEW/ADD/CHANGE                   Escape: Mair
=======A========B========C========D========E========F========G========H==
  1:                               So and So Day Care Centre
  2:                               Fund-raising Account
  3:
  4:              Donations        Booksale         Bottledrive        Totals
  5:
  6:December        $27.50          $123.00           $83.27
  7:
  8:January         $12.10           $27.50            $2.80
  9:
 10:February         $7.28           $12.10          $127.50
 11:
 12:
 13:
 14:
 15:
 16:
 17:
 18:
-------------------------------------------------------------------------
G10
```

7. doing the final calculations	go to cell A13 and type in the word totals:	the word totals appears
	place your cursor in cell B13 and type the following value @sum(B6..B10) and press RETURN	the total for column B donations will appear
	Repeat this step for each of cells D13 F13 and H13	all totals will appear

HAVE YOU GOT A MATCH?

8. Calculating totals	go to cell H6 and type in the following value: @sum(B6...F6) Press RETURN Repeat this step for each of H8 and H10	totals will be calculated and inserted in that cell

A good time to save your file.

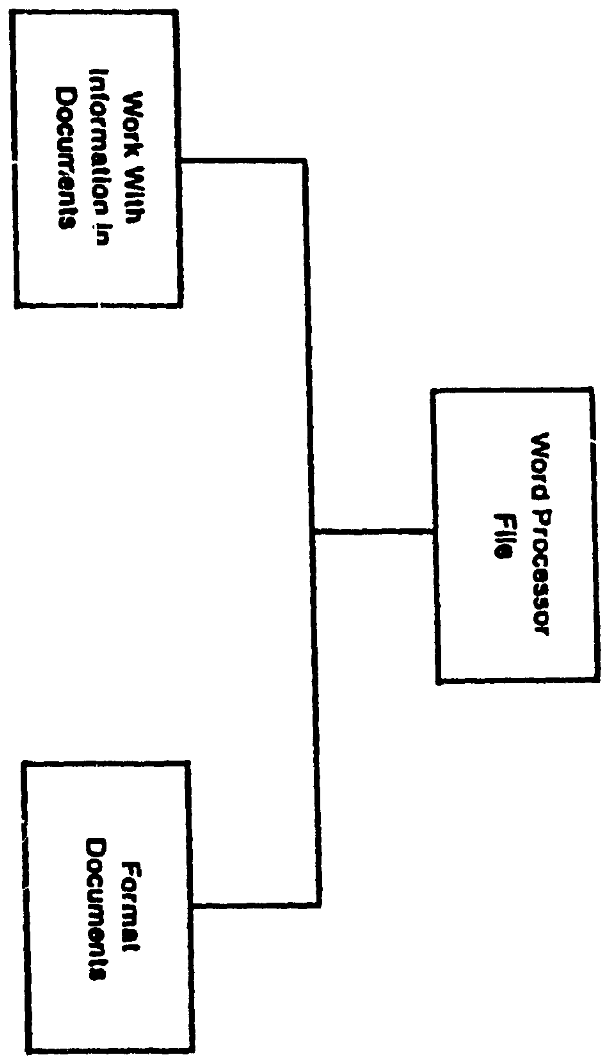
```
File: dka                        7
========A=========B=====
   1!
   2!
   3!
   4!              Donation
   5!
   6!December       $27.5
   7!
   8!January        $12.1
   9!
  10!February        $7.
  11!
  12!
  13!totals:        $46
  14!
  15!
  16!
  17!
  18!
------------------------
!15
```

9 cutting and pasting your spreadsheet to your original word processed document	Make sure your word processed document is on the desktop (OPEN-APPLE-Q) Have your spreadsheet on the screen. Place cursor at the very beginning of the spreadsheet Press Open-apple-P to indicate you want to print the report Press RETURN Choose the "clipboard" as the printing destination. Press "RETURN". Press "RETURN" Press "spacebar" Press Open-apple-Q to see all the files on the desktop and select your word processed document. Press "RETURN"	Print menu will appear The cursor is placed on "All" Print destination menu will appear Prompt to name report or press RETURN you are notified that your report is on the clipboard your spreadsheet appears Your word processed document appears
10. changing page layout	Place your cursor where you will want to insert your spreadsheet. Press Open-apple-O and change left and right margins to zero to accomodate your spreadsheet report	

11. Merging	Press Open-apple-C Ch ,e from the clipboard rearrange your document in its final format. SAVE AND PRINT	offers you the copy from where menu your spreadsheet will be inserted into your documen

Congratulations you've done it

```
Disk: Drive 1                         MAIN MENU
================================================================

   Main Menu

     1.  Add files to the Desktop

     2.  Work with one of the files on the Desktop

     3.  Save Desktop files to disk

     4.  Remove files from the Desktop

     5.  Other Activities

     6.  Quit

----------------------------------------------------------------
Type number, or use arrows, then press Return        A-? for Help
```


Word Processor File
Work With Information in Documents
Format Documents

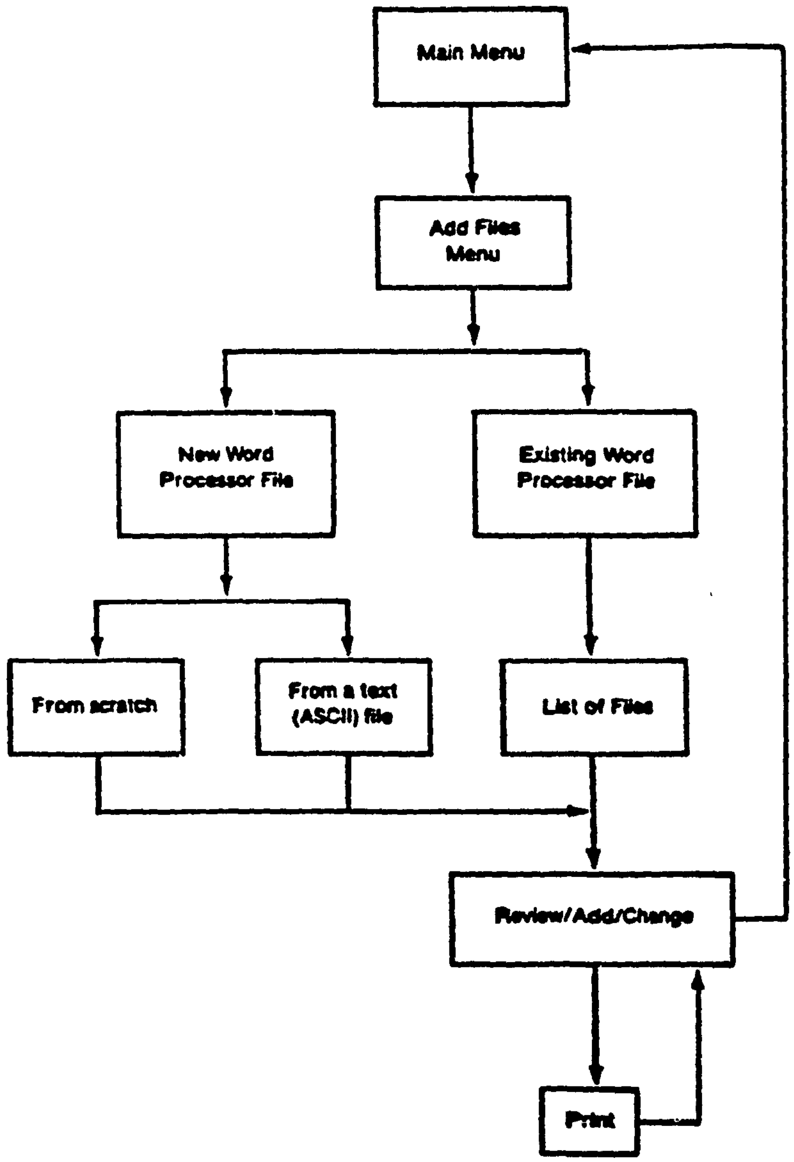

Main Menu
Add Files Menu
New Word Processor File
Existing Word Processor File
From scratch
From a text (ASCII) file
List of Files
Review/Add/Change
Print

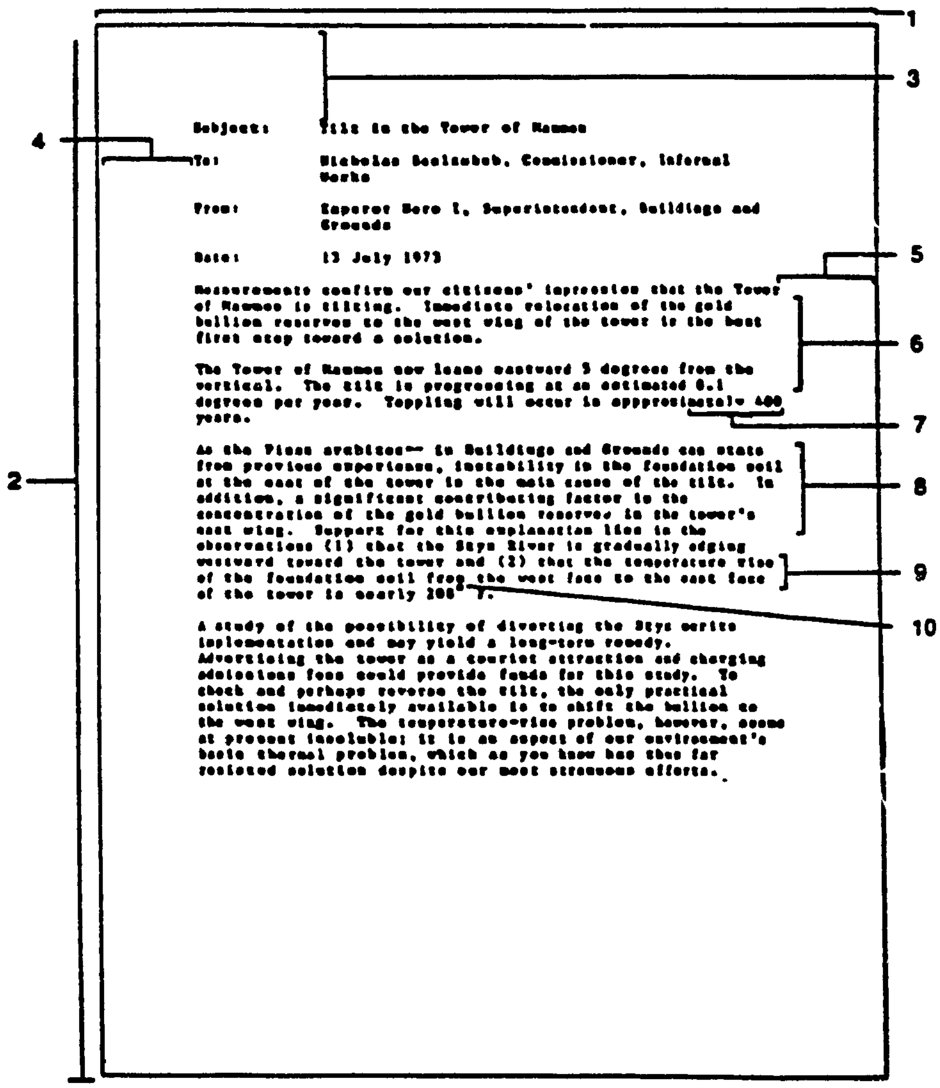
Figure 8-4. Printer Options

```
File: Tower of Mammon        PRINTER OPTIONS        Escape: Review/Add/Change
==============================================================================

Subject:      Tilt in the Tower of Mammon

To:           Nicholas Beelzebub, Commissioner, Infernal
              Works

From:         Emperor Nero I, Superintendent, Buildings and
              Grounds

