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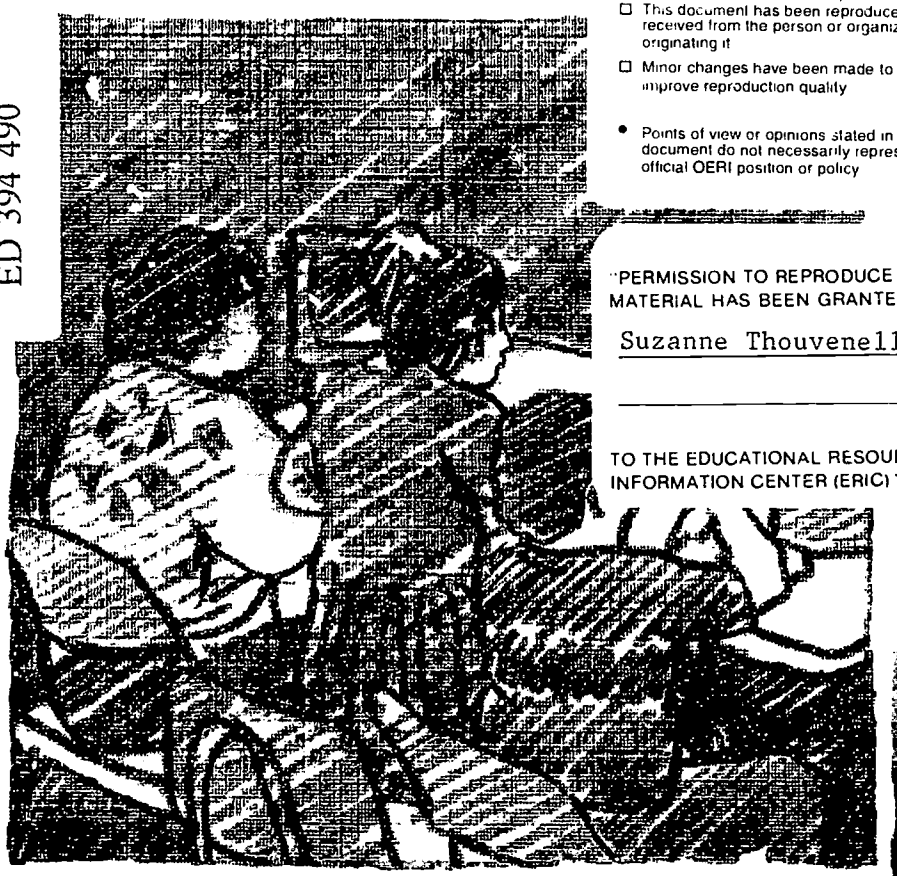
ABSTRACT

This report confirms many of the recommendations offered in the 1990 report and offers updated guidance in these areas. Recommendations include practical teaching activities for use with children, training and support strategies for teachers, and ways to involve parents and volunteers. A summary of the recommendations is followed by information on the Head Start International Business Machines (IBM) Partnership Project (a joint effort of the Head Start Bureau and IBM); a rationale for computers in the classroom; organization of the computer learning center; the process of introducing children to computers; the process of training and supporting teachers; ways to involve parents and volunteers; and characteristics of successful Head Start program implementation. Appendices include a Human Development Services Head Start Information Memorandum; descriptions of hardware and software 1990 and 1994; participating organizations; technology readiness self-assessment questionnaires; and diagrams of computer placement and equipment organization. (AEF)



Computers in Head Start Classrooms

Recommendations from the Head Start/IBM Partnership Project

2nd Edition
(Includes 1994 Update)

Computers in Head Start Classrooms

Recommendations from the Head Start/IBM Partnership Project

Compiled and Edited by the Staff of

MOBIUS Corporation

Alexandria, Virginia

March 1990, December 1994

For further information about implementing the Computer Learning Center as a curriculum enrichment module in your Head Start classroom, call MOBIUS Corporation toll-free at **1-800-426-2710**.

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Head Start Grantees

Action Head Start
Winder, Georgia

Beauregard Community Action Association Head Start
DeRidder, Louisiana

Cardinal Spellman Head Start
New York, New York

Cold Spring Family Center
Baltimore, Maryland

Community Action Lexington-Fayette County, Inc.
Lexington, Kentucky

Economic Opportunity Planning Association of Greater Toledo
Toledo, Ohio

Home Education Livelihood Program (H.E.L.P.)
Las Cruces, New Mexico

Metro Delta Head Start
Baltimore, Maryland

Montgomery County Community Action Agency Head Start
Dayton, Ohio

St. Bernardine's Learning Center
Baltimore, Maryland

St. Veronica's Head Start
Baltimore, Maryland

There is a growing awareness
and perhaps insistence
that computers have a place
in the early education curriculum.

Information** and **experience
will help us meet this challenge.

Foreword

Almost seven years have passed since the Head Start/IBM Partnership Project was begun. Four years ago Computers in Head Start Classrooms, the final report of this project, was published. Since then many changes have taken place in the area of technology. For most early childhood educators these advances outpace our abilities to understand and determine how they apply to our work with young children. There is a growing awareness and perhaps insistence that computers have a place in the early education curriculum. Information and experience will help us meet this challenge.

In an effort to provide for this ever increasing demand for information about the use of technology in Head Start, we recently contacted participants from the original study sites. We asked them to review their experiences with classroom computers over the past seven years. We requested that these Head Start education staff give interested educators their best advice for approaching the often complex world of classroom computer use. Many respondents had important suggestions and recommendations to offer educators considering the use of computers with young children. Head Start staff confirmed many of the original project recommendations, published in the 1990 Head Start/IBM Partnership Report, and offered updated guidance in these areas.

PLANNING FOR TECHNOLOGY

- ☐ Have a long-range plan in mind when you begin. Be sure that you understand some of the costs associated with technology, and that once you begin to use computers in classrooms it involves a long-term commitment.

- ☐ Consider the costs of hardware upgrades and maintenance as an essential part of your long-range planning and budgeting process. These associated costs are required to maintain the computer as a valuable learning tool for young children. A good example of a practical consideration is reflected in this education coordinator's dilemma. Although *carry-in maintenance* for hardware is less costly, now that we have more computers, I can't carry-in 26 machines!

- ☐ Technical support and trouble-shooting help are essential and should be considered when hardware and software are purchased. How long will support be available? Is it toll-free? Are there any limitations on who can call in for help? Are there any charges?

PROVIDING TRAINING AND SUPPORT

- ☐ Although some respondents felt that initial training had been adequate, they would have preferred more ongoing support throughout the year. When turnover in the teaching staff occurred, some experienced users were able to share their technology knowledge and computer literacy with new staff. However, this

was not always true, and some computers went unused due to lack of training.

USING COMPUTERS WITH CHILDREN

- ☐ The computer learning center is a valuable tool for teachers and young children, but not to the exclusion of any other learning experiences! Be careful to integrate the computer as a tool supporting children's discovery, not just as a reward for appropriate behavior.
- ☐ Teaching staff highlighted the benefits of using classroom computers with young children. They observed children's improved self-confidence, enhanced socialization and communication skills and improved attendance.
- ☐ Using software that offers voiced feedback and instructions allows young pre-reading children to independently use the computers. This is an important factor in supporting child-initiated activities, and in freeing the teaching team to observe children and respond to their individual needs.

INVOLVING PARENTS AND FAMILIES

- ☐ Offering classroom computers to Head Start children represents an opportunity for children and families that would not otherwise be available.
- ☐ Several respondents underscored the importance of offering opportunities for parents and family members to use the computers for their own literacy needs. In one Head Start an

adult literacy program opened its doors to the community. Anyone in the community could use the computers in the evenings. Now, adults in the community are getting computer work-place skills, and using technology to help their children with homework and basic reading, writing, and math skills.

- ☐ A coordinator for a family literacy program that developed as a result of the Head Start/IBM Partnership reported that the biggest drawback of using technology is the notion that you can rely exclusively on the technology to do the job of educating. He was adamant, "you **cannot** ignore the human element!" Use computer-assisted training with support from a real person. This "coach" needs to assist the parent, organize small group discussions, encourage, review, and support the technology in the context of a meaningful learning experience. The same is true for use of computers with young children.

If your Head Start program is considering classroom computers, contact other Head Starts to see what they have done. Participants of the original partnership project are listed in Appendix C. The most important reminders from these participating Head Starts are:

- *budget and plan for training and maintenance - both are recurring costs;*
- *involve parents; and,*
- *don't forget the human element - someone needs to always be available to help and to encourage!*

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Appendix B: Description of Hardware and Software 1990 and 1994

Appendix C: Participating Organizations

Appendix D: Readiness Self-Assessment Questionnaires

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Summary of Recommendations

Recommendations on Benefits for the Children:

- ☐ Offer the computer learning center as an enrichment to the ongoing curriculum experiences already supported by Head Start.
- ☐ Offer appropriate computer experiences to Head Start children so they, too, can be ready to meet the challenges of an Information Age society.

Recommendations on Staff Readiness:

- ☐ Select enthusiastic teaching staff who believe in the benefits of technology for children, and who understand developmentally appropriate practices in other Head Start curriculum areas.

Recommendations on Software:

- ☐ Select software that supports the needs of young children to independently explore, discover, and learn.

Recommendations on Cost:

- ☐ When funding is limited, share the recommended "two computer" learning center across several classrooms for alternate six- to eight-week periods.
- ☐ Consider carefully the costs beyond the simple purchase price of hardware and software. The decision to get computers for Head Start children involves many additional costs.

Recommendations on Placement:

- ☐ Set up the computers within the classroom, not in a separate lab.
- ☐ Set up computers in the classroom as "just another learning center". The computer learning center should be located in a well-defined, relatively quiet part of the classroom, away from "messy" materials. Its location should enhance children's integration of concepts they explore in the other learning centers in the classroom.

Recommendations on Organization Within the Learning Center:

- ☐ Computer learning centers should include two computer stations and a shared printer.
- ☐ Position the computers so children at one computer can see what children at the other computer are doing. This will encourage social interaction between small groups of children, language stimulation and exchange of ideas, and cooperative learning by peer tutoring and joint problem-solving.
- ☐ Arrange peripheral devices and accompanying materials to encourage independent access by the child.

Recommendations on Initial Experiences for Children:

- ☐ When introducing the computer, begin with a more structured approach and ease children toward independence.
- ☐ When introducing the computer, break down the sequence used to access it into small steps that children can independently use.

Recommendations on Introducing New Software:

- ☐ Software should be introduced to children gradually, following an organized approach that takes into consideration children's abilities and interests.

Recommendations on Managing Child Access:

- ☐ Establish management rules for using the computer in the beginning of the year.
- ☐ Allow children to choose the computer learning center by free choice, just like they choose other learning centers.
- ☐ Encourage children to work together in pairs or small groups to promote sharing of ideas.

Recommendations on Linking with Other Learning Centers:

- ☐ Support children's initial exploration of concepts through hands-on activities with concrete materials. Then offer computer experiences that allow children to build on previously explored concepts to create basic understandings of their world.

- ☐ Use themes to create a framework that helps children integrate computer experiences with those in other learning centers.
- ☐ Extend computer experiences to other areas of the classroom to explore concepts from different perspectives using different materials.
- ☐ Display children's computer creations around the classroom just as their productions using other media are displayed in the class. Let children create "books" of their computer printouts to take home and share with parents, family, and friends.
- ☐ Facilitate integration of the computer learning center into the curriculum by using teacher-made materials that support concepts and skills reflected in the software.

Recommendations on Helping Train Teachers to Their "Comfort Level" with Computers:

- ☐ Provide hands-on computer training for teaching staff and then numerous opportunities for practice with software.
- ☐ Conduct computer training off-site, so that teaching staff can give all their attention to the task of learning about the computer and software.

Recommendations on Training Workshops:

- ☐ Offer academic credit, continuing education units, and certificates to teaching staff for participating in training.