Date:         13 July 1973
PW=8.0 LM=1.0 RM=1.0 CI=10 UJ PL=11.0 TM=1.0 BM=2.0 LI=6 SS
Option:              UJ: Unjustified     GB: Group Begin      BE: Boldface End
                     CN: Centered        GE: Group End        +B: Superscript Beg
PW: Platen Width     PL: Paper Length    HE: Page Header      +E: Superscript End
LM: Left Margin      TM: Top Margin      FO: Page Footer      -B: Subscript Begin
RM: Right Margin     BM: Bottom Margin   SK: Skip Lines       -E: Subscript End
CI: Chars per Inch   LI: Lines per Inch  PN: Page Number      UB: Underline Begin
P1: Proportional-1   SS: Single Space    PE: Pause Each page  UE: Underline End
P2: Proportional-2   DS: Double Space    PH: Pause Here       PP: Print Page No.
IN: Indent           TS: Triple Space    SM: Set a Marker     EK: Enter Keyboard
JU: Justified        NP: New Page        BB: Boldface Begin
```

Code that stands for the option

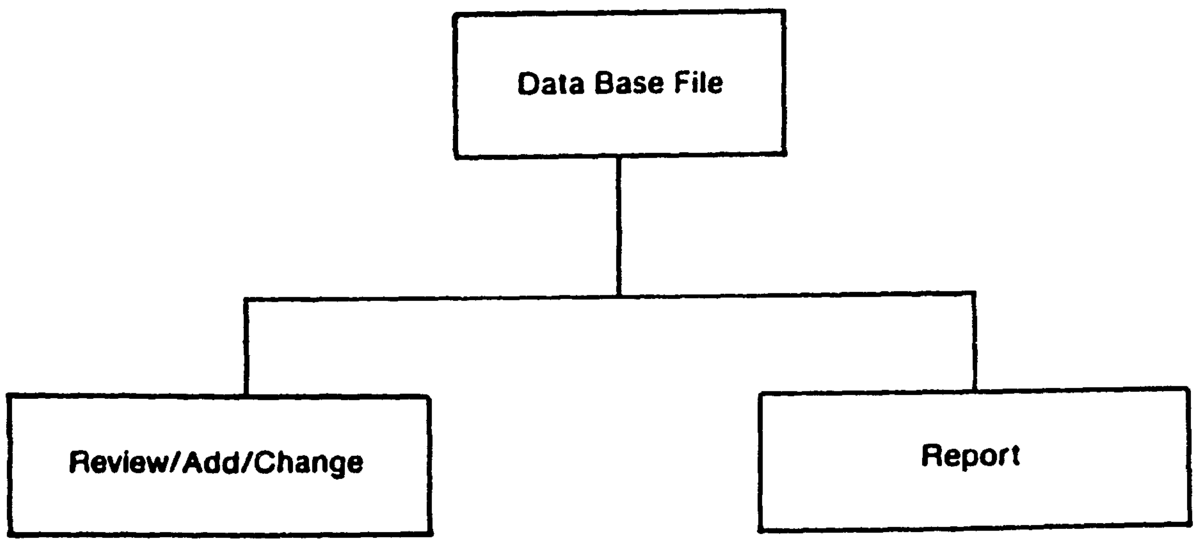
Options are grouped by function.

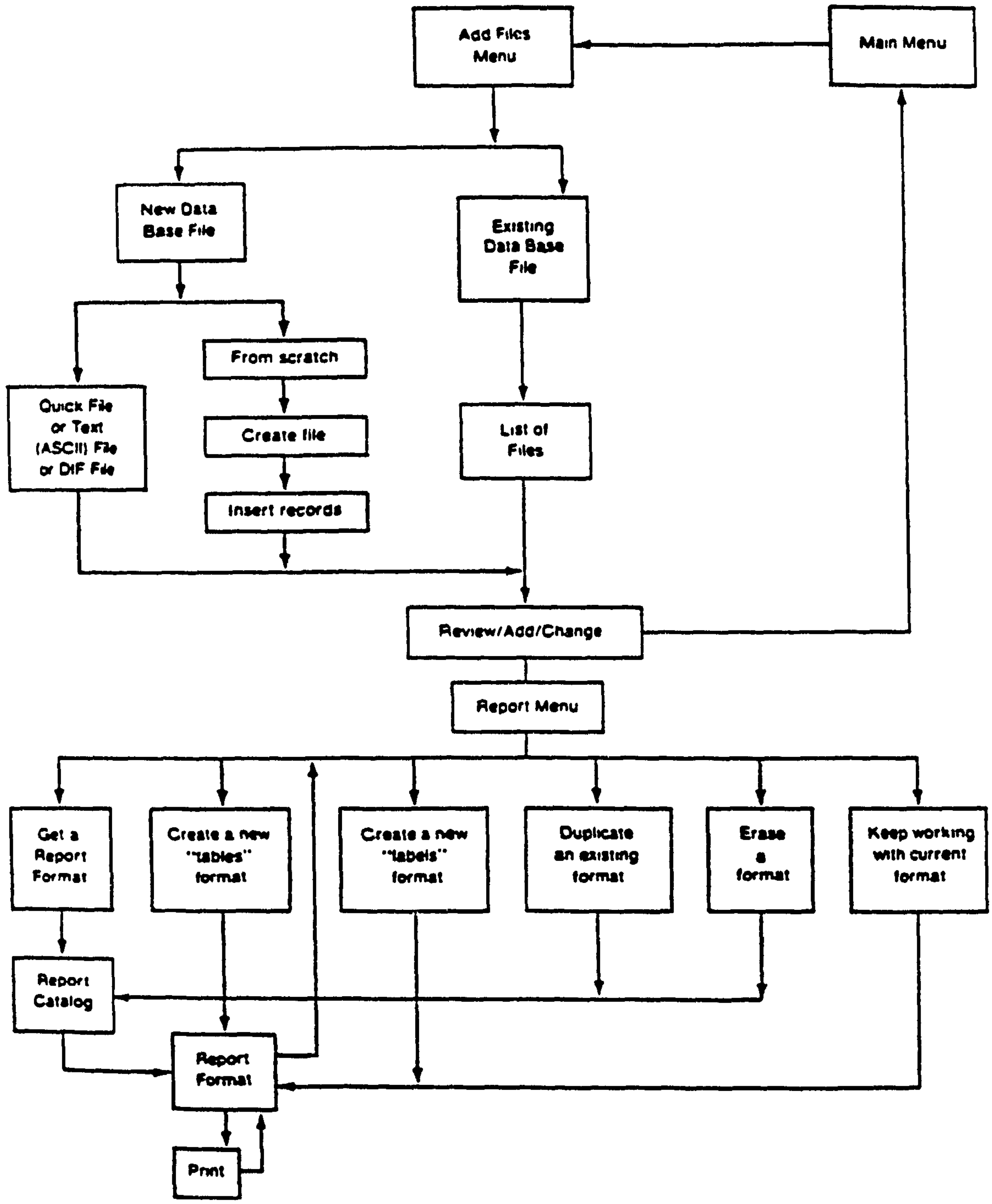
List of printer options



The formatting options in Figure 8-1 are set as follows:

1. Platen width = 8 inches
2. Paper length = 11 inches
3. Top margin = 1 inch
4. Left margin = 1 inch
5. Right margin = 1 inch
6. Right margin is unjustified.
7. Characters per inch = 10
8. Lines per inch = 6
9. Single spacing
10. Superscript


Data Base File
Review/Add/Change
Report

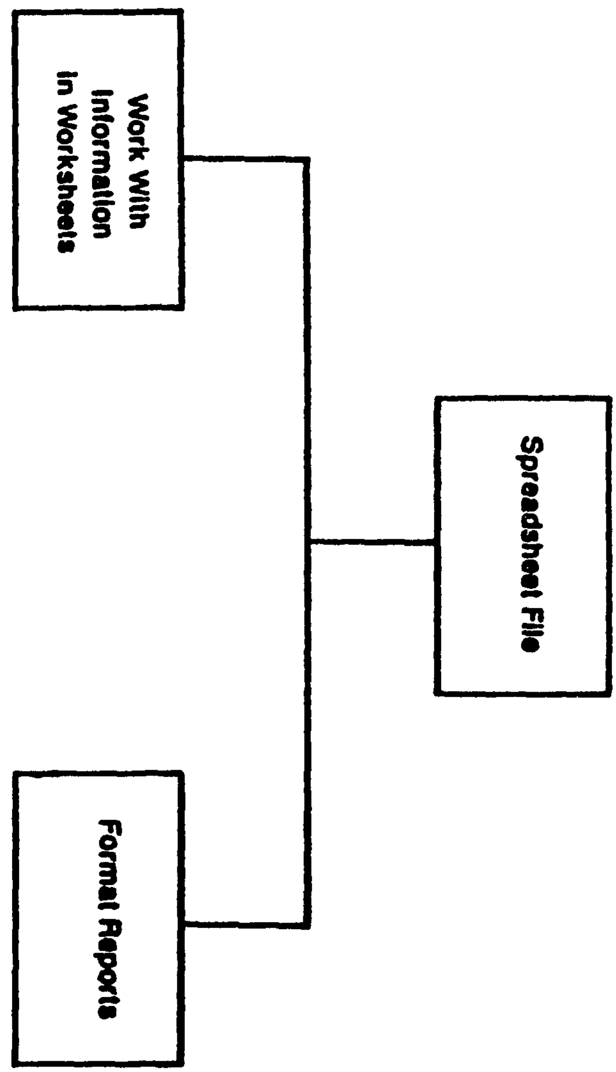

Add Files Menu
Main Menu
New Data Base File
Existing Data Base File
From scratch
Quick File or Text (ASCII) File or DIF File
Create file
List of Files
Insert records
Review/Add/Change
Report Menu
Get a Report Format
Create a new "tables" format
Create a new "labels" format
Duplicate an existing format
Erase a format
Keep working with current format
Report Catalog
Report Format
Print

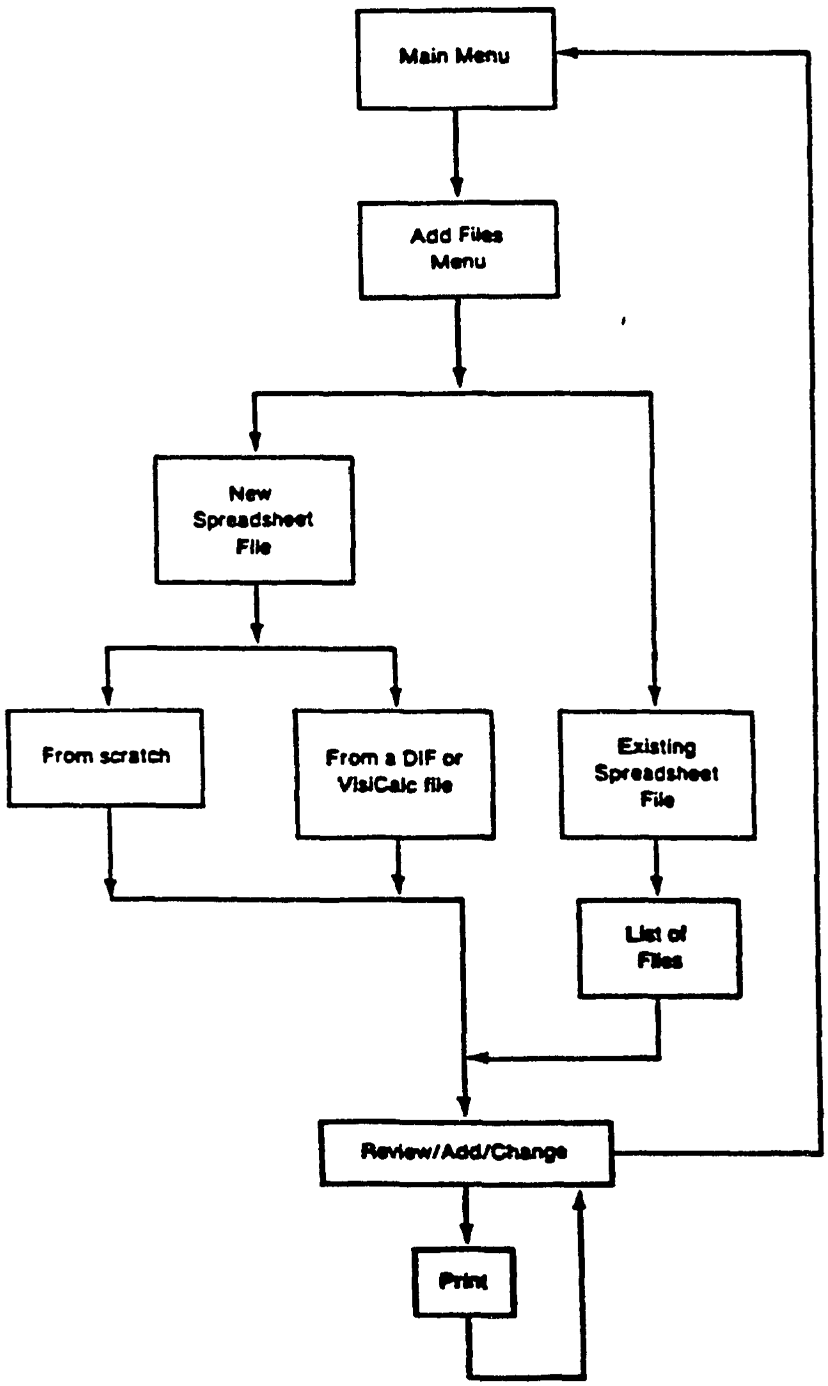
Item	DateBought	Where	DeprecVal	Price	Warranty
Copy Mach.	Jan 03 83	Fred's Off.Sup.	1500.00	2299.95	3 years
Answering Mach.	Nov 15 82	Sam's WholSl	0.00	159.95	1 year

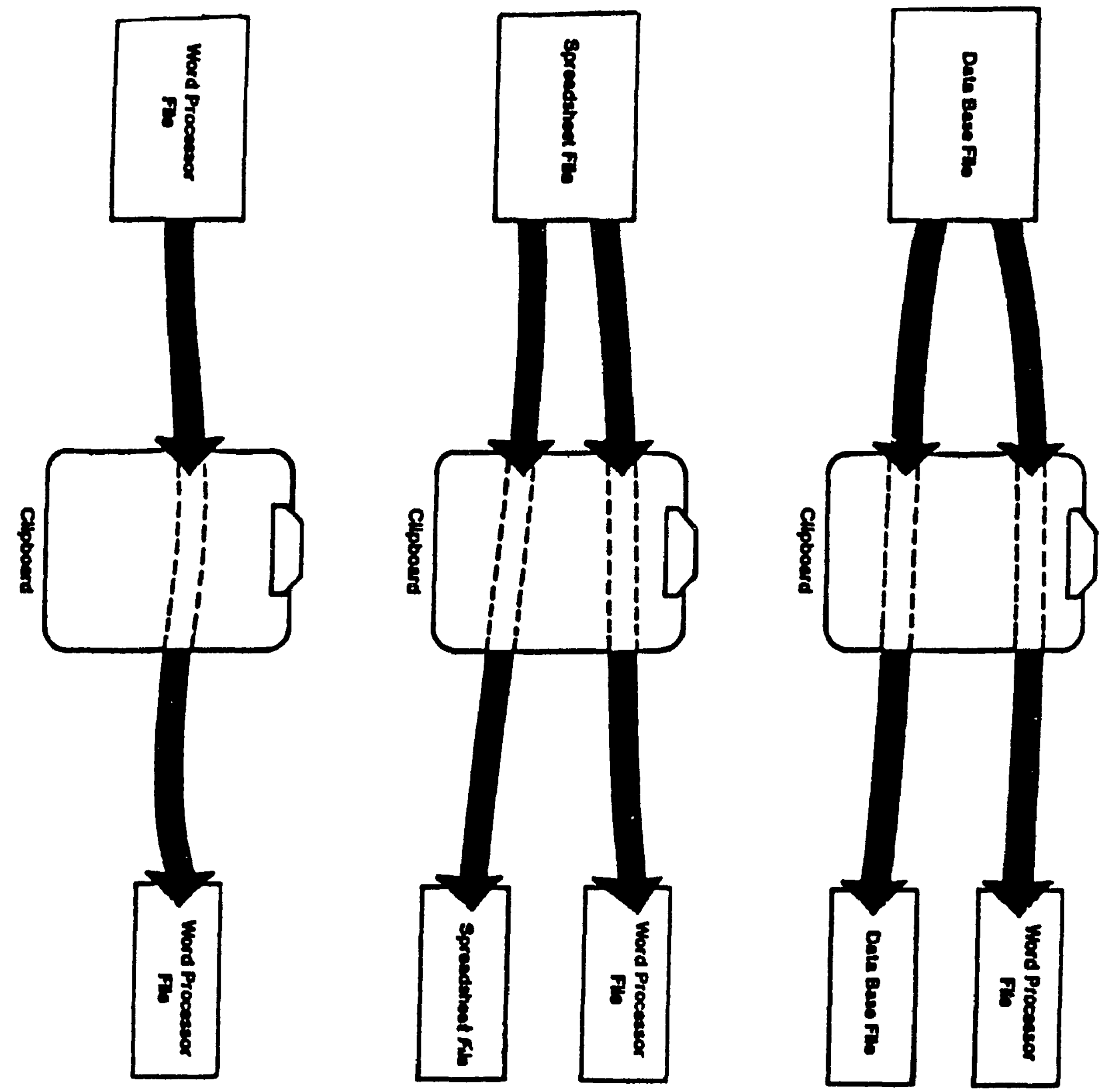
Records

Entries

Categories


Spreadsheet File
Work With
Information
in Worksheets
Format Reports


Main Menu
Add Files Menu
New Spreadsheet File
From scratch
From a DIF or VisiCalc file
Existing Spreadsheet File
List of Files
Review/Add/Change
Print


Word Processor File
Clipboard
Word Processor File
Spreadsheet File
Clipboard
Spreadsheet File
Word Processor File
Data Base File
Clipboard
Data Base File
Word Processor File

58

WORKSHOP 3

COMPUTERS AND YOUNG CHILDREN

COVER SHEET

WORKSHOP 3	
MODULE 1	ISSUES RELATED TO COMPUTERS IN EARLY CHILDHOOD EDUCATION
OBJECTIVES:	On completion of this module, participants will be able to discuss relevant issues related to computers in early childhood developmental appropriateness gender differences sexist software divergent thinking learning theory creativity children with special needs adult attitudes, etc.
TRAINING TIME:	30 Minutes
TRAINING AIDS:	BLANK ACETATE SHEET ACETATE MARKER O/H PROJECTOR

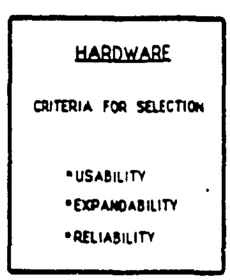
INSTRUCTION	AIDS
In relation to computers in early childhood education, it seems to me that the first real question is **should computers be used with young and very young children** For a number of years now, adults, parents and educators alike, have had some real concerns about whether the computer is an appropriate tool for their young children (3-5). Because of the concerns, researchers over the last 7 or 8 years, have done considerable work in trying to look at these concerns or **issues**.	**preamble 5 mins.**
I'd like to review a little of the relevant literature with you but briefly Most people are not particularly interested in who researched what and where What they really want to know are the results For those of you who are interested, Appendix A at the end of your manual references the studies I will tell you about and space is provided on page 3 in your manuals for note-taking Use the space in whatever way is relevant for you	
Before I do this, though, I would like you to do some thinking yourselves on the issues involved when talking about computers for young children Turn to the person on your right and talk about your feelings about your concerns.	**allow 5 mins.**
How did you do? Let's throw out some of these and I'll record them on the overhead here	**blank O/H acetate**
Let me add a few and then we can discuss the research findings around these issues	**Record their issues and the remaining from mod. 1 objectives**

INSTRUCTION	AIDS
A number of studies in the last 5 years suggest that computers enhance **social interaction** among young children. If given developmentally-appropriate software, children get together at the computer creating dramatic role situations, solving problems and discussing cause and effect. I have on a number of occasions witnessed a young child at the computer speaking to himself/herself out loud This has always thrilled me because it makes obvious something very difficult to see **cognitive processing**. A specific study was set up in which children were encouraged to work alone at the computer The children wouldn't comply They had such a need to share with their peers (as they do at the sand table), that the study had to be redesigned	**Borgh et al** **Lipinski et al** **Swigger & Swigger** **Swigger & Swigger (84)**
When children use appropriate software, they are in the driver's seat They tell the computer what to do This mastery over technology develops a **sense of competence** and **self-esteem**.	**Burg (84)** **Ziajke (83)** **Wright ?** **Samaras (86)**
Seymour Papert used a really interesting term to describe the process involved when one **thinks** about how one thinks He called it **metacognition** It's kind of like standing back and watching yourself perform When you can see it, you can improve it Good software will allow the child to do this	**1980**
Children learn through **play** It is suggested that the best way to begin the relationship with the computer is through play play through exploration and discovery Like blocks, drama, and painting, the computer is just a tool which can be used to enhance all areas of development Introduce and use the computer as any other activity **centre** in the classroom, as part of an appropriate preschool curriculum.	**Bonner (84)** **Eliason & Jenkin, (86)** **Rubens (84)** **Beaty (87)** **Hoot (87)** **Munro (87)**
The computer is the "great equilizer" Studies have shown that unlike the later years, the computer is **shared equal'y** and with as much skills by both girls and boys It further offers the shy or isolated child opportunities for social interaction.	**Beaty (87)**
The quality computer program very much resembles the natural learning process learning through interaction, through discovery and through visual thinking	**ibid**

INSTRUCTION	AIDS
The good software program is **self-pacing, non-threatening and offers immediate feedback**. These aspects offer opportunities for children to experiment with problem solving strategies. The development of problem-solving skills gives children a **sense of mastery** over their environment, and builds confidence	**Conlin (81)** **Grimes (81)** **Munro (84)**
Some believe that the computer enhances self-image, increases attention span and fosters **divergent thinking**. This is a creative open way of thinking where many solutions are possible	**Beaty (87)** **Hoot (86)** **Papert (80)**
In sociometric studies, researchers have found that it is a real advantage for young children to **work in pairs** at the computer. They share ideas, brainstorm together, and actually teach each other. The computer has been used in some very interesting ways to help children who otherwise would not be able to communicate. Tests done with young children with cerebral palsy have shown that computers with built in speech synthesizers that read from a touch pad, have allowed children so afflicted, to communicate. The results are amazing	**Conlin (81)** **Swigger (84)** **Grimes (81)** **excerpt from Suzuki video**
The great debate over the appropriateness of computers for young children has been fairly well resolved. Many of the **fears** have been found **groundless**. When used in developmentally appropriate ways, when the software is appropriate and selected on the basis of established criteria, the computer enhances social and language skills, is unisex and has **no adverse effects** on other activities in the classroom. Software can be used by children independently and provides excellent opportunities for cognitive and metacognitive development. The computer is just a **learning tool** like others in the classroom and should be allotted its place. The educator's **attitude** and **strategies** for introducing the computer and new software into the curriculum will very much determine whether the computer becomes the **excellent tool for learning** it has the **potential** to be	**summation**
Now that we have a notion that the computer is an appropriate tool for young children let's go on to setting up . . .	

COVER SHEET

WORKSHOP 3	
MODULE 2	**SELECTING APPROPRIATE HARDWARE**
OBJECTIVES:	On completion of this module, participants will be able to explain how to go about purchasing the appropriate hardware system for the early childhood classroom.
TRAINING TIME:	20 Minutes
TRAINING AIDS:	O/H *1 - 2 3 SOFTWARE EVALUATION GUIDES

INSTRUCTION	AIDS
TO THE TRAINER: NOTE THAT YOUR OVERHEADS HAVE LINES ON THEM. THIS IS TO ALLOW YOU TO ADD EXTRA INFORMATION SUCH AS SUB-CATEGORIES, WHEN APPROPRIATE.	
So you want to buy a computer for your classroom. Maybe you will be buying a number, including one for the office for information management purposes There are a number of things to think about	**preamble 5 mins.**
money. How much can you afford ? Are there other budgets that you can borrow from? Will the board of directors help out? Needless to say you will want to get the best deal for your money	
the system to buy: There are a number of systems on the market which are fairly appropriate to use with young children. They vary in cost, memory capacity and peripheral accomodation Let's look at a few.	
The **Tandy**, the **Commodore 64**, the **Apple 11 series**, and the **IBM** PC are the most-commonly used systems for young children They average 128K of memory which is considered sufficient for the kind of software appropriate for the children and for your personal information management requirements	
Let's look at the criteria for hardware selection and try to determine which system will meet your particular needs	**O/H # 1**
	**ACETATE PEN**

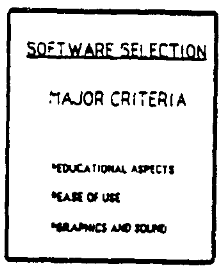
INSTRUCTION	AIDS
The three major criteria are **usability, expandability, and reliability** What do these mean?	
Usability refers to how easy it is to use. The Commodore's keyboard is complex, the IBM doesn't yet have a great variety of software and is very expensive Does the computer have enough memory for the type of software you want to use? Can it run graphics and sound programs?	**add sub categories onto o/h**
Expandability refers to whether you can readily add peripherals to the system Are printers readily available? Can printers print graphics? Does the computer have a joystick port?	
Reliability refers to company reliability, track record, and repair time Is it likely that the company you buy from will stay in business long enough to respect the warranty? Does it have a good reputation? Can you have your equipment repaired locally and in good time? Some companies will send a repair person to your centre and do the job right there and then	
Based on these criteria the **APPLE 11 SERIES** 11+, 11E, 11C, and 11GS is your best bet **.....at this time**......	**what we have here are the 11E's**
The first question, though and the most important to ask yourself is **what kind of software do I want ???**	
Looking through catalogues and referring to Software Evaluation Guides will help you decide what in fact **quality** software for young children is.	**show sample eval. text provided in Appendix E**

INSTRUCTION	AIDS
Let's look at the different computer software companies that manufacture specific software Notice that more than one will produce the same essential program They will vary only in how the computer will understand the programming If you buy Dinosaurs for the Commodore 64, it won't run on your Apple.	**Demo the 3 evaluation surveys and discuss indiv. systems for eval.** O/H #2

software	supplier
[illegible]	Apple, Atari
[illegible]	Apple, Atari, [illegible]
[illegible]	Apple, [illegible]

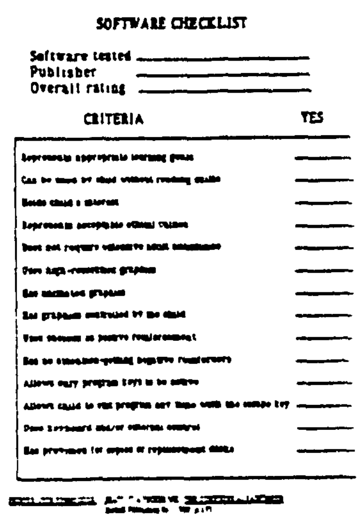
COVER SHEET

WORKSHOP 3	
MODULE 3	**CRITERIA FOR SOFTWARE SELECTION**
OBJECTIVES:	On completion of this module the participant will be able to list the criteria for the selection of developmentally appropriate software for young children.
TRAINING TIME:	30 Minutes
TRAINING AIDS:	O/H #3 - 4 LCD unit for software display "Stickybear Opposites" software

INSTRUCTION	AIDS
We have already discussed how very important it is to select the appropriate **software** for young children How is this done?	
You can go through various software evaluation guides like those recommended in your bibliography and demonstrated here The publishers of these have already done the evaluation for you But you may want to evaluate software yourself You never know . you may get your hands on a software package not yet evaluated you may not trust the publishers's evaluations you may just want to become a software evaluator yourself They are your children and you know what they need	
Let's take a look at **3 major categories** of criteria for software selection	
	O/H #3
Notice that the first step is looking to see that the objectives of the software designer matches your educational objectives	
What about learning objectives, the literacy level required, motivational level, ethical values promoted	
Is the software easy to use does it need much adult assistance is control in the child's hands, how is reinforcement provided, are the program keys the only ones active, is the program easy to exit, does the company supply replacement disks at no extra or at minimal cost	
These are the essential questions. You need to ask them, do some reflection, and make a wise decision on how you will spend your money	

INSTRUCTION	AIDS