Recommendations on Site Liaison:

- ☐ Offer teaching staff regularly scheduled on-site support, especially during the introductory stages of using computers in the classroom.
- ☐ Locate a local source of training and technical assistance to provide ongoing support for teaching staff. A department of early childhood education or child development at a nearby university or community college would be a good beginning point.

Recommendations on Practice:

- ☐ Set aside special time for teachers to practice using the computer. Teaching staff will only gain the necessary confidence if they are given the time to explore and "play" with the computer themselves.

Recommendations on Sharing Ideas Among Staff Members:

- ☐ Plan specific meetings that offer teaching staff a forum focused on sharing their experiences in using the computer learning center.
- ☐ If possible, set up at least two classrooms per Head Start center with computer learning centers. This way teaching staff can support each other as they explore and develop strategies for using computers in the classroom.

Recommendations on How to Get Parents Involved:

- ☐ Offer parents opportunities to visit classrooms and observe their children using the computers. Often parents' interest is stimulated by the printouts children bring home and by the excitement children convey about their use of computers.
- ☐ Conduct a needs assessment for parents to identify basic skills and employment training needs that can be fulfilled by computer software geared to adult use.

Recommendations on How to Train Parent Volunteers:

- ☐ Use computers for basic skills and literacy training when parents show interest.
- ☐ Conduct evening classes and training workshops for parents.

About the Head Start/IBM Partnership Project

In 1987 the Head Start Bureau and IBM Corporation joined in a partnership to explore classroom uses of computers with Head Start children and families. This partnership grew out of the conviction that Head Start children and families should have opportunities to access computers. However, once equity of access is affirmed, the question remains of how best to facilitate young children's successful experience with computers. This project explored many aspects of that question by watching what happened when computers were actually put in the classrooms of eight Head Start grantees across the nation.

Purpose

Successful computer experiences for young children require an understanding how of young children learn. A major focus of this exploration was to determine whether computers could support developmentally appropriate teaching and learning in Head Start classrooms. Within this context the following objectives were explored:

- *To identify hardware requirements that are essential to support young children's independent access to computers;*
- *To identify characteristics of software that support discovery-oriented and exploratory learning for children;*
- *To determine the amount and nature of training, technical assistance and support required by teaching staff and parents to effectively integrate the computer learning center into the curriculum; and*
- *To evaluate the responses of Head Start children, teaching staff, and parents to the opportunity to use computers.*

Organizations involved

Eight Head Start special computer grantees in four Regions actively participated by using the computer learning center in more than 44 classrooms. These Head Start grantees include:

- ☐ Action Head Start
  Athens, Georgia
- ☐ Beauregard Community Action Association
  DeRidder, Louisiana
- ☐ Cardinal Spellman Head Start
  New York, New York
- ☐ Community Action Head Start of Lexington-Fayette County, Lexington, Kentucky

- ☐ Economic Opportunity Planning Association of Greater Toledo, Toledo, Ohio
- ☐ Home Education Livelihood Program (H. E. L. P.), Las Cruces, New Mexico
- ☐ Montgomery County Community Action Agency, Dayton, Ohio
- ☐ Urban Services Head Start, Baltimore, Maryland
  - *St. Bernardine's Learning Center*
  - *Cold Spring Family Center*
  - *St. Veronica's Head Start*
  - *Metro Delta Head Start*

Two major organizations collaborated on the design, planning, and execution of the Partnership Project: the Administration For Children, Youth and Families, DHHS, Washington, D.C., and International Business Machines Corporation, Educational Systems Division, Atlanta, Georgia and Rockville, Maryland.

MOBIUS Corporation of Alexandria, Virginia, acted as systems integrator to carry out the field coordination activities for ACYF and IBM. This included identifying the computer hardware and software requirements, providing on-site training, providing toll-free telephone support, and coordinating the formative evaluation components and documentation of the partnership project.

The names and addresses of all the organizations involved are listed in Appendix A.

Computer hardware and software

Each classroom learning center includes two computers set up side-by-side with a shared printer, mouse and PowerPad. A PowerPad is a large touch sensitive device that accepts input via a child's touch. Additionally, each computer is equipped with a special voice card capable of producing both human quality and synthesized speech. Color monitors support the display of photographic quality graphics. Appendix B provides more details about the hardware specifications.

Software includes eleven activities for children and three teacher software programs. All of this software operates under KidsWay, an interface that is specifically designed with graphics and voiced instructions to help pre-reading children quickly gain independence at the computer learning center. KidsWay provides a consistent set of commands for children to load different software programs, to use the software, to print, and to exit the software. It is based on icons, little pictures of things familiar to children. One set of icons can be assigned to children, letting each child pick a favorite to symbolize him or her. Another set of icons is pre-assigned to the software programs included with KidsWay. These icons permit children to independently choose the software using a mouse even though they do not yet know their letters and cannot read. See Appendix B for descriptions of the software programs and features.

Selection of the eleven software programs included in the classroom computer learning center was based upon the systematic evaluation of over one hundred software programs during the pre-pilot phase of the partnership project. Further information regarding the software evaluation and procedures for documenting evaluation experiences is available upon request.

The teacher materials used were designed to support the integration of the computer learning center with other learning centers in the Head Start classroom. Several picture books, posters, and a map facilitate use of specific software programs with early childhood themes. An extensive curriculum integration guide and a technical reference manual are used by teaching staff.

About this report

This report offers a series of recommendations for creating a successful computer learning center in the Head Start classroom. These recommendations are derived from information gathered from the Head Start grantees involved in the partnership project. In order to more clearly indicate the origin of many statements, the originating Head Start program's name is included in parentheses. Frequently statements are attributable to more than one Head Start program, suggesting a broader consensus.

The purpose of this report is to share experiences of Head Start grantees and delegates as they explored the feasibility of using computers in their

classrooms. Throughout the process of using computers with children all of the participants learned many important things. Many of the most significant insights resulted from activities that were tried but did not work. Often such lack of success forces re-examination of the approach to the teaching and learning process. This refocusing requires trying new strategies, attending more closely to children's needs, and analyzing the environment more carefully.