educational concerns A software package is not always the best use of the computer. The computer is fast, can provide animation and colour graphics, and can supply sound, even imitating the human voice It provides immediate feedback and provides the child with an environment in which to be really creative what if you are evaluating a software package, where the objective is to learn to count If there are no graphics, no sound capability, and no real feedback, then you are better off using rods, beads, etc And it's far chearper Is the vocabulary at the children's level ? Does the package include supportware for extending the learning to non-computer environments? **ease of use** The disk should have an iconic label on it so that the children can readily identify it Is the program fast enough to hold the children's interests How are reinforcements both positive and negative offerred A happy sound is pleasant and makes one feel good, but an annoying sound to indicate that you have erred is annoying Most quality software offers a happy sound to indicate success and simply waits or makes a simple sound to indicate that an error has been made The child should then be cued to try again **graphics and sound** Remember that the children you work with are considered pre-literate and should not be expected to read The software you use with them must not depend on the written word Graphics, pictures and sound should be used effectively to communicate with the child Is the screen design pleasant, using high resolution graphics, animation, colour Does the sound appeal and can it be easily turned off and on	

INSTRUCTION	AIDS
Let's try evaluating some software together. Using the checklist on page 10, check off those criteria which are present in the following software package. It's called **Stickybear Opposites** and is very popular with young children.	**have the lcd unit ready**
Would one of you like to volunteer to run the program while the rest of us watch what happens on the LCD display	**select a volunteer** **allow 5 mins.**
Now let's discuss how it went so we can fill out the checklist. Fill out the top and place the checks where appropriate	O/H #4



WE'LL BE USING THE CHECKLIST LATER WHEN WE GET TO TRY OUT A NUMBER OF SOFTWARE PACKAGES.

COVER SHEET

WORKSHOP 3	
MODULE 4	INTRODUCING THE COMPUTER INTO THE CLASSROOM
OBJECTIVES:	On completion of this module, participants will be able to explain how to introduce the computer into the classroom.
TRAINING TIME:	20 Minutes
TRAINING AIDS:	O/H *5 - 6 High Scope Video "Computers in the Early Childhood Classroom"

INSTRUCTION	AIDS

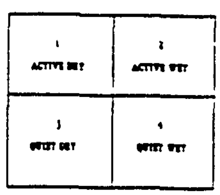
When you visit elementary schools and highschools, you notice that very often, they have a computer lab Once a week each group of children have a 1/2 hour or an hour in the computer room. This works to a large extent. However, it doesn't relate to our philosophy of early childhood education

The computer is an educational tool just as blocks, crayons, water and puzzles are educational tools The computer should be in the classroom as any of the other activity centres The reading centre has its place, as does the block centre and the art centre

WHERE TO PUT THE COMPUTER CENTRE ?

When designing the floorplan for a classroom, a number of considerations must be addressed Based on philosophy of education and a belief that children learn in a specific way, models are developed to help with the design One such model successfully used in a number of early childhood settings is the **RAMBUSCH MODEL** which looks at dividing up the environment into quadrants of usage

Let's look at this particular model



O/H #5

Notice that the top of the plan designates active areas, while the bottom designates quiet areas The left of the model depicts dry areas and the right, wet

It doesn't really matter the order of the quadrants What is important is knowing that certain activities belong in certain areas Imagine a small group of children doing energetic dramatic play right next to the quiet private area

INSTRUCTION	AIDS

Take the time now to envision your particular floorplan. Where are the dry activities ? . the wet ones? Where are the children when highly active?

Now try to figure out where you would put the new computer centre Where would it be? Near what other centres?

Close your eyes and try to see it. .

Discuss

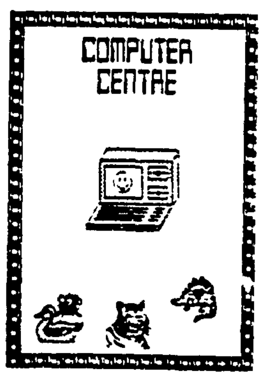
HOW TO INTRODUCE THE COMPUTER

You want the computer centre visible and attractive It needs its own boundaries established with low separators or dividers Put up a large visual indicating the centre's purpose. I made this one using **PRINT SHOP**, a software package that allows you to create posters, signs, cards, etc By the way, young children love this program they create a birthday card for their mom

LET ME SHOW YOU WHAT PRINT SHOP CAN DO

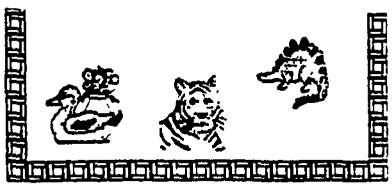
O/H #6

SHOW TOP ONLY



The computer should be placed at the child's level on a low table The computer monitor should be at the child's eye level and the keyboard at elbow level Test it carefully

Non-computer activities should be designed to help the children become more familiar with the computer and with what it can do Refer to Appendix D in your manual for some ideas. Be creative Remember ..the "Booting song" ?

INSTRUCTION	AIDS
HOW TO INTRODUCE NEW SOFTWARE Group time is an appropriate time to introduce children to new software Show them what it can do and how to identify it Give a demonstration using a couple of the children. If it has not been labelled in such a way as to clearly identify it, then place your own icon on it.  HIGH SCOPE has developed a video explaining how to introduce the computer into the classroom and how to familiarize the children with new software. let's watch it ...take notes as we go along so that we might discuss it later.	 O/H *6 BOTTOM

COVER SHEET

WORKSHOP 3

MODULE 5 — **INTRODUCING THE COMPUTER INTO A DEVELOPMENTALLY APPROPRIATE CURRICULUM**

OBJECTIVES:

On completion of this module the participant will be able to explain using examples, how computer activities can be incorporated into a developmentally-appropriate curriculum

...design a comprehensive experience for young children, incorporating both computer and non-computer activities

...Evaluate a variety of available early childhood software

TRAINING TIME: 60 Minutes

TRAINING AIDS: O/H #7 - 8
12 ECE software packages

INSTRUCTION	AIDS
You plan the activities for the children by going through a process, whether that be a written or mental process. Let's look at a model for curriculum planning. STATEMENT OF PHILOSOPHY GOAL STATEMENTS STATEMENT OF OBJECTIVES SEQUENCING OF ACTIVITIES TEACHING STRATEGIES MOTIVATION IMPLEMENTATION REINFORCEMENT EVALUATION	O/H #7
This may not be the model you use, but let's look at the various steps. when planning an experience for the whole child.	discuss curricular steps
Based on the analysis, you can develop an activity plan that might look something like this: ACTIVITY PLAN SAMPLE EXPERIENCE TITLE OBJECTIVES SEQUENCE OF ACTIVITIES ACTIVITY 1 (MOTIVATION) ACTIVITY 2 IMPLEMENTATION ACTIVITY 3 REINFORCEMENT EVALUATION	O/H #8

INSTRUCTION	AIDS
Related Activities should be combined together to serve different purposes as Pre-activities to motivate and stimulate the children, as main activities to teach the concept and finally as post-activities to reinforce the learning	
Remember STICKYBEARS we looked at before... Try using it now Get together with a colleague and using the activity plan on p 15 of your manual, try to create an experience for young children that incorporate both computer and non-computer activities Think about motivating, applying and reinforcing concepts through this technique Use a variety of media - a media-mix	**allow 10 mins.**
We have learned a great deal here in this workshop Know that we know almost everything we need to in relation to implementing the computer into the classroom, let's take some time to evaluate a variety of software packages we have available here	**one package at each station**
Choose a partner and go to a computer. The trainer will distribute software to each team. Use the checklists in the appendix to evaluate the software You will probably have time to evaluate at least 3 software packages. Have **fun**	**rotate software regularly walk around observing** **allow 40 mins.**

WORKSHOP 3 EVALUATIONS
COURSE EVALUATIONS

LIST OF APPENDICES

BIBLIOGRAPHY OF RELATED RESEARCH

BORGH, K & Dickson, W, "Two Preschoolers Sharing One Microcomputer: Creating Prosocial Behavior with Hardware and Software", In Campbell & Fein (eds.) **Young Children and Microcomputers** Englewood Cliffs, NJ, 1986

LIPINSKI, J, Nida, R., & Watson, A., "The Effects of microcomputers on Young Children. An examination of free-play choices, sex differences, and social interactions.", **Journal of Educational Computing Research,** 1986,2, 147-168

SWIGGER, K, & Swigger, B.K., "Social Patterns and Computer Use Among Preschoolers" **AEDS Journal,** 1984,**84**17(3), 33-41

ZIAJKA, A, "Microcomputers in Early Childhood Education? A First Look", **Young Children,** 1983 38(5), 61-67

WRIGHT, J, & Samaras, A S, "Play Worlds and Microworlds" In Patricia Campbell & Greta Fein (eds), **Young Children and Microcomputers,** Englewood Cliffs, NJ, 1986

CLEMENTS, D.H., **Computers in Early and Primary Education,** Prentice Hall, Inc., Englewood Cliffs, NJ, 1985

DAVIDSON, J I, **Children and Computers Together in the Early Childhood Classroom,** Delmar Publishing, Inc., 1989

HOHMANN, C, **Young Children and Computers,** High Scope Press, Ypsilanti, Michigan, 1990

APPENDIX E

Beaty, J.J. & Tucker, W.H., **The Computer as a Paintbrush.** Merrill Publishing Co., Columbus, Ohio, 1987

Buckleitner, W., **1989 Survey of Early Childhood Software.** High Scope Educational Research Foundation, Ypsilanti, Michigan, 1989

Clements, D.H., **Computers in Early and Primary Education.** Prentice Hall, New Jersey, 1985

Davidson, J.I., **Children and Computers Together in the Early Childhood Classroom.** Delmar Publishing Inc., Albany, New York, 1989

Haugland, S.W. & Shade, D.D., **Developmental Evaluations of Software for Young Children -1990.** Delmar Publishing Inc., Albany, New York 1990

Hohmann, C., **Young Children and Computers.** High Scope Press, Ypsilanti, Michigan, 1990

HARDWARE

CRITERIA FOR SELECTION

*USABILITY

*EXPANDABILITY

*RELIABILITY

NOTES:

software	supplier
Jeepers Creatures	Apple, Atari
Stickybear series	Apple, Atari, Commodore 64
Dinosaurs	Apple, IBM, Acorn, Commodore 64

NOTES: ______________________________

SOFTWARE SELECTION

MAJOR CRITERIA

*EDUCATIONAL ASPECTS

*EASE OF USE

*GRAPHICS AND SOUND

NOTES:

SOFTWARE CHECKLIST

Software tested ______________________
Publisher ______________________
Overall rating ______________________

CRITERIA	YES
Represents appropriate learning goals	________
Can be used by child without reading skills	________
Holds child's interest	________
Represents acceptable ethical values	________
Does not require extensive adult assistance	________
Uses high-resolution graphics	________
Has animated graphics	________
Has graphics controlled by the child	________
Uses success as postive reinforcement	________
Has no attention-getting negative reinforcers	________
Allows only program keys to be active	________
Allows child to exit program any time with the escape key	________
Uses keyboard and/or external control	________
Has provision for copies or replacement disks	________

THE COMPUTER IN THE CLASSROOM

WHY IN THE CLASSROOM

The computer is an educational tool just as blocks, crayons, water, and puzzles are educational tools. The computer should be in the classroom as an activity centre just like the block centre, the reading centre and the art centre

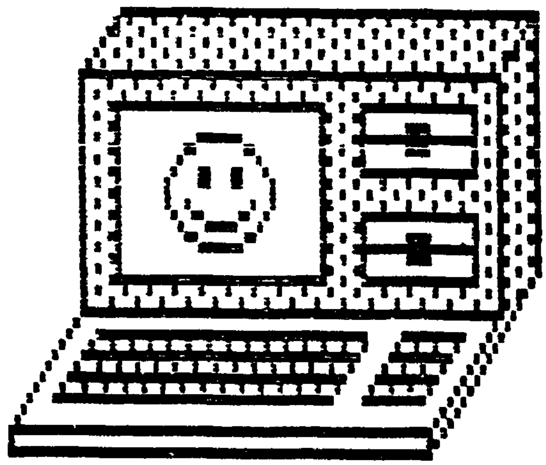
WHERE IN THE CLASSROOM

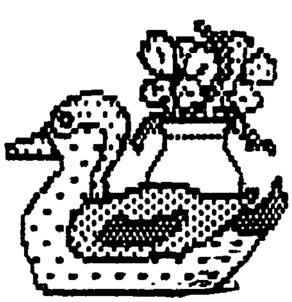
When a centre is being designed, a model is selected to plan the physical environment (floor planning) The quadrant model (Rambusch model) is frequently used, because it is efficient and meets the needs of young children Let's look at it

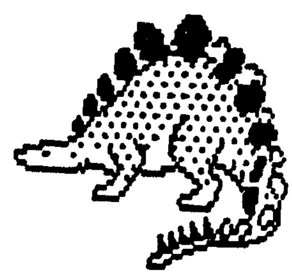
1 **ACTIVE DRY**	2 **ACTIVE WET**
3 **QUIET DRY**	4 **QUIET WET**

Close your eyes and try to envision what your classroom looks like. Where do you think the ideal location for the computer would be?

COMPUTER CENTRE







INTEGRATING THE COMPUTER INTO THE EARLY CHILDHOOD CURRICULUM

When we do programming for young children, we usually go through the following **curriculum planning process**:

STATEMENT OF PHILOSOPHY

GOAL STATEMENTS

STATEMENT OF OBJECTIVES

SEQUENCING OF ACTIVITIES

TEACHING STRATEGIES

MOTIVATION

IMPLEMENTATION

REINFORCEMENT

EVALUATION

Based on philosophy and knowledge of development, we design for the WHOLE CHILD.

ACTIVITY PLAN SAMPLE

EXPERIENCE TITLE :

OBJECTIVES :

SEQUENCE OF ACTIVITIES :

ACTIVITY 1 :
(MOTIVATION)

ACTIVITY 2 :
IMPLEMENTATION

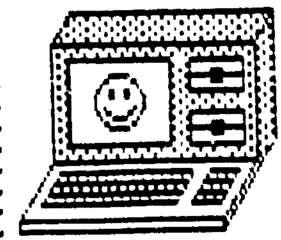
ACTIVITY 3 :
REINFORCEMENT

EVALUATION :

APPENDIX D (105 pages)

Participants' Manuals

COMPUTERS IN EARLY CHILDHOOD



WORKSHOP 1

INTRODUCTION TO COMPUTERS

WELCOME TO...

WORKSHOP 1

INTRODUCTION TO COMPUTERS

TABLE OF CONTENTS

MODULE 1 — EVOLUTION OF COMPUTERS

OBJECTIVES:

Participants will be able to...

-Briefly describe the rapid evolution of computers
-Differentiate among generations of computers
-Explain the trend toward greater miniaturization and speed of execution

MODULE 2 — COMPUTERS & COMPUTER APPLICATIONS

OBJECTIVES:

Participants will be able to...

-Define the three categories of computer applications and give examples of each
-Define the term "**computer**" and describe its functions

MODULE 3 — COMPUTER CONCEPTS AND TERMS

OBJECTIVES:

Participants will be able to...

-List the basic components of a computer
-Differentiate between the terms "**hardware**" and "**software**"
-Define and list a few commonly used peripherals
-Define the term "**program**"
-Define what is meant by the term "**supportware**"
-Discuss various programming languages and explain how these are understood by the computer
-start-up ("boot") the computer
-Key enter a simple **BASIC** program
-Run a **BASIC** program

MODULE 4 — DISK MANAGEMENT

OBJECTIVES:

The participant will be able to...

-Discriminate between floppy and hard disks.
-Summarize the procedures for taking care of disks
-Explain the purpose for the following disk procedures; FORMAT, WRITE PROTECT and BACK-UP

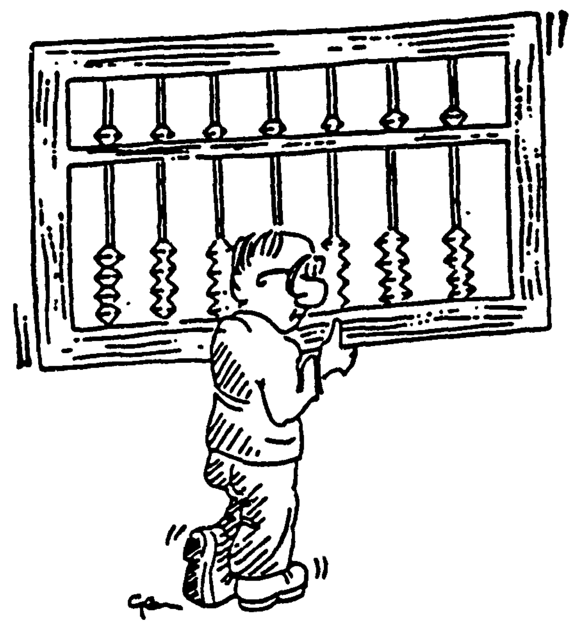
MODULE 5 — FILE MANAGEMENT

OBJECTIVES:

The participant will be able to...

-Explain how information is stored on a disk
-Differentiate between a bit and a byte
-List the different steps in the file structure hierarchy
-Explain by example, the types of information which would appear in each of these steps