Teaching staff, parents, and directors at each site participated in formative evaluation activities, including focus group discussions, individual interviews, and classroom observations. On-site liaison staff documented the experiences of Head Start staff and children using the computer learning centers and provided summary reports each month. The Head Start experiences documented in these reports, in observation checklists, and in focus group discussions were analyzed. Recommendations based upon these data are presented in this final project report.

The computer learning center can extend and enrich curriculum opportunities for Head Start children. Recommendations in this report are designed to guide Head Start grantees as they provide Head Start children and families access to computers.

The big decision: "Computers for our Head Start children?"

This is not an easy decision. There are convincing reasons for adopting computers, yet there are problems and pitfalls as well. Here are some issues to consider in making your decision.

Benefits for the children

To be relevant, today's education must match our rapidly changing world. The "Information Age" now enveloping us provides compelling reasons for using computers in education as early as possible. Moreover, computer technology has advanced enough to be both practical and affordable for pre-reading children.

Many children are taught to sit down, be still, give the right answer quickly, and compete against each other. These skills were useful on the assembly line, but are of little value when teams need to work together to solve complex problems. We can no longer focus on discrete skills. We need to teach in a way not just to impart knowledge, but instead to help children construct their own knowledge, filling in gaps, experimenting in order to under-

stand, and interpreting in order to apply that knowledge.

Computer experience for children ages three to four motivates them and influences their behavior in other areas of the classroom. It has increased their abilities to attend to task, cooperate with other children, and teach each other. Also, social skills such as waiting for turns or asking for help appropriately have been improved. Children show greater ability to follow directions, wait for directions, listen, and be patient (Action Head Start).

With the proper software, computers can create an unlimited range of conceptual environments for children. This limitless flexibility, in turn, lets us challenge children to explore fully and construct truly their own understandings of the world. This new world requires the ability to create understandings, learn new skills, think about the gray and contradictory areas of knowledge, and work cooperatively.

Recommendation: Offer the computer learning center as an enrichment to the ongoing curriculum experiences already supported by Head Start.

Recommendation: Offer appropriate computer experiences to Head Start children so they, too, can be ready to meet the challenges of an Information Age society.

Staff Readiness

One of the most important issues in considering classroom computers is the readiness of the teaching staff. "Readiness" is not intended to imply they already know how to use computers. Rather, it suggests they are enthusiastic about learning to use them, and they believe computers would be beneficial for children.

Many teachers are concerned about using computers with young children. Perhaps they do not understand the potential that computers have to support young children in the exploration of their world. Perhaps they feel computers can teach only "rote learning" skills. Perhaps they feel the "developmentally appropriate" practices they have so carefully learned will be undermined by computers.

Chances for success with computers are enhanced when your program has enthusiastic staff. If there are only a few teachers who are excited about this innovation, then encourage them to set up a pilot trial with computers. Your enthusiastic teachers will lead the way. If these "pioneers" also have a thorough understanding of early childhood development, and perhaps some prior knowledge of computers, they will help even more to ensure successful implementation in the rest of your classrooms.

In an effort to provide a strategy to determine readiness of staff, we have included two Readiness Self-

Assessment questionnaires in Appendix C: one to be completed by individual Head Start teachers and staff, and the second to be completed by the Head Start director.

Recommendation: Select enthusiastic teaching staff who believe in the benefits of technology for children, and who understand developmentally appropriate practices in other Head Start curriculum areas.

Software

Computer software contains the instructions that put pictures and text on the computer screen, directs the words the computer speaks, and prints the pictures and stories on paper. Without software, computers are unusable.

Every Head Start program has its own approach for teaching its children. It may involve using a formal curriculum, such as the High/Scope Cognitively-Oriented Curriculum, the Creative Curriculum, or any one of the many others. Or it may be a curriculum developed by your own education coordinator, or your own teachers.

Your goal is to find software that is developmentally appropriate for your preschool children. You must consider the level of abilities of your children as well as their interests. Moreover, most computer

software has a major barrier for use by pre-reading children: it requires a knowledge of letters and words to use the traditional keyboard, and to read the text on the screen. Voiced directions and symbols on the screen (icons, or little pictures) can help pre-reading children to use the computer independently.

More and more software is becoming available with "developmentally appropriate" characteristics. In general, this is software which:

- *Encourages discovery-oriented learning*
- *Empowers the child*
- *Provides interaction*
- *Promotes independence*
- *Has expanding complexity*
- *Is designed to promote self-esteem and positive feelings towards learning*
- *Includes multi-sensory technical capabilities (e. g. , animation, colors, graphics, voice, music)*
- *Provides keyboard alternatives (e. g. , mouse, powerpad, joystick)*
- *Includes teacher supports (e. g. , documentation, classroom integration guides)*

Recommendation: Select software that supports the needs of young children to independently explore, discover, and learn.

Cost

Your limited funding may not permit you to equip all classrooms with computers at the same time. A phased-in approach to introducing classroom computers is often useful. In this case, just a few classrooms are equipped with computer learning centers, and after the teaching staff become proficient in their use and integration into the curriculum, more classrooms are brought "on-line". In this way, experienced Head Start teaching staff can provide training, support, and troubleshooting for the Head Start staff "new" to the classroom computer initiative. Success with the innovation is shared with staff new to computers by Head Start staff who have lived through the initial anxieties and uncertainties.

Another way to minimize costs is to share computers across several classrooms. For example, you might use the computer learning center in one classroom for six to eight weeks, then rotate the entire learning center set-up to another classroom for the next six to eight-week period.

Recommendation: When funding is limited, share the recommended "two computer" learning center across several classrooms for alternate six- to eight-week periods.

Other Issues

Staff readiness, appropriate software, and availability of funds are only some of the issues that must be considered. Here are some of the others:

- *Outside training and support for teaching staff*
- *Security of equipment*
- *Space requirements*
- *Electrical (availability of grounded circuitry)*
- *Insurance*
- *Appropriate furniture*
- *Maintenance for equipment*
- *Expendable supplies (paper, printer ribbons, and disks)*

Recommendation: Consider carefully the costs beyond the simple purchase price of hardware and software. The decision to get computers for Head Start children involves many additional costs.

Organizing the computer learning center

To properly organize the computer learning center you will need to consider two overall issues: the placement, or location, of the learning center; and the organization of equipment and materials within the learning center. Appendix D includes diagrams that you may want to refer to when reading the following sections.

Placement

Placement of the computer learning center involves two very different kinds of considerations. The first relates to the teaching philosophy and approach held by you and your staff, and the role you expect the computer to play in that philosophy. The second consideration relates to nitty-gritty physical issues.

"Just another learning center"

First and foremost it is important to maintain a perspective that is developmentally appropriate when integrating the computer learning center into the Head Start classroom. Head Start programs use a

variety of curricular approaches, and with the right attitude computers can be effectively integrated no matter which specific curriculum is in use.

Observations across centers indicate that if a classroom already has a firmly established developmentally appropriate curriculum, implemented on a daily basis, then the integration of the computer learning center will most likely be implemented in a manner that meets age, activity, material, experience, and needs of the whole child. Introducing the computer as simply one more tool for learning supports the notion of developmentally appropriate practice for young children.

When making decisions involving the placement and design of the computer learning center, staff members must explicitly try to support their existing approaches. Proper placement will encourage children's independent use of the computer, encourage social interaction between the children present in the center (i.e., peer teaching, sharing of ideas), and encourage integration of the center into the classroom routine, among other benefits. Careless attention can *discourage* them.

Physical considerations

Creating a successful computer learning center requires much consideration and planning. Programs have stressed the importance of placing the center inside the classroom, as opposed to creating a "computer lab" that children have to leave the classroom to access (St. Veronica's, Metro Delta). Otherwise, accessing the center and integrating it with the rest of the classroom activities becomes

difficult. Also, the computer learning center should be well defined within the classroom.

Various factors were considered by staff members when choosing the location of their computer center. These included:

Safety. Place computers against a wall to prevent children from tripping over cords and playing with plugs in electrical outlets.

Equipment care. Keep computers away from harmful materials, such as paint, water, and food.

Lighting. Try to avoid glare on the computer screen. Teachers need to look at the screen from the child's height when checking for glare.

Traffic patterns. Many teachers have placed the center away from direct traffic. However, one study has suggested that placing the center more centrally in the room may allow the center to be more easily integrated into the classroom.

Noise level. Teachers have chosen quiet areas of the room for the center. However, as mentioned above, placing the center in a far corner of the room to achieve quiet may isolate the center from the rest of classroom, and work against its integration into the classroom routine.

Future integration activities. Several staff members suggested placing the computer center near the learning centers with which they plan to relate computer activities. For example, one teacher placed the computer center near the story area, because she hoped to connect computer activities with story time activities (Cardinal Spellman).

Recommendation: Set up the computers within the classroom, not in a separate lab.

Recommendation: Set up computers in the classroom as "just another learning center". The computer learning center should be located in a well-defined, relatively quite part of the classroom, away from "messy" materials. Its location should enhance children's integration of concepts they explore in the other learning centers in the classroom.

Organization within the learning center

Organizing the equipment and materials within the computer learning center involves many decisions. Teaching staff must decide on how many computers they are going to place in the center, how they are going to arrange the computer and peripherals (i.e., mouse, joystick, powerpad, keyboard and printer), where they are going to place the accompanying software and overlays, and what kind of furniture they are going to use for all of this equipment and materials. The next three sections explore some of the related issues.

Choosing appropriate furniture

It is important that furniture chosen for the computer learning center provides enough space for the computer, printer, peripherals, and materials. Tables designed specifically for computer use are available. One that would be a good choice has a printer shelf that accommodates the recommended computer set up and allows ample space for peripherals and materials.

Furniture must also be appropriate for the children's size. Tables and chairs need to be proportional to the children's height. The computer screen needs to be at the children's eye level when they are sitting in front of the computer. The height of the tables and chairs in the center should allow children to use the powerpad by resting one edge of the pad on the table and the other edge on their lap. If the slant of the pad is too steep, the overlay will slide off the pad. Appropriate tables are adjustable and can accommodate the size of preschoolers. It is also important to have two chairs in front of each computer station. This encourages children to work together, share ideas, and cooperate.

Arrangement of computers in the learning center

The majority of the Head Start sites used two computer stations and a shared printer in their learning centers. A power strip/surge protector should be

used so that both printer and computers can be turned off simultaneously. It is important that the computer screens are situated so that the children using the computers, as well as those playing in other learning areas, can see both screens.

Teachers who used two computers in this manner felt that this arrangement was preferable to having only one computer in the learning center, because it encouraged peer teaching, promoted social skills, led to sharing of ideas, gave more opportunity for children to use and explore the software, encouraged language development, and helped avoid conflicts between children over access to the computer (Beauregard, Action, Metro Delta, Greater Toledo, Lexington-Fayette).

More behavior problems were observed in the computer learning centers of classrooms using only one computer in their center. In these classrooms, children had more difficulty waiting their turn and acted aggressively toward the computer and peripheral devices. The computer learning center also seemed less integrated with the rest of the classroom activities.

Recommendation: Computer learning centers should include two computer stations and a shared printer.

Recommendation: Position the computers so children at one computer can see what children at the other computer are doing. This will encourage social interaction between small groups of children, language stimulation and exchange of ideas, and cooperative learning by peer tutoring and joint problem-solving.

Arrangement of peripheral devices and accompanying materials

There are a variety of ways that peripherals and materials can be organized in the computer learning center. However, the arrangement that you choose must encourage children's independent use of the computer. Children must be able to easily find and access the peripherals, disks, or overlays needed to use the computer. Therefore, it is necessary to be consistent in the placement of all peripherals and materials. All peripherals and materials must be easy to reach for the children. Some teachers have placed the disks in small plastic baskets or boxes (disk-size) by the computer so children can easily select software (Beauregard, Cardinal Spellman, Greater Toledo, Lexington-Fayette, Metro Delta, Action).