MODULE 1
IN THE BEGINNING...



BEFORE MINIATURIZATION

Notes: ____________________

____

____

____

____

____

SPEED: From generation to generation the real marvel has been the speed at which the computer is able to obey a command. This is called **speed ofexecution.** Speed has increased very dramatically over the last few generations (computer generations, of course).

SPEED OF EXECUTION:

2nd Generation: Millisecond 1/1,,000 th of a second

3rd Generation: Microsecond...1/1,000,000 th of a second

4th Generation: Nanosecond....1/1,000,000,000 th of a second

5th Generation: Picosecond......1/1,000,000,000,000 th of a second

Since the creation of the first electronic computer in 1946, computers have evolved through the generations to the point where they are...

SMARTER

SMALLER

FASTER

AFFORDABLE

AVAILABLE

6

HISTORY OF COMPUTERS

1947-1960	The Dawn of Computers
1961-1970	Computers in Space
1971-1980	Computers in Business
1981-	Computers in the Home

Notes:

HISTORY IN REVIEW

LONG, LONG AGO...	counting, using fingers, pebbles, sticks, stones
3,000 B.C. approx...	the abacus hits the market
1614	John Napier invents "Napier's Bones" Multiplication is simplified
1642	Blaise Pascal develops the first mechanical calculating machine
1801	Joseph Marie Jacquard introduces the first punched card
1812	Charles Babbage's "Difference Machine" can compute mathematical tables such as logarithms.
1890	Herman Hollerith solves the U.S.A.'s census problems with the first punched card tabulating machine. He forms a company which in 1924 becomes IBM
1946	ENIAC is the first electronic digital computer
1955	first generation computers appear
1959	transistors are now used in computers. second generation arrives
1960's	miniaturization and third generation computers. large scale integration becomes possible
1980's	Fifth generation computers appear making very large integration possible.
2010	computers are found in every home, doing a wide variety of jobs and probably sitting on your lap.

MODULE 2

COMPUTER AND COMPUTER APPLICATIONS

COMPUTER APPLICATIONS

We are interacting on a daily basis with computers. They are everywhere, producing sophisticated sound and graphics, performing repetitive tasks, making calculations or complicated projections, and controlling production.

An **application** is a specific job or task that the computer is given to do. Calculating salary could be part of a Payroll application. Maintaining inventory could be part of a Stock Management application. There are a vast number of computer applications. It is possible to group them into three broad categories:

Business applications

Scientific applications

Process Control applications

There is also something called **"Multi-task applications"**, which means that the system allows you to use a variety of applications together

9

COMPUTER APPLICATIONS :

- BUSINESS

- SCIENTIFIC

- PROCESS CONTROL

Notes:

All computer applications can be listed in one of these categories and some may fit into more than one category. (multi-task).
Let's define each category:

BUSINESS: Business applications are those which process information and provide the user with this information in one form or another. This is probably the type of application with which we have the most daily contact. Cash registers keeping track of inventory is one example of a business application.

SCIENTIFIC: Scientific applications are those which perform rather complicated calculations or computations. Frequently referred to as "number crunching", they are often used in research for statistical analysis.

PROCESS CONTROL: Process control applications are those which monitor and adjust a given process while it is happening. For example, steel mills use such applications to control furnace temperatures during the process of steel refinement.

TRY IT: For each of the categories listed below, try to think of a number of possible applications.

BUSINESS	*SCIENTIFIC*	*PROCESS CONTROL*	*MULTI-TASK*

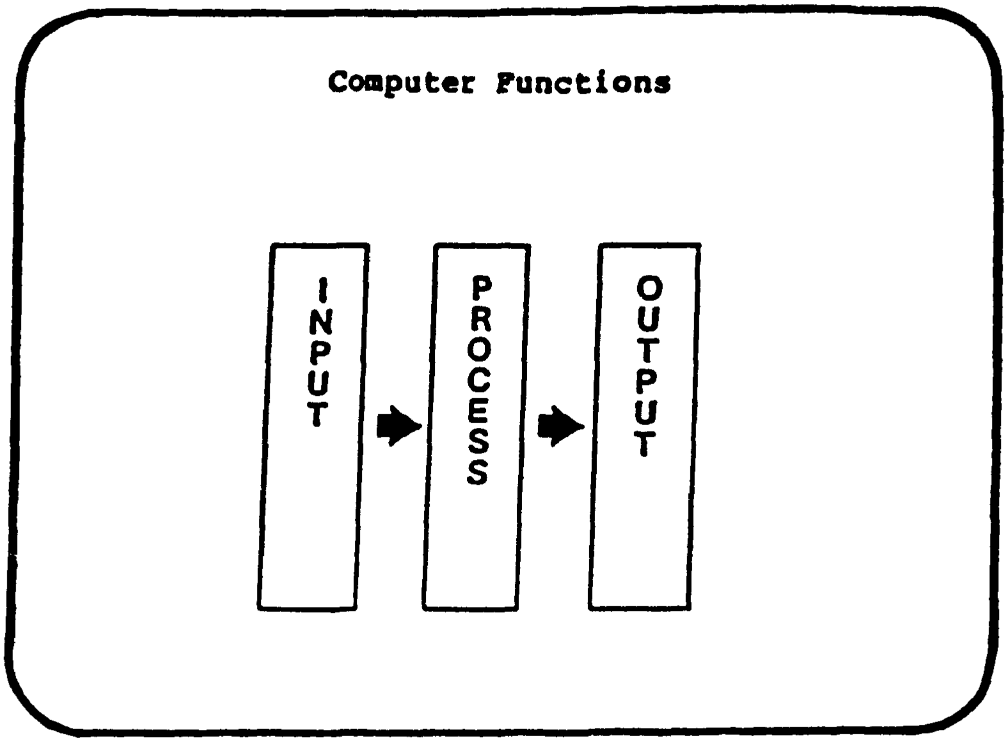
THE COMPUTER

A computer is **any device, mechanical, electrical or a combination of both, which is capable of accepting information, processing that information and supplying a result.**

From this definition, we can easily identify the three basic functions of a computer. No matter what job the computer is doing, it goes through each of these functions:

ACCEPTING INFORMATION
PROCESSING THAT INFORMATION
SUPPLYING A RESULT

We can represent these functions in diagram form



Notes:

A COMPARISON

Any system, whether it be a physiological system like your digestive system, or the transmission system in your car, is made up of component parts. If the system is to run smoothly all components must work together. If one component is malfunctioning, then the entire system itself is in trouble.

A computer system can be compared to a basic stereo system. The amplifier is the main component of the stereo. It processes the electrical signals sent it by another one of the components (like the cassette recorder) and sends the signals out through yet another component (the speaker) By itself, the amplifier doesn't do much. It needs a component to provide the signals or **input** and speakers to provide **output**.

EXAMPLE:

The bar code on an item is recognized by the optical scanner and is fed into the computer as **input**.

The computer identifies the item, finds its price and updates the inventory file by supplying this information as **output**.

There are many other examples of computerized systems. Can you think of a few ?????

Hint...banking

MODULE 3

COMPUTER CONCEPTS AND TERMS

IT'S JUST A MACHINE:

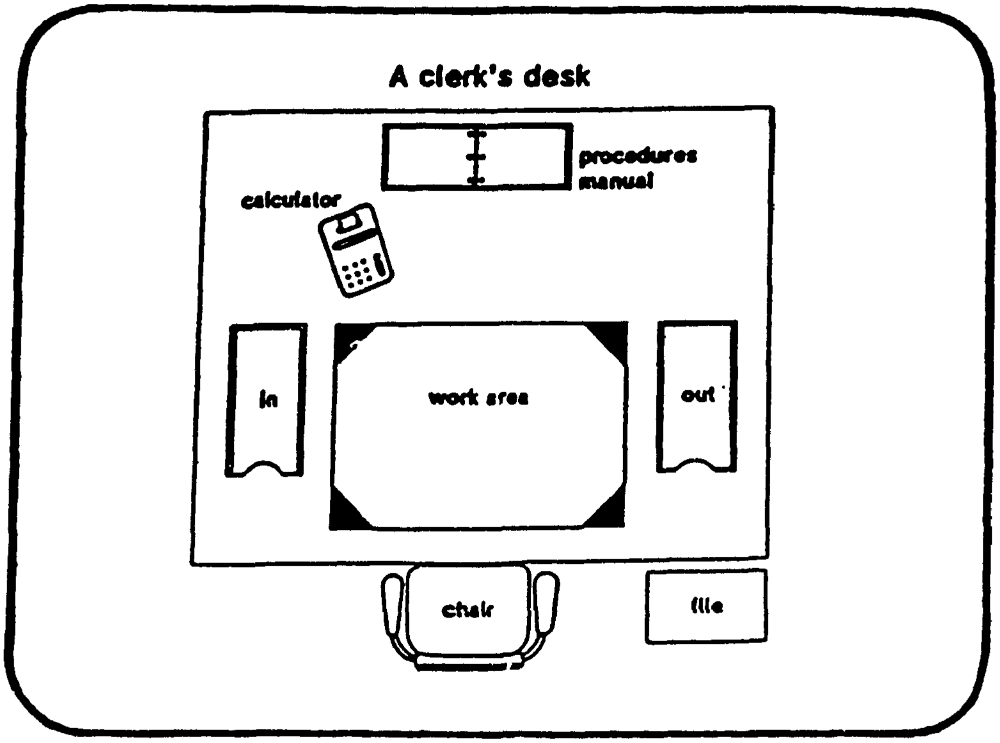
We look at computers as if they were magical and we feel we can trust the computer to do what we want. It cannot be wrong, right? Wrong. The computer will do exactly what you tell it to do. Computer "experts" enjoy this sense of "all-knowingness" and will slip into "computerese" to confuse you just a little more. In fact, most of this lingo covers up a rather straightforward science.

Computers are only machines (like dishwashers) and **dumb** machines at that. They do not really think, and are not quite able to make their own decision. Computers do only what a programmer tells them to do, and if a programmer tells a computer to do the wrong thing, the computer will do this just as faithfully as it will do something correctly. It's not what you <u>want</u> it to do but rather what you <u>tell</u> it to do that counts.

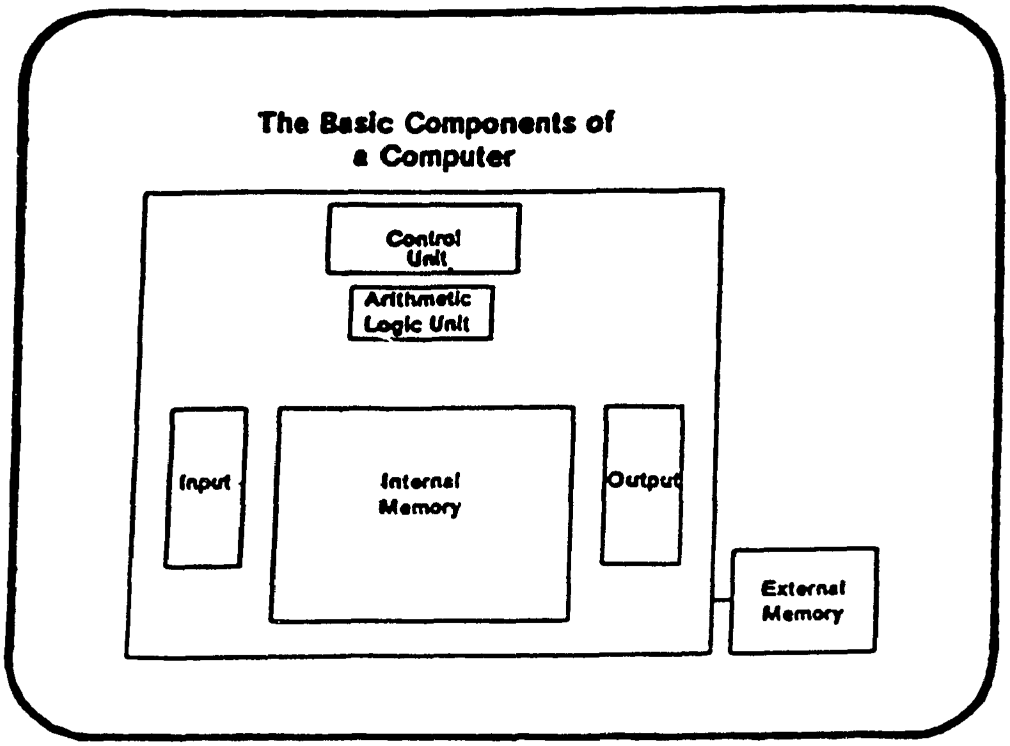
At the end of this workshop manual, you'll find a **glossary** of a few computer terms. This should be enough for you to dazzle a few people yourself.

Let's look at some more commonly used terms and basic concepts in computer science.

THE STRUCTURE



Notes:


The Basic Components of
a Computer
Control
Unit
Arithmetic
Logic Unit
Input
Internal
Memory
Output
External
Memory

Notes:

The brain of the computer is the **CENTRAL PROCESSING UNIT** (CPU). It is the process part of the computer. Remember:

INPUT ---> PROCESS ---> OUTPUT

The **CPU** has internal memory where the work goes on (the clerk's blotter). It contains a CONTROL UNIT (procedures manual) to ensure that the work is done properly. It performs calculations and therefore needs its own ARITHMETIC LOGIC UNIT (calculator). Since the internal memory can't store all output (outbox) forever, there must be an external memory as part of the system.

hint: That's why internal memory is often referred to as desktop memory.

In very large systems, the **CPU** stands alone and is connected to its input/output (I/O) devices. In smaller systems, such as our microcomputers, the CPU and its I/O devices are frequently contained in the same "box".

REVIEW

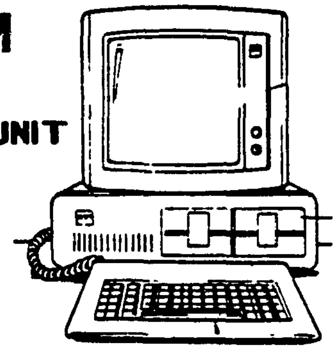
HARDWARE is all the physical equipment which makes up the computer including its peripherals

There are **input** devices to feed data into the **CPU**.
There are **output** devices to show the resulting work.
There are **I/O** devices which are capable of doing both.

Printers are output devices which vary widely in size, shape and speed. Some print one character at a time while others are capable of printing full pages at a time. Some will print out in colour.

The disk drive is the device which allows you to input from a disk and output to disk.

PARTS OF A COMPUTER SYSTEM



CENTRAL PROCESSING UNIT
INPUT DEVICE
OUTPUT DEVICE
INTERNAL MEMORY
EXTERNAL MEMORY

NOTES:

THE SOFTWARE

In the previous section, we agreed that hardware is the physical equipment: that which is tangible, can be seen and touched.

Software cannot really be seen and touched. Although we know it exists because there is a disk, we cannot see what is written on the disk. Even if we take a disk apart and remove the jacket which protects the mylar, we don't see any writing on it.

Software is therefore, **the name given to all the instructions, programs, rules and relevant information necessary to run the computer**. The software is stored on disk. but is not the disk (just as music is not an audio cassette).

A **program** is part of the software. It is the specific set of instructions needed for the computer to complete a given task.. For example, **APPLEWORKS SOFTWARE** allows you to word process, do data base management and do spreadsheet analysis. Each of these is a program.

REVIEW

SOFTWARE is the computer programs, rules and relevant documentation which are necessary to run the computer

A PROGRAM is a set of instructions necessary to complete a specific task. Programs are parts of software

THE SOFTWARE

3 CATEGORIES OF SOFTWARE

1. Operating System
2. Programming Language
3. Application Software

Notes:

CATEGORIES OF SOFTWARE

As mentioned before, the computer is basically a simple machine that only does what it's told. In fact it only understands machine language which is a code consisting of **0's** and **1's**.

We can probably guess how a programmer makes a living. He/she is that person who writes, codes and sequences a series of instructions (a program) in such a way that the computer can understand it and do its job.

It used to be that programmers would first design a program on paper in their mother tongue, say English. They would then code each instruction using bits and bytes (0's and 1's). This was known as **machine language**. You can imagine how tedious it was to be a programmer.

Computers still only understand machine language, but a **translator** has been built into the computer to allow the programmer to use coding which better resembles human language.

These easier coding systems are called **Symbolic languages** and are designed to make life easier for the programmer and leave the work of translating to the computer. Symbolic languages have now evolved to the point where a person doesn't have to be a programmer to be able to write programs.

The **Basic language** is a good example of this evolution. It is fairly easy to learn and can be lots of fun.

Let's do a **BASIC** tutorial

BASIC TUTORIAL

Go to a computer with a partner. It is more fun and very helpful to have someone with you, for sharing ideas and frustrations.

Some important commands and keys you will need:

Left arrow (<-)	allows you to move backward over previous typing so that you can change it by typing over.
Return key	Immediate execution. The computer will do what you have told it to do immediately.
Print	whenever you type the word PRINT, whatever you have written after it within quotation marks will print out on the screen.

Let's try it...

PROCEDURE	YOU DO THIS	THIS HAPPENS
Loading the system disk	Pick up the system disk with thumb on the label If you have 1 disk drive: Insert the disk, label up into the disk drive and close the door. If you have 2 disk drives: Insert the disk, label up into the disk drive with the number 1 or the letter A on it.and close the door Switch on the monitor (screen). The switch is usually found on the top right. Switch on the computer (CPU) . Reach behind the left bottom of the CPU and find the switch. In some models there is a fan switch attached to the left front of the CPU. If so, switch it on as well.	 You will notice some sound and the red light of the disk drive will come on, indicating that the CPU is reading the disk. Make sure caps lock key is down A flashing cursor appears
Beginning writing BASIC	The flashing cursor is an indication that the computer is awaiting your command	

Learning to print out	Type the following: PRINT 1259 + 783 Press the **return** key	**notice** there is a space between each word and set of characters The answer appears quickly **2042**
Doing more complex calculations	These are the symbols the computer understands for mathematics: + = addition - = subtraction * = multiplication / = division Try this: You type: PRINT 23 * 8 + 44 - 12 Press **return** key	The computer quickly prints out the answer: 216
Printing out words	Just like in English, if you put words in quotation marks the computer will literally **quote** you. Try this: You type: PRINT "Hot fudge sundae" Press **return** key	**note**: no space between the quotation mark and the word It prints out exactly what you had in quotes.

Writing a mini program	If you want to write a little program containing a few statements and store them to run together later, this is called **deferred execution**. You have to type a number in front of each statement so that the computer knows there will be a number of such statements. Let's try it You type 10 PRINT "Roses are red" Press **return** key If you want it printed out you type: RUN	 nothing happens. The computer is storing it for later your statement is printed out
Writing a program	Try this: You type the following: **remember to press the return key at the end of each line** 10 PRINT "MY NAME IS JO" 20 PRINT "HOW DO YOU DO" 30 PRINT "I AM FINE" 40 END RUN	 This says program done Shows you your program

Pretty basic, huh !!!

Needless to say, BASIC can do more sophisticated work than this. As a programmer, you can instruct the computer to accept **input** and then print it. This input can be numbers, symbols or words. If input is to be words you must use the $ symbol.You can cause the programme to repeat certain lines indefinitely **(recursion)** by giving it the **GOTO** command.
Just for fun, you may want to try a few slightly more complex programmes. Here are a few. Try a couple if you like. You may also want to get creative and design a programme of your own.

INTRODUCTION

type the following:
Remember to press **return** after each line