There also needs to be adequate table space for computers and peripherals so that children can easily focus their attention where needed. Removing an unused peripheral, such as the keyboard or power pad, can create more space if table space is

limited (Action, Beauregard, Cold Spring). Also, using a mouse pad helps children focus on the mouse since it defines the space where the mouse can be used. See the diagram in Appendix D.

Recommendation: Arrange peripheral devices and accompanying materials to encourage independent access by the child.

Introducing children to computers

In creating a successful computer learning center, placing it and organizing it are only the beginning of the process. Staff members must then decide how they are going to introduce children to the computer learning center.

Initial experiences

Children can be introduced to the computer in small groups, in pairs, or individually. Some of the teaching staff feel that it is best to introduce the computer learning center at the same time as the other centers, during the very beginning of school. By introducing the computer center along with the other centers, children will approach the computer learning center in the same way that they approach the other learning areas in the classroom (Cold Spring, Cardinal Spellman, St Bernardine's).

Other teaching staff have suggested waiting two or three weeks until the children are accustomed to the classroom routine (Metro Delta, Beauregard, Action). Whether children are introduced immediately to the computer or only after several weeks, it is important that all learning centers receive an

equal introduction with an emphasis on equity of use (Montgomery County).

One specific strategy is used during a staggered enrollment process (Greater Toledo). This process follows the steps given below:

1) The teaching staff conducts an initial needs assessment to determine computer experience, skills, and knowledge with both parents and children. Questions determine if they have used a computer, own a computer, or have seen a computer. Do they have games, appliances, etc. that use skills required for computer usage?

2) The staff introduces the diskette and demonstrates how to insert and eject it. The child then practices inserting the diskette.

3) The child chooses a symbol, and staff assign the child's name to that special symbol. Letting the children record their names in their own voices when selecting their icons (little graphical pictures of familiar things, used in the KidsWay user interface to symbolize children) is an effective and exciting way of presenting the computer to children (Metro Delta).

4) The staff presents a selected introductory software program to the child and parent by introducing any information needed to run the software and then following the steps for using the software. Teaching staff pre-

fer to begin with software that utilizes the powerpad and are able to provide children with a printed copy to take home.

5) A printout is made of the child's picture.

6) Staff then extend the experience according to the child's level of interest and questions.

Using this model, both parents and children become familiar with the idea of a computer center, children have printouts to bring home with them, and all the children are signed on before the whole class arrives. The model presents a commonly used breakdown of the sequence of actions children must learn to use the computer independently (Metro Delta, Greater Toledo, Cardinal Spellman, St. Veronica's).

The St. Veronica's Head Start stresses the necessity of breaking down the introduction to the computer learning center into steps so that children, especially younger ones, will not become overwhelmed. Before focusing on computer software, they begin by concentrating only on teaching children their icons (little graphical pictures of familiar things, used in the KidsWay user interface to symbolize either children or software). Icons are placed on cubbies and on name tags to help children learn their icons quickly. After children can recognize their icons, teachers then begin to explain procedures involved when using the computer and software. Some of the topics included in their introduction are rules for handling disks, the keys children will commonly use on the keyboard,

and helpful hints such as listening for the click when loading disks.

As can be seen, different sites have chosen varying teaching approaches for introducing children to the computer learning center. Most of them are similar in that teachers begin with a more structured approach, using more teacher direction and monitoring, and ease children towards independence, remaining nearby to provide assistance when needed (Action, Montgomery County, Beauregard, Metro Delta).

Once children have practiced the sequence of steps required to use the computer learning center, they are able to sign on, select, and load software independently. When teaching children how to sign on and to select software it is important to use the KidsWay interface correctly and in a consistent manner so that children will become independent as quickly as possible.

During the initial stages of computer use in the classroom, children may be disproportionately attracted to the computer learning center, because of its relative newness compared to the other learning centers. These "novelty effects" are only temporary and will decrease as the children become accustomed to the presence of the computer in the classroom. However, establishing management rules for learning centers in the beginning of the year can help alleviate these initial effects. Some recommended management techniques are discussed below in the section entitled *Managing Child Access*.

Because the initial stages of the computer learning center may require more adult supervision, parent volunteers can help children in the computer learn-

ing center, allowing teachers to distribute their attention more evenly across the different learning centers in the classroom (Cardinal Spellman, Montgomery County).

Recommendation: When introducing the computer, begin with a more structured approach and ease children towards independence.

Recommendation: When introducing the computer, break down the sequence used to access it into small steps that children can independently use.

Introducing new software

Deciding which software to introduce first involves taking into account children's abilities and interests in order to avoid frustration and to ensure success. Most of the sites suggest starting with the easier software, such as those included in Level 1, or *Costume Ball*, which lets children choose pieces of a costume that a child in the story can wear to a party (St. Veronica's, Cardinal Spellman, Metro Delta, Montgomery County).

The Greater Toledo Head Start feels that software using the power pad is easiest for children to learn at first. The Action Head Start tries to use a curriculum sequence in which children can increase their

independence. The content of the software also affects its introduction to children. Thematic considerations influence when certain software programs are introduced (i.e., *Costume Ball* can be used during Halloween or Mardi Gras) (Beauregard, St. Veronica's, St. Bernardine's).

It is important to use the computer, like any other teaching material, in a way that supports meeting individual child needs. Often there will be specific software to help individual children with specific areas of learning. Then it becomes appropriate to introduce only one or two children to a specific software program depending upon their needs as well as their computer skills and interests.

Again, many teachers prefer introducing children to new software using a more structured approach, easing children towards independence. Using the quickstart guides (KidsWay teacher instructions for using the software, included in the manual), software can be introduced during small group time, large group time, or during free time with staff working with children individually or in pairs (Beauregard, Greater Toledo, Montgomery County, Lexington- Fayette, Action).

Teaching staff of one Head Start has successfully introduced software by first familiarizing children with the new software's program icon. In a group situation, the software disk is passed to each child. The meaning of the icon and its connection to the software is explained so that the child can recognize the icon when later going to the computer. Then, with teacher assistance, children can go to the computer learning center in small groups to find the disk and to take turns working through the software (Action Head Start).