```
NEW
10 PRINT "WHAT IS YOUR NAME?"
20 INPUT N$
30 PRINT "HELLO, "N$
40 END
RUN
```

CONVERSION

```
NEW
10 PRINT "CONVERT INCHES TO CENT
    IMETERS"
20 PRINT
30 PRINT "INCHES" ;
40 INPUT I
50 LET C - I * 2.54
60 PRINT C; " CENTIMETERS"
70 END
RUN
```

THE FUNNY TWOS

```
NEW
10 PRINT "I CAN COUNT BY TWOS"
20 LET A = 0
30 LET A = A + 2
40 PRINT A
50 GOTO 30
60 END
RUN
```

THE YEAR 2000

```
NEW
10 PRINT "FIND OUT HOW OLD YOU W
    ILL BE IN THE YEAR 2000"
20 PRINT
30 PRINT "HOW OLD ARE YOU NOW?"
40 INPUT A
50 PRINT "WHAT YEAR IS IT NOW?"
60 INPUT Y
70 LET T = 2000 - Y + A
80 PRINT "IN THE YEAR 2000 YOU W
    ILL BE "T
90 END
RUN
```

MODULE 4

DISK MANAGEMENT

DISK DISC DISKETTE

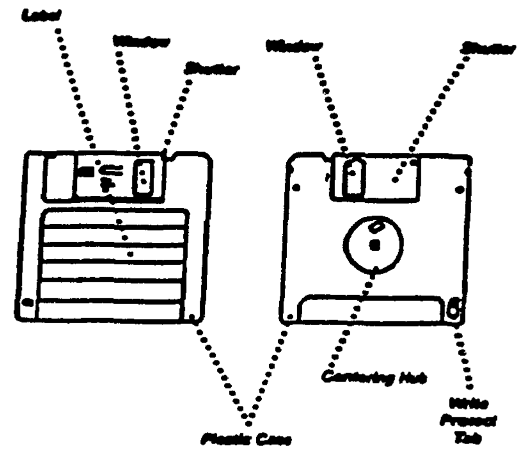
A disk is a thin, flat, circular piece of flexible **mylar** (rigid aluminum) which is covered with a magnetic surface. A disk functions very much like the tape in a tape recorder. It is used to store information, which is coded magnetically onto its surface(s).

The information can include any combination of programs, files, or data. The information can then be retrieved by the computer through the **read/write** heads of the disk drives. Information that is stored on the disk can be in various forms, including...

Operating Systems	**MS-DOS**
Computer Languages	**BASIC**
Application Software	**LOTUS 1-2-3**

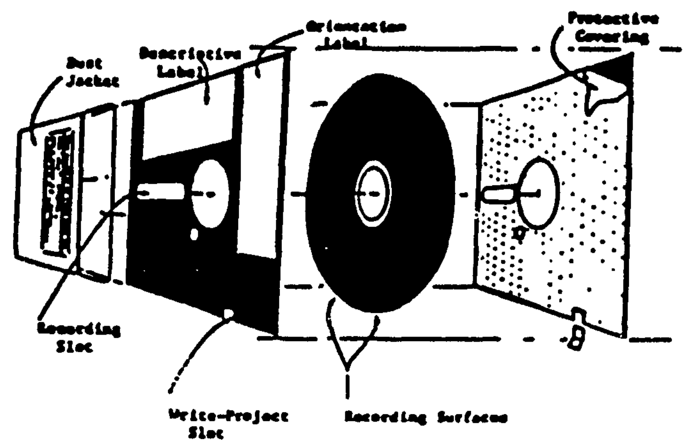
Disks come in various sizes and have different memory capacities, but are essentially the same...

3½" Flexible DISC



Notes:

5¼" or 8" Flexible DISC



Notes: ______________________________

____

____

____

____

____

DISKS:

A disk can either be floppy or hard. A floppy disk is enclosed in a square plastic case that is designed to keep the recording surfaces clean, to keep the disk flat when in the disk drive, and to protect the recording surface from physical damage.

A hard disk is made of rigid aluminum and is considerably larger than a floppy. It has a much larger storage capacity and cannot be removed from the disk drive.

When disks are mistreated, information can be partially or totally lost. Since a full disk could have hundreds of typewritten pages stored on it, it can represent a serious loss to ruin one.

Your floppy disks require a clean, dust-free environment, as your computer does. To avoid damaging your disks and losing the information stored on them, follow a few simple rules for handling and caring for your floppies.

DO

-use a felt tip pen when you label a new disk. Ball point pens or pencils may scratch the disk's surface

-keep your disks away from any type of magnetic material

-keep your disks in a safe temperature environment. The freezer won't do

-Keep disks stored in an upright position away from the disk drive

-avoid getting smoke, dust, eraser particles, food, liquids, or fingerprints on your disks

-invest in an appropriate disk storage container

DON'T

-touch the exposed surfaces of the magnetic disks

-open the door of the disk drive when the indicator light is on

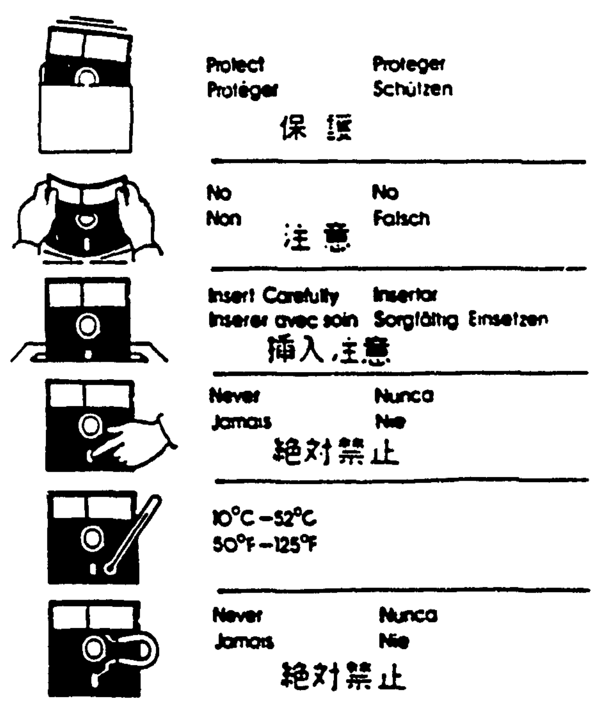
-put your disks on top of your disk drive

-try to clean the disk

-fold, bend or otherwise warp

-leave your disk exposed to the sun

DISKETTE CARE AND HANDLING INFORMATION



A NEW DISK

A new blank disk is not like a blank cassette tape. You cannot just put one in a disk drive and write information onto it. Before you can use a disk, it must be formatted. **Formatting** is a process which prepares a disk to receive and store data in a format your computer can understand.

DISK LIFE SPAN

Flexible disks last about 1 or 2 years, depending on how much they are used. Record the date you begin using a new disk on the disk label. This will give you some idea of when to discard your disk.

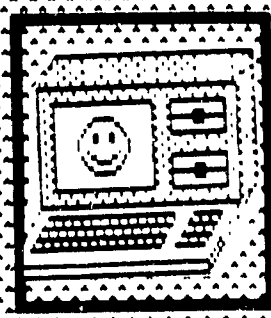
WRITE-PROTECT DISKS

There are some disks which you will regularly write information to, such as letters, memos, data base updates, etc. You will want to update these, change them or erase them.
Some of your disks on the other hand, are intended to be kept the way they are. In order to ensure that no one writes onto these disks, writing over or deleting information, you want to **write protect** the disks. All information on a write-protect disk can be read into memory but cannot be written onto.
To write-protect your disk, cover the write-protect slot or tab.

BACKING UP DISKS

Since it is possible to damage or lose a disk, you should get into the habit of regularly making back-up copies of important disks. The procedure is fairly simple and involves copying your files from one disk to another. You can either make a backup copy of a disk, which copies all files from one disk to another, or you can make a copy of one file. The important thing is to protect your work.

COMPUTERS
IN
EARLY CHILDHOOD



WORKSHOP 2

INFORMATION MANAGEMENT

i

WORKSHOP 2

INFORMATION MANAGEMENT

WHAT IS APPLEWORKS ?

Appleworks is an integrated computer software program which allows you to do:

-**word processing**
-**data base management**
-**spreadsheet analysis**

It is a system which has three different applications in it. You can manipulate text, organize information records, and do some number crunching. By integrated, we mean that the three applications are able to communicate together. For example, you can insert part of a data base and/or part of a spreadsheet into a word processed document

THE APPLICATIONS:

Word Processing: allows you to write documents such as letters, memos, reports, newsletters, etc

Data Base management allows you to work with information you usually keep in lists names and addresses, schedules, inventories, etc

Spreadsheet Analysis allows you to create information ,you normally put on a spreadsheet and manipulate with a calculator budgets, financial forecasts, income and expense statements, income tax calculations, etc.

THE TUTORIALS are designed so that you will be able to achieve the following:

load the appleworks program
format a blank disk
familiarize yourself with all three applications
produce a word processed document
produce a small database
produce a spreadsheet
cut and paste parts of the data base/spreadsheet into your document
print you final document

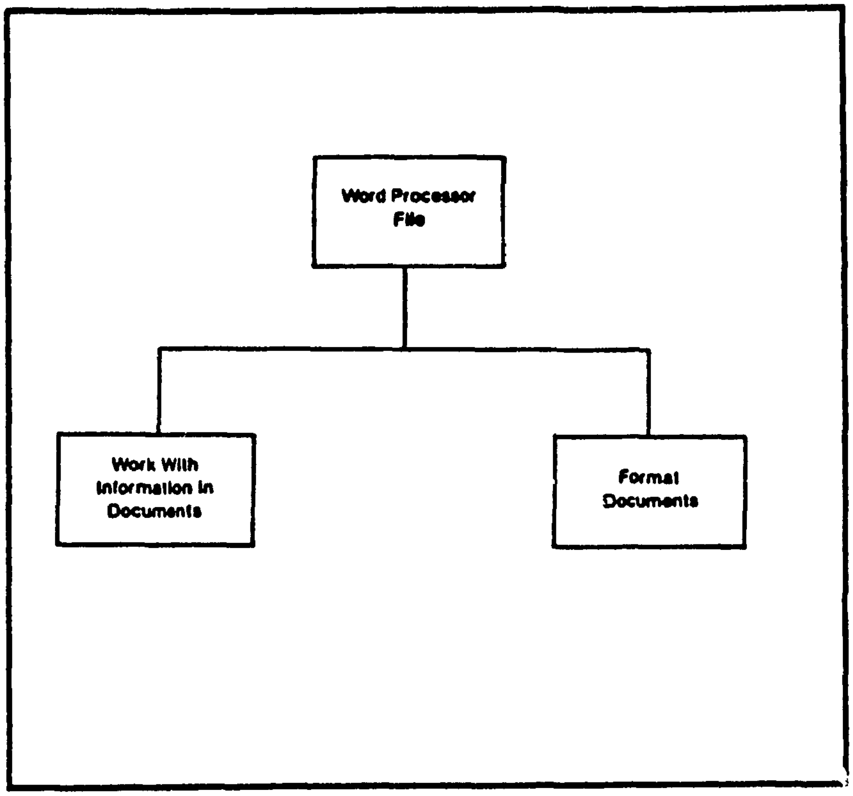
iii

THE MAIN MENU

```
 ..................................................
  __________________________
 |    Main Menu             |______________________
 |
 |
 |    1.  Add files to the Desktop
 |
 |    2.  Work with one of the files on the Desktop
 |
 |    3.  Save Desktop files to disk
 |
 |    4.  Remove files from the Desktop
 |
 |    5.  Other Activities
 |
 |    6.  Quit
 |
 |_________________________________________________
```

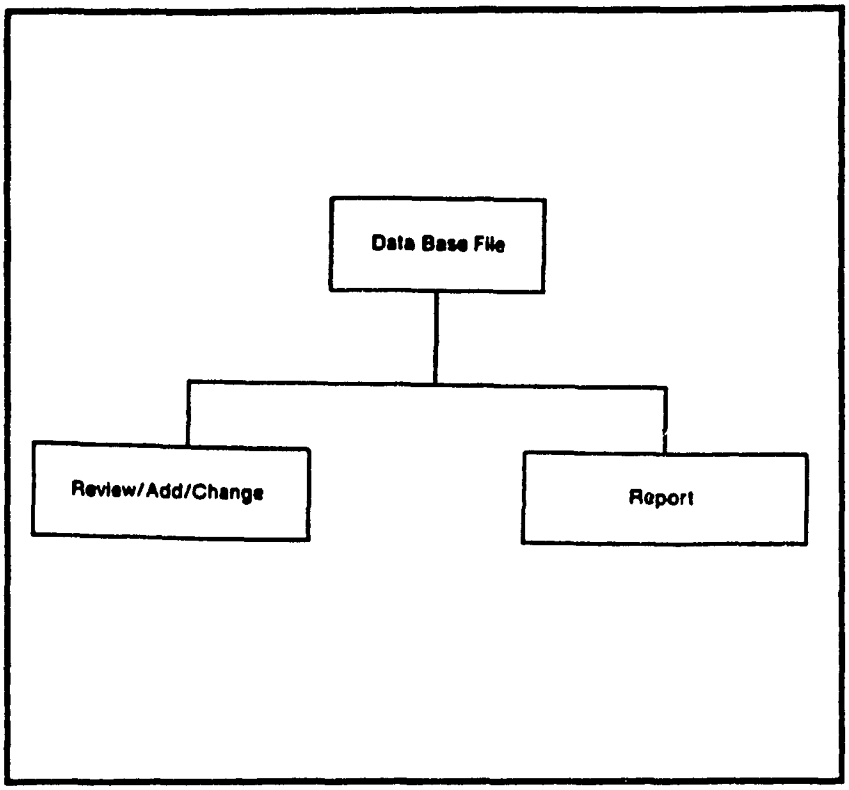
NOTES:

WORD PROCESSING MENU



NOTES:

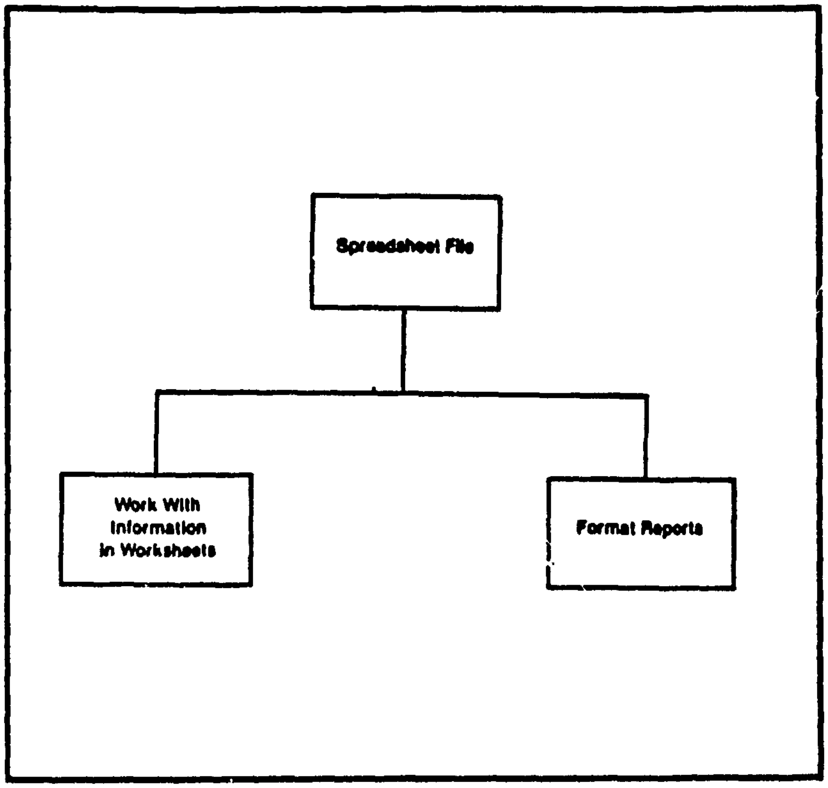
DATA BASE MENU



NOTES:

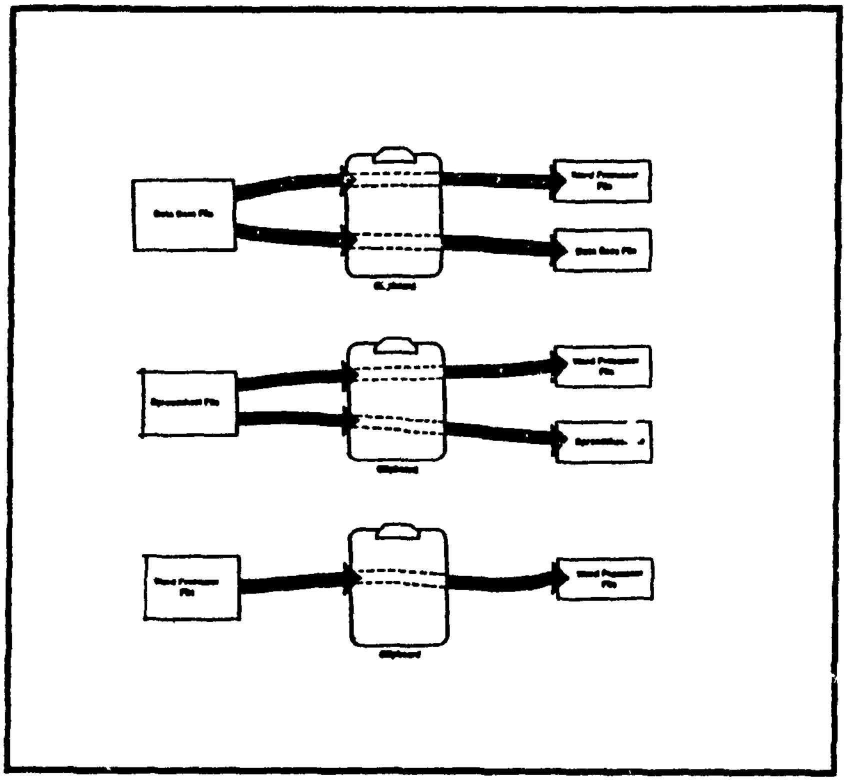
V1

SPREADSHEET MENU



NOTES:

CUT AND PASTE INTEGRATION



NOTES:

APPLEWORKS

TUTORIAL 1

WORD PROCESSING

TUTORIAL 1: WORD PROCESSING

This tutorial is self-instructional. It is always a good idea to work in pairs at the computer when learning a new program. Two brains are better than one and it's nice to have someone to share frustrations with. Follow the instructions together. Perhaps one can read while the other does the keyboarding, and then you can alternate roles. This will give you both experience on the computer.

The following tutorial will allow you to:

-create a new document
-type and edit information
-format your document
-save and print your document

REMEMBER:

It is important to regularly save your document. Should there be a power failure or if you unintentionally delete some of your work, then the document, as last saved, can be recalled. This is far better than losing all of your work.

As you go through the tutorial, don't be afraid of experimenting. We say that children learn through active exploration and discovery of their environment. Maybe we all learn that way Before we begin, look at your computer system. Does it have one disk drive or two disk drives? This is important to know. The computer must be told so it knows which disk drive to go to to read from and write to. If you have **2** disk drives the one on the bottom is disk drive **A** and the top one is disk drive **B**. **A** is used for the start-up and program disk, and **B** for your data disk. If you have only one disk drive you will have to use the same disk drive for both disks, removing and replacing as the system prompts you to do so.

NOTE: When the red light on your disk drive is on, do not do anything as the CPU is in the process of reading from or writing to disk.

The system disk is two-sided. Side 1 is the start-up and side 2 is the program disk. The start up disk is used only once at the very beginning to load the system and then the program disk is used for the rest of the time. It is the program with all the rules, that you will be using most of the time. A data disk is used as external memory, to save your personal data.

ENJOY

Check out the way the tutorial has been designed. The first two columns indicate the Procedure we will working on. The next column tells you step-by-step what is to be done and the final column indicates what has happened.

It is best to go step-by-step. If there is a problem don't hesitate to ask for help, from your partner, the trainer, or anyone else who happens to be around

PROCEDURE		YOU DO	THIS HAPPENS
1.	loading the Appleworks program	Insert the *start-up* disk into disk drive A Turn on the monitor usually found on top right Switch on the C.P U. There is a switch at the very back left of the CPU. If your system comes with a fan switch found on the left of the computer, switch it on as well.	the disk will load the set up and you will be instructed to remove it and insert the *program* disk.
		Insert the *program* disk and press *RETURN* key	You will be prompted for the date.
		Type in the date as directed You can use the arrow keys to move around the date Press the *RETURN* key	Appleworks Main Menu will appear

				4
2	format a blank disk	select option 5. Press the *RETURN* key	sub menu appears.	
		select option 6 to inform the computer whether you are using one or two disk drives. Select 1 or 2.	"Disk drives you can use	
		Press *ESCAPE*	back to sub menu	
		select option 5. Press the *RETURN* key	format process appears	
		name your disk don't leave any spaces. Press *RETURN* key and follow instructions.	the name will appear at the bottom of the screen	
		insert the data disk into the appropriate drive. This disk will now be referred to as your file disk		
		press *RETURN*	formating begins	
		If it is a completely blank disk, no problem but if there is already information on it	You will be asked if its okay to destroy it. If so type "yes"	
		Type yes.and Press *RETURN*	When complete you will get a message "formatting successful"	
		Follow instructions		
		press *ESCAPE*	back to sub menu	
		press *ESCAPE*	back to main menu	

3.	add a file to desktop	select *ADD FILES* *RETURN* select option 3 *RETURN* select *from scratch*	add files menu appears new file menu appears prompts for a name
		name your file (for example: Newsletter) Press *RETURN*	 file is now opened

CONGRATULATIONS: YOU'VE GOTTEN THIS FAR.

Before going on to work on the document, let's look at some of the most frequently used commands that you will want to play with as you go on.

To manipulate information around the screen Open-Apple (⌘) commands are used. The Open-Apple key is found on the immediate left of the spacebar You press down the open-apple key, and while holding it down press another key simultaneously A complete list of these keys (Appleworks quick reference) is provided at the end of tutorial 3 Refer to this as often as you need to As you type information into your document, experiment with these commands until you feel comfortable with them. Perhaps while one of you is typing, the other can read from the Quick Reference sheet. Alternate until you are both comfortable. **Have fun**. don't worry about making mistakes. It's very difficult to mess up, especially if you are saving your file frequently

You are to write a one-page newsletter to the parents of the children in your early childhood classroom Make up a fictitious daycare name and address Be creative.. you are to talk about some of the upcoming activities for the month of May, indicating that a birthday party will be held for all the children having a birthday in May You will also notify them about the recent fundraising campaign. Some of these funds will be used for a field trip to a "cabane a sucre" and the birthday party being planned Sign your letter as the two educators of that class.

Before you begin typing your document, go into printer options (Open-apple-O) to become familiar with the various options for setting up your document. The set up of margins, spacing, etc has already been established for you. Try it this way but later on you may wish to experiment

MOST FREQUENTLY USED COMMANDS

Open-apple-S	saves your file to disk
Open-apple-C	copies any part of your information to another place in the document, or copies to a clipboard (memory) where you can get it later to put into another spot or into another document. None of the original information is lost from the document. Your cursor must be at the beginning of the area you want copied
Open-apple-M	moves any part of your information to any place else in your document or into the clipboard. When moved, the original information if erased from its original spot
Open-apple-D	deletes a line at a time You use the arrow keys to determine how many lines you want to delete.
Control-Y	deletes from the cursor to the end of the line
Open-apple-E	toggles from one cursor type to another There are two kinds of cursors the blinking bar and the blinking rectangle. The blinking bar allows you to insert characters from the cursor position. The blinking rectangle is the overstrike cursor, which allows you to type over existing characters
Open-apple-1	brings you immediately to the very beginning of your file.
Open-apple-9	brings you immediately to the very end of your file
Open-apple-Q	shows you the desktop index which shows all your files presently in memory.
Open-apple-T	allows you to rearrange the tab setting.
arrow keys	move the cursor around the screen
escape key	brings you back to the last menu
shift key	allows you to capitalize a letter

Caps lock	allows you to capitalize all letter s	8
return key	begins a new line, or adds empty lines	
tab key	moves the cursor 5 spaces to the right	

Once you are happy with the layout of your document, make sure you *SAVE* it. You can now print it out...

setting up your document for printing	Open-apple-1 will take you to the beginning of your document
choosing printer options	open-apple-O will display all the printer options available to you Play around with the different choices in spacing, line length, boldfacing, etc.
Print	Press Open-apple-P select from the "beginning" select printer type
Make sure the printer is on	select 1 copy Press *RETURN*

Why don't you type your document now. Have **fun** with it. **experiment.**

How did it go?? There are fancier things Appleworks can do, but you have learned the basics of word processing. If you are interested in learning more, an Appleworks manual will give you the information you need.

Now, on to DATA BASE MANAGEMENT

APPLEWORKS

TUTORIAL 2

DATA BASE MANAGEMENT

TUTORIAL 2: DATA BASE MANAGEMENT

The following tutorial will allow you to:

-create a new data base file
-insert a number of records into the data base file
-organize the layout of your records
-design a report format
-print out a specific report from the data base

REMEMBER TO SAVE YOUR WORK FREQUENTLY

	PROCEDURE	YOU DO	THIS HAPPENS
1	loading the Appleworks program	If the system is not loaded, do so now using the procedure from Tutorial 1	
2	creating a data base file	choose "ADD FILES TO THE DESKTOP" press RETURN choose "MAKE A NEW FILE FOR THE DATA BASE press RETURN choose "from scratch" press RETURN	add files menu will appear you will be asked "from where" you will be prompted to type a name for this file.

3.	Naming your file	Type in the name for your file noting that you can use up to 15 characters (letters, numbers, perio`` and spaces) Remember not to leave blank spaces. Try to give your file a name that will indicate the type of information it will include as a memory trigger for the next time you wish to access that file. for example classlist data press RETURN	the name will appear at the bottom of the screen the records set-up form will appear
4.	setting up your categories	type in the following categories. use the overstrike cursor (see open-apple-E pg 5) to type over category 1 Press RETURN after each category name, including the last name (last first) date of birth address city phone number gender press "Escape" when you are satisfied with the filename and category names. press "space"	category names will appear as typed You will be prompted that the file doesn't contain any information and that you can begin inserting new records by pressing "space" first blank record appears

5	inserting records into the data base file Note: type last name first, then a comma followed by the first name ex. Jones, Mary	type information for each entry and press RETURN. Just press RETURN if you wish the entry to be blank make up the data as you go along. (Give three of the children a birhtday in MAY) After the last entry, press RETURN Continue in this way until you have 5 or 6 different records (children). When completed, press the "escape" key.	your entries will appear as typed. you are presented with the second blank record. You will be presented with all the new records displayed in Multiple-record layout.
6	Viewing your records	Using the "Open-apple-z allows you to zoom into single-record layout and out of it to multiple-record layout for different perspectives. press open-apple-You can toggle back and forth between the two layout types	presents you with the single record layout format.

7.	arranging your records	there are a number of ways to organize or reorganize your file. Let's try arranging them alphabetically. place the cursor on the last name Press open-apple-A choose the way you want the records arranged	 You will be asked how you wish arrangement to take place this will be done automatically
8.	creating a report	Make sure you are in the Review/add/change screen press open-apple-P choose create a new 'tables" format. type the name of the report and press RETURN	the report menu appears prompted for the name of the report you are presented with the Report Format display
9.	selecting certain records	you only want to select those records in your file which include MAY birthdays. Press open-apple-R This command allows you to select only specific records. Select only those records which include the word "MAY"	 these will be selected for you

10.	saving your file and your report format	Press Open-apple-S	your work will be saved to disk.
11.	Printing your report to the clipboard (so you can paste it in your word processor document later.	Press open-apple-P (to indicate you want to print the report	you will be prompted as to the desired destination
		Choose "clipboard", press RETURN	you will be prompted for the date
		type the report date, press RETURN	a message is displayed that the report is on the clipboard
		Press ESCAPE until you get back to the main menu	

12.	pasting DB information to your word processor document	go to Appleworks Main Menu choose "Add files to the desktop" choose the current disk (if you're using 1 disk drive. or choose a different disk (if you're using 2 disk drives select your previously designed document (Newsletter) Move your cursor to the place in your document where you would like your data base report to appear Press open-apple C choose "from clipboard"	main menu appears you are asked where to get the files from all files displayed your file appears. prompted as to where to copy from the copying is complete (cut and paste)
13,	Saving your document changes	press open-apple-S	your document has been saved, with the new addition

PRINT YOUR DOCUMENT OUT ..SEE WHAT IT LOOKS LIKE.

Now on to Spreadsheet Analysis

APPLEWORKS

TUTORIAL 3

SPREADSHEET ANALYSIS

TUTORIAL 3: SPREADSHEET ANALYSIS

The following tutorial should allow you to:

-create a new spreadsheet file
-format the spreadsheet
-establish standard values
-input data into the spreadsheet
-make standard calculations
-save your files
-cut and paste from your file
-print out your new document

REMEMBER TO SAVE YOUR WORK FREQUENTLY

A spreadsheet is divided into cells. Cells are intersections of rows and columns Rows are labelled numerically and columns are labelled alphabetically. Whatever you type goes into a cell. You will notice at the bottom left of your screen "A 1" which indicates the cell your cursor is on. Arrow keys move you from cell to cell.

Words are considered **labels** and numbers are considered **values**. As you type in a word or a number, the bottom left of the screen will indicated which mode you are in. Please feel free to experiment. **HAVE FUN.**

PROCEDURE	YOU DO	THIS HAPPENS
1. Loading the system (IF YOU'RE STARTING AGAIN)	follow directions from Tutorial 2 (loading)	The main menu will appear
2 Opening a new Spreadsheet file	Choose "Add files to the Desktop" and Press Return Choose "Make a new file for the spreadsheet and Press Return Choose from scratch Press RETURN Type in "DC. FUNDS" Press RETURN	Add files menu appears Spreadsheet menu appears You will be prompted to type a name for your new file SPREADSHEET appears
3 Saving your new file	Press Open-apple-S and follow the instructions	your file will be saved to disl
4 Setting up your spreadsheet format	Use the following diagram to help you. Notice the cells into which the labels are types	

```
File: dka                              REVIEW/ADD/CHANGE                    Escape: Main !
========A=========B=========C=========D=========E=========F=========G=========H====:
   1!                                  So and So Day Care Centre
   2!                                  Fund-raising Account
   3!
   4!             Donations            Booksale            Bottledrive          Totals
   5!
   6!December
   7!
   8!January
   9!
  10!February
  11!
  12!
  13!
  14!
```

5. Establishing standard values	Press Open-apple-V	standard values menu appea at the bottom of the screen
	choose value format and press RETURN	value format menu appears
	choose dollars and press RETURN	dollar format appears
	choose decimal to 2 places and press RETURN	
6 Inputting your data	use the following diagram to insert the correct numbers in each cell	

```
File: dka                              REVIEW/ADD/CHANGE                 Escape: Mair
========A=========B========C=========D=========E=========F========G=========H==
   1:                                  So and So Day Care Centre
   2:                                  Fund-raising Account
   3:
   4:           Donations              Booksale            Bottledrive          Totals
   5:
   6:December    $27.50                 $123.00              $83.27
   7:
   8:January     $12.10                  $27.50               $2.80
   9:
  10:February     $7.28                  $12.10             $127.50
  11:
  12:
  13:
  14:
  15:
  16:
  17:
  18:
--------------------------------------------------------------------------------
G10
```

7. doing the final calculations	go to cell A13 and type in the word totals: place your cursor in cell B13 and type the following value @sum(B6..B10) and press RETURN Repeat this step for each of cells D13 F13 and H13	the word totals appears the total for column B donations will appear all totals will appear

HAVE YOU GOT A MATCH?

8 Calculating totals	go to cell H6 and type in the following value. @sum(B6...F6). Press RETURN Repeat this step for each of H8 and H10	totals will be calculated and inserted in that cell

A good time to save your file.