Working with groups of two to three children, teachers can also present new software during free time. Starting with the software selection screen, they can help children to select the proper icon and then to use the software. Staff members can also load a particular software program, begin using it, and wait for children who are interested to come to the computer learning center. Then staff members can teach those children how to use the software through demonstration and supervised practice (Metro Delta). After the children have been introduced to the software and begin to feel comfortable, they can begin to use the software independently and teach others.

Peer teaching, during which two or three children work together to learn a software program, is another effective way to introduce new software to children and to encourage their sharing of ideas (Cardinal Spellman, Lexington-Fayette, Metro Delta, St. Veronica's). Fewer behavior problems seem to occur when younger children, less experienced with the computer, are paired with older more experienced children. In these situations, the younger children seem more able to focus their attention and to wait during pauses in the software (St. Veronica's). The more experienced children who fill the "teacher role" also seem to benefit as they learn how to help others (Metro Delta).

When introducing software to children, it is helpful to present the software within a framework of concept exploration so that the software will have some meaning for them. The Action Head Start provides a context for using software to explore concepts by introducing it to children through the reading of a related story during circle time. After reading the story, the teacher discusses and demon-

strates the software with the group of children before they go to the computer.

There are certain common obstacles that children may experience when learning new software programs. It will be easier to introduce new software to children by keeping these obstacles in mind. The keyboard can be confusing to a young child unfamiliar with the layout of the keys. When presenting software that uses the keyboard, put stickers on those special keys that are required to run the software (St. Veronica's, Metro Delta).

Initially, children may be impatient with the time it takes the computer to process information. Teachers suggest focusing children's attention onto the red light that signals that the computer is processing information, explaining to children what the computer is doing and why they are waiting, and preparing them for what will happen next (Montgomery County, St. Veronica's). With the teacher's persistence, children seem to eventually learn to be patient. Children's ability to wait patiently while in the computer learning center has even been observed to transfer into other areas of the classroom (Montgomery County, Action).

Recommendation: Software should be introduced to children gradually, following an organized approach that takes into consideration children's abilities and interests.

Managing child access

Children usually play in the computer learning center during planned activity time (free time). At some of the sites, children also use the computer during playtime and during arrival time in the mornings (Beauregard, Metro Delta). To support a developmentally appropriate model, children choose to use the computer learning center in the same manner that they choose to use other learning centers in the classroom, by free choice.

Like other areas, some children will choose the computer center more often than other interest centers. It is then the staff's responsibility to ensure that all children are encouraged to use all areas of the classroom and that all children have equal access to the computer. Experiences with the computer seem most successful when children work in pairs or in small groups. Working together seems to lead to more sharing of ideas, group problem solving, and cooperative learning. Children learn to share and wait their turn (Metro Delta).

Teaching staff can help foster children's independent use by establishing rules for the use of classroom learning centers in the beginning of the year. Setting limits on the number of children who can use a center at one time can prevent crowding in the computer center (St. Veronica's). Placing cards in each center to represent the number of children allowed in the center makes this rule concrete (Cold Spring). A suggested limit for the computer

learning center is one that will allow children to work in small groups. Using a waiting list on which children can see their names and places in line can help children to wait and prevent disputes over turns.

Because children's independent access to the computer is a necessary component of a successful computer learning center, children must eventually be able to select software on their own. Teaching staff can facilitate children's independence by setting the software icon screen to the appropriate software level for children and then making available only those software disks that are within that level (Greater Toledo, Metro Delta, Montgomery County).

This enables children to choose software freely by helping to ensure that they will not select frustrating or developmentally inappropriate software. If children choose software that they have not yet learned, staff members can provide the necessary assistance until children can use the software independently. Children benefit most from the computer when they reach a level of familiarity with the software that allows a confident and creative approach. Therefore, it is suggested that teachers not introduce a new level of software until children have reached this point of familiarity with the present level.

Staff can set up alternate periods when a single particular software program is taught (and only that software program is available to be used by children), and periods during which children can choose freely among already learned software. Using this method, children learn each software program well enough to use it confidently and

creatively. As children learn more software programs, they have an increasingly large selection of software from which to choose and which can be used truly independently (Action).

Recommendation: Establish management rules for using the computer in the beginning of the year.

Recommendation: Allow children to choose the computer learning center by free choice, just like they choose other learning centers.

Recommendation: Encourage children to work together in pairs or small groups to promote sharing of ideas.

Linking with other learning centers

Integrating the computer learning center with the rest of the Head Start classroom is key to the computer's effectiveness in motivating learning and communicating new ideas. By correlating the concepts explored using the computer with those experienced in other areas of the classroom, children are provided a framework for assimilating new information. Without this framework, the relevance of discoveries may be missed; as a consequence, opportunities may be lost for children to transform

useful information into meaningful knowledge (Montgomery County). Strategies used to integrate the computer learning center into the classroom involve *using themes or units* to connect computer activities with activities in different learning areas, *extending activities* related to the computer to other areas of the classroom, and *creating materials* that support the concepts and skills presented in the software.

Using themes. Using themes or units to relate the computer learning center with other areas of the classroom is a commonly used strategy. When preparing themes, staff members need to approach the computer center as they would any other center.

Some Head Start staff are now incorporating computer activities into the weekly lesson plan with their classes (Greater Toledo, Metro Delta). For instance, *Electronic Builder* has been used to reinforce the concept of shapes. *Electronic Builder* is a software program that allows children to make pictures with circles, triangles, etc., by using a mouse to put copies of them anywhere on the computer screen. The child can then color them, and after the child's "drawing" is finished it can be printed to the printer.

After the children have explored shapes using blocks and other concrete materials, the teacher demonstrates *Electronic Builder* to the class as a group. Making a picture, the teacher labels the various shapes with which the children have played. Afterwards, the children are free to explore the software on their own, assistance being available if needed. Printouts can be made of the children's pictures, glued to construction paper, and hung on the classroom walls. In this example, the teacher has

managed to introduce *Electronic Builder* within a meaningful framework by relating abstract shapes to real objects.