```
File: dka                          REVIEW/ADD/CHANGE                Escape: Main
=======A========B========C========D========E========F========G========H===
  1:                               So and So Day Care Centre
  2:                               Fund-raising Account
  3:
  4:           Donations           Booksale            Bottledrive          Total
  5:
  6:December    $27.50             $123.00               $83.27            $233.77
  7:
  8:January     $12.10              $27.50                $2.80             $42.40
  9:
 10:February     $7.28              $12.10              $127.50            $146.88
 11:
 12:
 13:totals:     $46.88             $162.60              $213.57            $423.05
 14:
 15:
 16:
 17:
 18:
-------------------------------------------------------------------------------
115
```

9 cutting and pasting your spreadsheet to your original word processed document	Make sure your word processed document is on the desktop (OPEN-APPLE-Q) Have your spreadsheet on the screen. Place cursor at the very beginning of the spreadsheet Press Open-apple-P to indicate you want to print the report Press RETURN Choose the "clipboard" as the printing destination Press "RETURN" Press "RETURN" Press "spacebar" Press Open-apple-Q to see all the files on the desktop and select your word processed document. Press "RETURN"	Print menu will appear The cursor is placed on "All" Print destination menu will appear Prompt to name report or press RETURN you are notified that your report is on the clipboard your spreadsheet appears Your word processed document appears
10. changing page layout	Place your cursor where you will want to insert your spreadsheet. Press Open-apple-O and change left and right margins to zero to accomodate your spreadsheet report	

11. Merging	Press Open-apple-C Choose from the clipboard rearrange your document in its final format SAVE AND PRINT	offers you the copy from where menu your spreadsheet will be inserted into your documen'

Congratulations you've done it

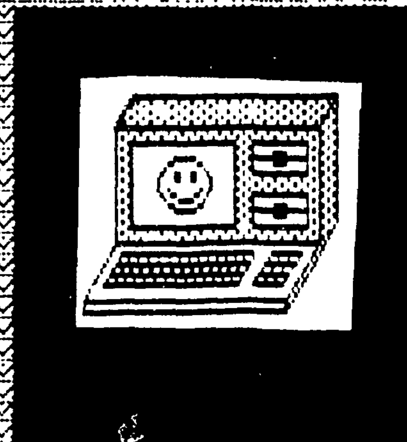
APPLEWORKS QUICK REFERENCE

Keyword	Keystroke	Word Processor	Data Base	Spreadsheet
Arrange	Ó-A	NA	Arrange or sort category	Arrange or sort rows
Blank	Ó-B	NA	NA	Blank out cells
Copy	Ó-C	Copy text	Copy records	Copy entries
Delete	Ó-D	Delete text	Delete records or report category	Delete columns or rows
Edit, Cursor Switch	Ó-E	Switch between insert and replace cursors	Switch between insert and replace cursors	Switch between insert and repla cursors
Find	Ó-F	Find text, page, or marker	Find records	Find entries or text
Group	Ó-G	NA	Add or remove group totals in a report	NA
Hard Copy	Ó-H	Print hard copy of current screen display	Print hard copy of current screen display	Print hard copy of current screen display
Insert	Ó-I	NA	Insert record, or previously deleted report category	Insert rows or columns
Justify or Jump	Ó-J	NA	Justify report category	Jump to other window
Calculate	Ó-K	Calculate page breaks	Define a calculated report category	Recalculate values
Layout	Ó-L	NA	Change record layout	Change cell layout
Move	Ó-M	Move text	Move records	Move rows or columns
Name Change	Ó-N	Change name of file	Change name of file, category, or report	Change name of file
Options, Printer	Ó-O	Display printer options	Display printer options	Display printer options
Print	Ó-P	Print text	Go to report menu, or print report	Print worksheet
Quick Change	Ó-Q	Switch to another file on the Desktop	Switch to another file on the Desktop	Switch to another file on the Deskt
Replace or Record Selection	Ó-R	Replace text	Change record selection rules	NA
Save	Ó-S	Save the current file to disk	Save the current file to disk	Save the current file to disk
Tabs, Totals, or Titles	Ó-T	Set tabs	Add or remove report category totals	Set titles
Edit Cell Contents	Ó-U	NA	NA	Edit cell contents
Value	Ó-V	NA	Set standard values	Set standard values
Window	Ó-W	NA	NA	Create windows
Clear	Ó-Y	Clear to end of line	Clear to end of entry	Clear to end of cell
Zoom	Ó-Z	Display format settings	Zoom to single-record or multiple-record layout	Zoom to formula display
Ruler	Ó-1 • • Ó-9	Move within file to beginning (1), end (9), or proportionally (2-8)	Move within file to beginning (1), end (9), or proportionally (2-8)	Move within file to beginning (1), en (9), or proportionally (2-8)
Help	Ó-?	Display help information	Display help information	Display help information
Cursor Move	Ó-← or Ó-→	Move cursor one word right or left	Change size of category	Scroll horizontally one screen displa
Cursor Move	Ó-↑ or Ó-↓	Scroll vertically one screen display	Scroll vertically one screen display	Scroll vertically one screen display

NA = Not applicable. The keystroke has no significance for this particular tool.
NOTE: Some of the Data Base keystrokes work for the Review/Add/Change screen; others for the Report Format screen.

COMPUTERS

IN



EARLY CHILDHOOD

WORKSHOP 3

COMPUTERS AND YOUNG CHILDREN

WORKSHOP 3

COMPUTERS AND YOUNG CHILDREN

COMPUTERS IN EARLY CHILDHOOD EDUCATION

On completion of this workshop the participants will be able to...

-Discuss relevant issues related to computers in early childhood education:

-developmental appropriateness
-gender differences
-sexist software
-divergent thinking
-learning theory
-creativity
-children with special needs
-adult attitudes
-etc.

-Explain how to go about purchasing the appropriate hardware

-List the criteria for the selection of developmentally-appropriate software for young children.

-Discuss the appropriate method for introducing the computer into the classroom

-Explain by way of example how computer activities can be incorporated into a developmentally-appropriate curriculum.

-Design a comprehensive experience for young children which would incorporate a pre-activity, computer activity and post activity.

-Evaluate a variety of available software

ISSUES

WHAT ARE SOME OF THE CONCERNS YOU HAVE ABOUT USING COMPUTERS WITH YOUNG CHILDREN?

Get together with a partner (just turn to the person on your right) and talk about some possible issues around the use of computers with young children. Don't hesitate to brainstorm think about things people have said to you, things you have seen in the media, your own gut instincts.

The trainer has a few more to add for discussion You may want to take note of these here A brief review of the literature which has come out within the last few years dealing with these issues and concern will be discussed For a full reference to these studies, please refer to appendix A

NOTES:

HARDWARE

CRITERIA FOR SELECTION

*USABILITY

*EXPANDABILITY

*RELIABILITY

NOTES:

HOW TO PURCHASE THE HARDWARE

Buying your computer system is a big decision There are usually a number of constraints that must be considered

?-how much to spend
?-what kind of system is best
?-how many are enough
?-where to buy the system

There are a number of systems on the market which are more or less appropriate to use with young children The **Tandy**, the **Commodore,** the **Apple 11 series**, and the **IBM PC** are the most commonly-used systems for young children These average 128K memory which is considered sufficient for the kind of software appropriate for the children and for your personal information management requirements

If one considers the criteria for selection we have already discussed, the Apple 11 series, either the **11+, 11E, 11C, or 11GS** seems to be the best buy, to date The **Apple** company still has a wider variety of appropriate software, is reasonably priced, and has the usability, expandibility and reliability you need

However you go about making your decision, the most important question to ask yourself is, **what kind of software do I want for the children?**

Looking through catalogues and especially consulting with software evaluation books (see Appendix E) will give you a good idea about what is considered **quality** software for preschoolers
A list of software manufacturers is provided in Appendix B of your manual

Let's look at a sample of software packages and who manufactures them

software	supplier
Jeepers Creatures	Apple, Atari
Stickybear series	Apple, Atari, Commodore 64
Dinosaurs	Apple, IBM, Acorn, Commodore 64

NOTES: ________________________________

____

____

____

____

____

____

CRITERIA FOR SOFTWARE SELECTION

Ask yourself if the software:

-represents appropriate **learning goals**
-can be used by a **preliterate** child
-holds the child's **interest**
-represents acceptable **ethical** values
-does not require extensive **adult assistance**
-uses high-resolution **graphics**
-has animated graphics
-has graphics **controlled** by the child
-uses success as positive **reinforcement**
-has no attention-getting negative reinforcers
-allows only **program keys** to be **active**
-allows the child to **exit** the program **easily**
-uses **keyboard** and/or peripherals
-has provision for copies or **replacement** disks

It is a good idea when thinking about purchasing a piece of software to borrow a copy for previewing.
The questions need to be asked, reflected upon and answered carefully
These are important questions and for purposes of discussion can be divided into three broad categories:

SOFTWARE SELECTION

MAJOR CRITERIA

*EDUCATIONAL ASPECTS

*EASE OF USE

*GRAPHICS AND SOUND

NOTES:

THE EDUCATIONAL ASPECTS:

When we are thinking about buying a software package, we must consider our educational goals

Is the software an appropriate use of the computer Some educational objectives are best met using a different medium Do the objectives of the program match your programming objectives Is the vocabulary used and the level of difficulty appropriate for your class Does the software lend itself to non-computer related activities. Does the package include **supportware** such as a teacher's guide and paper-based visuals, books or other learning materials for the children

EASE OF USE:

The disk should be labelled pictorially indicating what the software is The children should be able to select their software independantly Is it easy to load and begin playing with Does it respond quickly to commands so that the child is not spending too much idle-time Will the software ignore incorrect key punches How does the system offer reinforcement positive and negative. Does the software offer some happy sound to indicate success and little or nothing but wait when the response has been incorrect Does the software prompt the child to try again

GRAPHICS AND SOUND:

The children we deal with are considered pre-literate, that is to say that they are not yet expected to be able to read The software we use with them must not depend on the written word Graphics pictures, and sound must be used effectively, not only to replace the written word, but also to motivate, delight, and reinforce the children Does the software you are testing have an appropriate screen design. using high resolution graphics, animation, color Can you turn the sound off and on

Go through catalogues, visit computer stores, check software evaluation books Then call, write, fax the selected manufacturers A list of these manufacturers can be found in Appendix B of your manual

SOFTWARE CHECKLIST

Software tested ______________________________

Publisher ______________________________

Overall rating ______________________________

CRITERIA	YES
Represents appropriate learning goals	________
Can be used by child without reading skills	________
Holds child's interest	________
Represents acceptable ethical values	________
Does not require extensive adult assistance	________
Uses high-resolution graphics	________
Has animated graphics	________
Has graphics controlled by the child	________
Uses success as postive reinforcement	________
Has no attention-getting negative reinforcers	________
Allows only program keys to be active	________
Allows child to exit program any time with the escape key	________
Uses keyboard and/or external control	________
Has provision for copies or replacement disks	________

THE COMPUTER IN THE CLASSROOM

WHY IN THE CLASSROOM

The computer is an educational tool just as blocks, crayons, water, and puzzles are educational tools. The computer should be in the classroom as an activity centre just like the block centre, the reading centre and the art centre

WHERE IN THE CLASSROOM

When a centre is being designed, a model is selected to plan the physical environment (floor planning) The quadrant model (Rambusch model) is frequently used, because it is efficient and meets the needs of young children Let's look at it

1 **ACTIVE DRY**	2 **ACTIVE WET**
3 **QUIET DRY**	4 **QUIET WET**

Close your eyes and try to envision what your classroom looks like Where do you think the ideal location for the computer would be?

HOW TO INTRODUCE THE COMPUTER

As with any other centre, you want to separate it visually from the other centres, with low dividers A visual might be placed up on the wall over the computer indicating the centre's purpose. See the sample on the next page This type of visual is fairly easy to make, using a program such as **PRINT SHOP**. The computer system should be on a table or set of tables in such a way that the computer monitor is the the child's eye level The keyboard should be a elbow level Non-computer activities can be designed to help the children become familiar with the computer. (See Appendix D) Remember the computer "BOOTING" song?

HOW TO INTRODUCE NEW SOFTWARE

As you purchase new software, introduce it to the children at group time Once everyone is familiar with what it looks like and what it can do, it can then be placed in the display board, for free-selection. Each piece of software should have an icon on it to indicate what it is Some labels on software have a distinctive graphic on it already A sample of what this might look like is also presented on the next page

High Scope has developed a video explaining quite nicely, how to introduce the computer and new software to the children Let's watch it now

NOTES: ______________________________

____

____

____

____

____

INTEGRATING THE COMPUTER INTO THE EARLY CHILDHOOD CURRICULUM

When we do programming for young children, we usually go through the following **curriculum planning process**:

STATEMENT OF PHILOSOPHY

GOAL STATEMENTS

STATEMENT OF OBJECTIVES

SEQUENCING OF ACTIVITIES

TEACHING STRATEGIES

MOTIVATION

IMPLEMENTATION

REINFORCEMENT

EVALUATION

Based on philosophy and knowledge of development, we design for the <u>WHOLE CHILD</u>.

ACTIVITY PLAN SAMPLE

EXPERIENCE TITLE :

OBJECTIVES :

SEQUENCE OF ACTIVITIES :

ACTIVITY 1 :
(MOTIVATION)

ACTIVITY 2 :
IMPLEMENTATION

ACTIVITY 3 :
REINFORCEMENT

EVALUATION :

Recall the piece of software the trainer shared with you earlier for evaluation How might you plan to incorporate this software into your curriculum plan? Think whether you would use it as a motivating activity, the primary activity, or the reinforcing activity. Try to design an experience using a media-mix Brain storm with a colleague and try to create something on the following activity plan.

Always remember that this model is being used as a sample. There are a number of activity plan models.

EXPERIENCE TITLE:

OBJECTIVES:

SEQUENCE OF ACTIVITIES:

PRE-ACTIVITY (NON-COMPUTER):

COMPUTER ACTIVITY:

POST-ACTIVITY (NON-COMPUTER):

EVALUATION:

HANDS-ON SOFTWARE EVALUATION

Using blank software evaluation checklists in Appendix C, let's evaluate a number of software packages, for practise and to get familiar with the kind of software, out there on the market.

TAKE NOTE.

Let's review the **APPENDICES** provided at the end of your manual so you will know what information is available to you. You may need it for your own future planning

Appendix	A	Bibliography of Related Research
Appendix	B	List of Software Evaluations Addresses of Software Manufacturers
Appendix	C	Software Evaluation Checklists
Appendix	D	Samples of Related Activities
Appendix	E	List of Recommended References

APPENDIX A

BIBLIOGRAPHY OF RELATED RESEARCH

BORGH, K. & Dickson, W., "Two Preschoolers Sharing One Microcomputer: Creating Prosocial Behavior with Hardware and Software", In Campbell & Fein (eds.). **Young Children and Microcomputers**. Englewood Cliffs, NJ, 1986

LIPINSKI, J., Nida, R., & Watson, A., "The Effects of microcomputers on Young Children An examination of free-play choices, sex differences, and social interactions.", **Journal of Educational Computing Research**, 1986,2, 147-168

SWIGGER,K., & Swigger, B.K., "Social Patterns and Computer Use Among Preschoolers" **AEDS Journal**, 1984,**84**17(3), 33-41

ZIAJKA, A., "Microcomputers in Early Childhood Education? A First Look", **Young Children**, 1983 38(5), 61-67

WRIGHT, J., & Samaras, A.S., "Play Worlds and Microworlds" In Patricia Campbell & Greta Fein (eds), **Young Children and Microcomputers**, Englewood Cliffs, NJ, 1986

CLEMENTS, D.H., **Computers in Early and Primary Education**, Prentice Hall, Inc., Englewood Cliffs, NJ, 1985

DAVIDSON, J.I., **Children and Computers Together in the Early Childhood Classroom**, Delmar Publishing, Inc., 1989

HOHMANN, C., **Young Children and Computers**, High Scope Press, Ypsilanti, Michigan, 1990

APPENDIX B

LIST OF EVALUATED SOFTWARE

LIST OF SOFTWARE MANUFACTURERS

Many different pieces of software are mentioned throughout the book. They are used in discussions of how children use computers. The following software list is intended to describe software so that readers can understand references in the text dealing with the software. **This list is not meant as an endorsement.** To see criteria for selecting appropriate software, read Chapter 3.

Note: The addresses of the manufacturers appear at the end of the list of software.

ASTRO-GROVER

Description: Five games that provide practice in counting, adding and subtracting. The graphics and animation have an outer space motif.

Company: CBS software

Computer: Commodore 64, Apple (the animation is better on Commodore)

Print capacity: No

Keys needed: Number keys, and on the Commodore a 17-key sequence needed for loading. The program uses a keyboard overlay once it is loaded.

Aides needed: A pictorial menu depicting the levels to supplement the written one. The program must either be preloaded or have colored labels on keys and a color coded guide to ease loading.

Skills needed: Must be able to count rationally

BALD-HEADED CHICKEN

Description: This program is formatted like a book. It has a title page and four picture pages. Children can pick up and move any of the characters or objects in the picture. Additional characters can be added as well as words. The story can be saved, and/or printed.

Company: Collarmore Educational Publishing, D. C. Heath & Company

Computer: Apple with 128K memory

Peripherals: Can use the keyboard or any of these: mouse, joystick, or koala pad. The keyboard makes the program much slower; use with peripheral is recommended.

Print Capacity: Color or black and white

Keys needed: Arrow keys (to move the cursor if peripheral not being used)

BANK STREET WRITER

Description: A children's word-processing program. The editing functions are accessed with the [Esc] key. The program can be used for free typing or taking dictation.

Company: Broderbund Software

Computer: Apple

Print Capacity: Black and white (many command steps needed to print)

Keys Needed: No specific keys for free typing

BIG BIRD'S FUN HOUSE

Description: A memory game with five levels. Children try to guess which Muppet characters are hiding.

Company: CBS Software

Computer: Commodore 64

Print Capacity: No

Keys Needed: There is a 16-key sequence for loading. Once the computer is loaded a keyboard overlay is used.

Aids needed: Preload or have colored labels on keys and a colored guide to ease loading. Picture menu for levels needed to supplement written one on program.

BUMBLE GAMES

Description: Grid plotting activities from simple to complex. The first two levels do not require reading.

Company: The Learning Company

Computer: Apple

Print Capacity: No

Keys Needed: For Levels 1 and 2, the keys needed are the numerals 1-7 to choose a game, and "A," "B," "C," "D."

Aides needed: Picture guide to supplement written menu for levels.

CHARLIE BROWN'S ABC'S

Description: This is an animated alphabet book. When the children presses a letter, they get the letter and a word and a picture of something starting with that letter on the screen. Pressing the letter again animates the picture. Only half of the alphabet is on each side of the disk.

Company: Random House Software

Computer: Apple, Commodore 64, IBM jr.

Print Capacity: No

Keys needed: Any letter keys on that side of the disk will work.

Aids needed: Perhaps a sheet to show which letters are on which side of the disk.

COLOR ME

Description: Children use a mouse, joy stick, or Koala Pad to draw pictures. Text can be added. Children can change colors, size of crayon, use spray paint, or use a fill option. The program can be used at a variety of skill levels.

Company: Mindscape

Computer: Apple, Commodore 64 (128K memory required), IBM

Peripherals: One of these is required—mouse, joystick, or koala pad

Print Capacity: Color or black and white (color preferable)

Keys Needed: "J," "K," or "M" to indicate type of peripheral

CREATURE CREATOR

Description: Children can make a creature by selecting arms, legs, heads, and bodies. They can make the creature dance with single keystrokes, or program a dance. There is also a game to recreate the creature's dance. Making and moving are simple. Programming the dance requires understanding the meaning of a grid.

Company: Design Ware

Computer: Apple, IBM

Peripheral: Joystick is optional.

Print Capacity: No

Keys needed: Spacebar, [Return], "R," "T," "W," "G," "H," "S," and arrows

Aids needed: Rebus pictures for moving commands

Skills: For programming dance and playing game, child must understand grid.

DELTA DRAWING

Description: A drawing program that allows children to move the cursor in straight line segments, "wrap" the line so it goes off the end of the screen and comes up on the other side, fill parts of the picture, and use five colors. Single letters are used for commands for example—D (draw), L (left), M (move without drawing) E (erase). As the picture is drawn, commands are stored for later editing. Pictures can be printed. Similar to LOGO. This can be used at a more complex level as well.

Company: Spinnaker Software Corp.

Computer: Apple, IBM Jr., Commodore 64

Print capacity: Yes

Keys Needed: "D," "R," "L," "M," "E," "C," 1-5, and additional keys for more advanced commands

Aides needed: Rebus picture menu depicting command letters and their uses

DINOSAURS

Description: This program offers five dinosaur games: matching dinosaurs, classifying by food type, classifying by habitat, counting dinosaurs, and matching dinosaurs to their written names. The program requires no reading. Excellent self-explanatory picture menus and clues. Animation is used to reinforce correct responses. Incorrect answers receive no response.

Company: Advanced Ideas

Computer: Apple, Commodore 64, IBM (128K memory required)

Keys Needed: [Return] key and arrow keys

EXPLORE-A-STORY SERIES

A software series that is presented like books. Each has a number of pages. Children can pick up and animate characters and objects. Words can be added. Pictures can be printed. Some of the titles in the series are **Bald-Headed Chicken, Lima Bean Dream, What Makes a Dinosaur Sore?** (See **Bald-Headed Chicken** and **What Makes a Dinosaur Sore?** for individual descriptions.)

Company: Collarmore Educational Publishing, D. C. Heath & Company

Computer: Apple (128K memory required)

Print Capacity: Yes

FACEMAKER

Description: Children use the spacebar and [Return] key to select features and construct a face. The children can then use six letters to move the features of the face. They can "write a program" for a series of movements. A memory game is available that is too fast for many young children.

Company: Spinnaker Software Corp.

Note: The [Caps Lock] key must be down for the moving part of the program to run. This version has been discontinued a description of the newer version (Golden edition) appears below

Computer: Apple, IBM PC & jr., Commodore 64, Atari

Print Capacity: No

Keys Needed: Spacebar, [Return], "1," "2," "W," "C," "E," "T," "S," "F"

Note: The [Caps Lock] key must be down to use the moving part of the program.

Aids needed: Rebus menu to show which number to press for making and moving parts of the program, and to illustrate letters for moving the face

Note: The introductory questions can be bypassed by pressing "1" when they appear.

FACEMAKER GOLDEN EDITION

Description: This is an updated version of **Facemaker**. It begins with a demo that can be ended by pressing the [Return] key, but the demo is slow to end. Compared to the original version, the menu for features is clearer, bodies, and accessories are available. Two new movements—crossed eyes and dancing—are added, as well as a printing option.

Company: Spinnaker Software Company

Computer: Apple, Amiga

Print Capacity: Yes

FREDDIE FROG

Description: A program available on PLATO that runs on a main frame computer. This uses a touch screen. The children touch a spot on the screen and Freddie Frog will jump where they touch. Later they must touch where he has jumped.

JUGGLE'S RAINBOW

Description: Three games that explore right/left, and up/down by adding a design to the screen to the side that corresponds to the side of the keyboard that is touched. At the beginning, the designs respond to where the child touches, then the child is expected to touch where the clues on the screen indicate. If the child completes the drill, then touching the screen creates a butterfly, rainbow, or windmill. Touching the spacebar allows children to advance to picture and bypass the drill. Children are sometimes confused with the menu and believe that "4" will let them make a question mark; it really gets them into instructions.

Company: The Learning Company

Computer: Apple, IBM, Commodore 64

Print Capacity: No

Keys needed: 1-3 to pick game, "4" for instructions and to cancel instructions that are accidentally entered

Note: The [Caps Lock] key must be down for this program to work.

KINDERCOMP

Description: This program includes six games: a drawing program using the arrows with a variety of colors; an option that repeats symbols typed; one that presents a name typed in many formats; and three drill and practice pieces involving uppercase/lowercase matching, shape matching, and finishing a sequence of numbers.

Company: Spinnaker Software Corp.

Computer: Apple, IBM PC & jr., Commodore 64, Atari

Keys Needed: 1-6 to pick options, for drawing—"F," "S," "B," "W," spacebar, and [Return] key

Aids needed: Picture menu to supplement written menu on program

Peripherals: Can use joystick

KIDWRITER

Description: Children can select from a variety of backgrounds and 100 objects to make a picture. Children can alter the size, color, and location of each object before moving to the next one. Children can invent stories as they move the character. Text can be added. Once the text is saved, it can not be edited.

Company: Spinnaker Software Corp.

Computer: Apple, Commodore 64, IBM PC & jr.

Print capacity: Black and white, and color

Keys Needed: "S," "C," "B," "F," "P," "S," "N," "M," "D," and arrow keys. The [Caps Lock] must be down for this program to work.

Aids needed: Picture menu to supplement written one on program

Skills needed: Ability to use a multistepped menu

LETTER-GO-ROUND

Description: Children use the spacebar to stop the ferris wheel and match upper- and lowercase letters, and to make three-letter words. Sesame Street characters used in the animation.

Company: CBS Software

Computer: Commodore 64, Atari

Print capacity: No

Keys needed: Commodore has a 16-key sequence for loading. Keyboard overlay used once the program is loaded.

Aids needed: Either preload the Commodore version or color-code the loading keys and provide a rebus guide for loading.

MAGIC CRAYON

Description: The children use the arrow keys to move the cursor horizontally, vertically, and diagonally. A variety of colors may be used. Pictures may be saved.

Company: C & C Software

Computer: Apple

Print Capacity: Color or black and white

Keys needed: Must type name to enter, arrow keys, [Return] key, "R" (remember), "P" (picture)

Aids needed: Stickers on the sides of keys for diagonal arrows, these come with the software, and a rebus menu for how to find colors. Later may want to add "how to save" and "retrieve" pictures to the rebus menu.

MANY WAYS TO SAY I LOVE YOU

Description: Children design their own "greeting card." They use the spacebar and [Return] key to select backgrounds, characters, borders, and music to go with the message. The card can be saved. When it is recalled, it is rolled up. It unrolls, and the characters are animated as the music plays.

Company: CBS Software

Computer: Apple, Commodore 64 (the animation is significantly better on the Commodore version)

Print Capacity: No

Keys Needed: [Space] bar, arrows, and [Return] key

Skills needed: Ability to move between a variety of menus

MASK PARADE

Description: Children can create masks and other costume accessories by selecting the designs they wish to combine. Once a choice has gone by, the child must go through all the other options to see it again.

Company: Springboard

Computer: Apple, IBM PC & jr., Commodore 64

Print capacity: Color or black and white

Peripheral: A joystick is optional.

Keys Needed: Spacebar, [Return] key, "I," "J," "K," and "M." The spacebar and [Return] key are used in the opposite way from many other programs. The [Return] moves the cursor through the menu and the spacebar registers the choice.

Aids needed: Arrows added to front edge of "I," "J," "K," and "M," to indicate direction, or a rebus card to use with the keys

NEWSROOM

Description: A program that allows you to create a newspaper. This can not be used independently by children.

Company: Springboard

Computer: Apple, IBM PC, Commodore 64/128

PEANUTS MAZE MARATHON

Description: Children move through a maze on the screen. When the maze is completed, the Snoopy characters will be animated. Simple mazes are on one side of the disk; more complex ones are on the other side.

Company: Random House Software

Computer: Apple, Commodore 64, IBM jr.

Print capacity: No

Peripherals: Joystick optional, but it makes the movement of the cursor smoother.

Keys Needed: [Return], and arrows if using keyboard

Aids needed: Indication on disk label to show which side of the disk has easy, and which side has hard mazes

PRINT SHOP

Description: A program that allows user to create a banner, sign, or greeting card. This can not be used independently without first having many repetitions with adult help.

Company: Broderbund

Computer: Apple, IBM PC & jr., Macintosh, Atari

Print capacity: Yes

PRIMARY EDITOR

Description: A word-processing program for children. The print is large. Stories can be saved and edited.

Company: IBM Educational Systems

Computer: IBM PC & jr. (requires 128K memory)

Print capacity: Yes

Keys Needed: Must type name and number to enter

Aids needed: A rebus guide listing the steps to enter would be helpful.

STICKYBEAR ABC

Description: When using this program, the child presses a letter, and an animated picture of something starting with that letter appears. There are two different pictures for each letter.

Company: Weekly Reader Software

Computer: Apple, Atari, Commodore 64

Print capacity: No

Keys Needed: Any key pressed will get a response.

STICKYBEAR BOP

Description: This is like a video arcade game. Children use a seesaw-like lever to launch balls into the air to shoot down objects.

Company: Weekly Reader Software

Computer: Apple, Atari XL, Commodore 64

Print capacity: No

Peripheral: Joystick required

TALKING SCREEN TEXT WRITER

Description: This program allows user to type in text and have the computer's word synthesizer "read" the text. Can be used at a much more complex level as well.

Company: Computing Adventures Ltd.

Computer: Apple

Print Capacity: Yes

Peripherals: Voice synthesizer

Aids needed: Teacher will need to load the program and provide a rebus menu for getting it to talk.

TASMIN TURTLE CONTROL SOFTWARE

Description: Logo software for controlling the Terrapin Turtle robot

Company: Flexible Systems

TURTLE TOT CONTROL SOFTWARE

Description: Logo software for controlling the Turtle Tot robot

Company: Harvard Associates

TOYBOX

Description: Children can create a picture. Each key will place a different shape, color, or special effect on the screen, the placement of the objects is random.

Company: Data Integration Services, Corp.

Computer: Commodore 64, Apple (128K required)

Print capacity: No

Keys Needed: Any key will get results.

WHAT MAKES A DINOSAUR SORE?

Description: This is formatted like a book. There is a title page and seven picture pages. Children can pick up and animate the characters and objects on the screen. Additional characters can be added as well as words. Stories can be saved and/or printed.

Company: Collarmore Educational Publishing, D.C. Heath & Company

Computer: Apple with 128K memory

Peripherals: Can use the keyboard or any of these: mouse, joystick, or koala pad. The keyboard makes the program much slower; use with other peripheral is recommended.

Print Capacity: Color or black and white

Keys needed: Arrow keys (to move the cursor if peripheral not being used)

ADDRESSES OF SOFTWARE MANUFACTURERS

Advanced Ideas, Inc.
2550 Ninth Street
Berkeley, CA 94710
(415) 526-9100

Broderbund Software
P.O. Box 1294
San Rafael, CA 94913-2947
(415) 479-1185

C&C Software
5713 Kentford Circle
Wichita, KS 67220
(316) 683-6056

CBS Software
CBS INC
One Fawcett Place
Greenwich, CT 06836
(203) 622-2500

Collarmore Educational Publishing
D. C. Heath & Company
125 Spring Street
Lexington, MA 02173
(800) 225-1149

Computing Adventures Ltd.
P.O. Box 15565
Phoenix, AZ 85060
(602) 954-0293

Data Integration Services Corp.
1728 K Street, NW, Suite 814
Washington, DC 20006
(202) 785-8585

Design Ware, Inc.
185 Berry Street
San Francisco, CA 94107
(415) 546-1866

Flexible Systems
219 Liverpool Street
Hobart, Tasmania
Australia 7000

Harvard Associates
1260 Beacon Street
Sommerville, MA 02143
(617) 492-0660

IBM Educational Systems
P.O. Box 2150
4111 Northside Parkway, NW
Atlanta, GA 30055
(800) 426-2468

The Learning Company
545 Middlefield Road, Suite 170
Menlo Park, CA 94025
(800) 852-2255

Mindscape, Inc.
3444 Dundee Road
Northbrook, IL 60062
(312) 480-7667

Random House Software
400 Hahn Road
Westminster, MD 21157
(800) 638-6460

Spinnaker Software Corp.
1 Kendall Square
Cambridge, MA 02139
(800) 826-0706

Springboard
7808 Creekridge Circle
Minneapolis, MN 55435
(612) 944-3915

Weekly Reader Software
245 Long Hill Road
Middletown, CT 06457
(800) 852-5000

APPENDIX C

SOFTWARE EVALUATION CHECKLISTS

SOFTWARE CHECKLIST

Software tested ______________________________

Publisher ______________________________

Overall rating ______________________________

CRITERIA	YES
Represents appropriate learning goals	________
Can be used by child without reading skills	________
Holds child's interest	________
Represents acceptable ethical values	________
Does not require extensive adult assistance	________
Uses high-resolution graphics	________
Has animated graphics	________
Has graphics controlled by the child	________
Uses success as postive reinforcement	________
Has no attention-getting negative reinforcers	________
Allows only program keys to be active	________
Allows child to exit program any time with the escape key	________
Uses keyboard and/or external control	________
Has provision for copies or replacement disks	________

SOFTWARE CHECKLIST

Software tested ______________________________

Publisher ______________________________

Overall rating ______________________________

CRITERIA	YES
Represents appropriate learning goals	____________
Can be used by child without reading skills	____________
Holds child's interest	____________
Represents acceptable ethical values	____________
Does not require extensive adult assistance	____________
Uses high-resolution graphics	____________
Has animated graphics	____________
Has graphics controlled by the child	____________
Uses success as postive reinforcement	____________
Has no attention-getting negative reinforcers	____________
Allows only program keys to be active	____________
Allows child to exit program any time with the escape key	____________
Uses keyboard and/or external control	____________
Has provision for copies or replacement disks	____________

SOFTWARE CHECKLIST

Software tested ______________________________

Publisher ______________________________

Overall rating ______________________________

CRITERIA	YES
Represents appropriate learning goals	________
Can be used by child without reading skills	________
Holds child's interest	________
Represents acceptable ethical values	________
Does not require extensive adult assistance	________
Uses high-resolution graphics	________
Has animated graphics	________
Has graphics controlled by the child	________
Uses success as postive reinforcement	________
Has no attention-getting negative reinforcers	________
Allows only program keys to be active	________
Allows child to exit program any time with the escape key	________
Uses keyboard and/or external control	________
Has provision for copies or replacement disks	________

APPENDIX D

NON-COMPUTER RELATED ACTIVITIES

BUILD A COMPUTER

Why?

- To use and hear computer vocabulary
- To encourage children to look more closely at the computer and use the information they have learned
- To encourage small-muscle development
- To allow children to work cooperatively
- To encourage creativity
- To encourage problem solving

What Is Needed?

Unit blocks
Pieces of cardboard shaped like a monitor laminated or covered with clear contact paper
Heavy yarn or string (to use as cables)
Cardboard disks
Paper cutouts of the keyboard (lamented)
Old computer paper
Cutouts for knobs and switches
Scrap paper
Markers
Masking tape
Colorforms
A computer in the classroom to refer to

How?

Encourage the children to use the blocks and other props to build a computer like the one in the classroom. The teacher can stimulate play by asking questions such as:
"What parts do we need to make?"
"What shape is the monitor? the computer? the disk drive? the printer?"
"Which part is largest?"
"How does the information get from the disk drive to the keyboard? from the keyboard to the monitor?"

Children can uso the scrap paper and markers to make the red light, the apple sign, or other details that they need. Children can then use the Colorforms to make a picture on the monitor. (It is best to find Colorforms that in some way resemble the program your children know: for example, a variety of colored lines for **Magic Crayon** or **Delta Draw**, or facial feature Colorforms for **Facemaker**.) Children can also write stories or draw pictures on the printer paper to represent the computer's printer output.

Making It Your Own:

If appropriate Colorforms are not available, the children can use markers to draw on the laminated monitor screen. Drawings can be erased with a damp cloth or sponge.

Going Beyond:

Use a variety of boxes instead of blocks, and let the children make their own computer to take home.

Use the box computers to make a classroom computer store. Make other kinds of computers as well as micros when the class is discussing the many uses for computers.

For older children, provide keyboard sheets with blank keys. Let the children fill in the appropriate letters by looking at the computer or a computer picture.

Instead of using paper keyboards, let the children use letter blocks to add the keys to their block computers.

With Gratitude:
Davidson, Jane, I.,
Children and Computers Together in the Early Childhood Classroom
Delmar Publ., 1989

ACTIVITIES TO TEACH ABOUT COMPUTER PARTS

COMPUTER EASEL

Why?

To use and strengthen knowledge of parts of a computer

- To allow for creativity
- To encourage small-muscle development

Making a picture at the "computer easel."

What Is Needed?

An easel
2 six-cup muffin tins
12 craypas (oil based crayons) [markers or crayons could also be used]
A small flat box with a slit in the side as a disk drive
A cardboard disk
Yellow construction paper cut into the shape of a monitor and keyboard with a dark green screen
Blocks or a small table on which to rest the muffin tin
Number circles to show the order in which to turn on the machine

How?

During free play, the children can come up and make a picture on the easel computer. Teachers can reinforce the words for the parts of the computer. The children can load the cardboard disk and push the buttons to start the easel computer, as they would on the real computer.

(Note: It is interesting to observe that most 4-year-olds do all their drawing on the screen part of the paper. Many of the drawings resemble the programs that are in use in the classroom.)

With gratitude:
Davidson, Jane, I.,
Children and Computers Together in the Early Childhood Classroom
Delmar Publ., 1989

APPENDIX E

RECOMMENDED REFERENCES

Beaty, J.J. & Tucker, W.H., **The Computer as a Paintbrush.** Merrill Publishing Co., Columbus, Ohio, 1987

Buckleitner, W., **1989 Survey of Early Childhood Software.** High Scope Educational Research Foundation, Ypsilanti, Michigan, 1989

Clements, D.H., **Computers in Early and Primary Education.** Prentice Hall, New Jersey, 1985

Davidson, J.I., **Children and Computers Together in the Early Childhood Classroom.** Delmar Publishing Inc., Albany, New York, 1989

Haugland, S.W. & Shade, D.D., **Developmental Evaluations of Software for Young Children -1990.** Delmar Publishing Inc., Albany, New York 1990

Hohmann, C., **Young Children and Computers.** High Scope Press, Ypsilanti, Michigan, 1990