Using this type of approach, software can be used to reinforce a variety of topics. *Facemaker* (which lets children choose from among many noses, eyes, ears, etc., to create a cartoon face) has been used to help teach about body parts and to broaden the "I am Special" unit (St. Bernardine's, Metro Delta, Greater Toledo).

Costume Ball has been used to extend children's experiences with Halloween or Mardi Gras (St. Veronica's, Action). At the Action Head Start, children dressed up in costumes for Halloween, and then dramatized the story of *Costume Ball*. One child pretended to be Ricochet (the main character in *CostumeBall*) and the other children gave him or her a piece of their costume.

Units involving community helpers can be easily supplemented using *Transportation*, which lets children match drivers (like farmers or police) with their vehicles. (Cardinal Spellman). *Fun with Letters and Words* can be correlated with the classroom unit on family (Metro Delta).

Using *Electronic Easel* (which lets children electronically mix primary colors and then draw pictures with the resulting colors) to strengthen children's understanding of colors has been a successful integration strategy (Montgomery County, Action, Metro Delta). Children can gain more confidence in themselves as learners, by confirming at the computer the discoveries that they have made about color mixing earlier at the easel (Montgomery County).

Greater Toledo teaching staff use computers as one more tool to implement key experiences. The software gives teachers an excellent way to extend key experiences, especially in the areas of language, active learning and logical reasoning. Key experiences in the area of language include describing objects, events and relations; expressing feelings in words; hearing one's own spoken language written down by an adult and read back.

Key experiences in active learning involve discovering relations through direct experience; manipulating, transforming and combining materials, choosing activities, materials and purposes; and acquiring skills with tools and equipment. Imitating actions and relating pictures, photographs, and models to real places and things are key experiences reflected in representational thinking. Logical thinking experiences involve investigating and labeling the attributes of objects (classification) and sorting and matching objects.

Extending activities. Extending computer activities into other areas of the classroom enables children to explore concepts from different perspectives, using different materials. This helps children to build a stronger and deeper understanding of new ideas, as well as to view the computer learning center as an integral part of the classroom. The different areas in the classroom can begin to be integrated with the computer area immediately in the beginning of the year using children's name icons. Children's icons can be copied, colored, and laminated and then placed in a variety of areas in the classroom. They can be then be used as seat cushions during circle time, or covers for the books that the children create (Montgomery

County, Cold Spring, St. Veronica's, Greater Toledo, Action, St. Bernardine's).

The St. Veronica's Head Start has extended concepts introduced in *Electronic Builder* into the block area by having children create pictures using *Electronic Builder*, make printouts of their pictures, and then use their printouts as blueprints to recreate their pictures using blocks. Introducing software during group time is another method for integrating the computer with other classroom areas (Action, Metro Delta).

Creating materials. To truly integrate the computer learning center into early childhood units or themes, as with the other learning centers, teaching staff find it important to develop and make materials that support the skills and concepts reflected in the software. For instance, creating puzzles where children can put together the different parts of animals helps support the type of skills children will be using in *Fantastic Animals* (Action). Using actual printouts to match modes of transportation to their corresponding occupations provides a concrete way to practice the concepts presented in *Transportation.* The curriculum guide that accompanies the software provides many additional examples of possible integration strategies.

Recommendation: Support children's initial exploration of concepts through hands-on activities with concrete materials. Then offer computer experiences that allow children to build on previously explored concepts to create basic understandings of their world.

Recommendation: Use themes to create a framework that helps children integrate computer experiences with those in other learning centers.

Recommendation: Extend computer experiences to other areas of the classroom to explore concepts from different perspectives using different materials.

Recommendation: Display children's computer creations around the classroom just as their productions using other media are displayed in the class. Let children create "books" of their computer printouts to take home and share with parents, family, and friends.

Recommendation: Facilitate integration of the computer learning center into the curriculum by using teacher-made materials that support concepts and skills reflected in the software.

Training and supporting teachers

Once you have installed computers, teacher training and support is the single most important factor in their successful use. Failure to recognize the central role played by teacher training will most likely interfere with the effective use of computers.

Helping teachers to their "comfort level" with computers

The successful use of the computer in the classroom depends, first and foremost, on teachers feeling comfortable with the computer and being familiar with the software. Teachers' comfort with the computer is reflected in their teaching skills and the level of computer use in the classroom (Beauregard, Metro Delta, Montgomery County).

Not only must teachers understand how to use the computer and software, they must also be knowledgeable about ways to successfully integrate the computer center into the classroom.

The Greater Toledo Head Start observes that, in addition to comfort and confidence, how much teachers like the computer is critical. Just as for all other components of early childhood education,

some teachers just *like* the computer more than other teachers. They have more fun with it, they really enjoy it as an area of learning, and this is reflected in their classroom approach and emphasis.

Teachers' attitudes towards the computer are especially important, because they strongly influence the children's perceptions of the computer. The Head Start site must be willing to provide its staff with necessary training and support. Teachers must be willing to take the time required to practice using the computer and software in order to become comfortable with them and their presence in the classroom.

Many kinds of training can be used to help the teachers reach the necessary comfort and confidence levels. The initial hands-on training to introduce staff to using computers in the classroom is key in setting the stage for acceptance of this innovation by Head Start (H. E. L. P.).

Conducting off-site training provides teaching staff with the clear message that this training is sufficiently important not to be interrupted by the daily pull of classroom responsibilities. Catering breaks and a lunch as part of the training indicates that participants are "special" and deserve support for their special efforts in meeting the new challenges they are facing. Training should be conducted by persons having backgrounds both in computer technology and early childhood education
(H. E. L. P.). Academic credit, continuing education units and certificates for participating in training and achieving competency are additional ways to ensure staff understanding of the commitment of the Head Start program to supporting this innovation.

Recommendation: Provide hands-on computer training for teaching staff and then numerous opportunities for practice with software.

Recommendation: Conduct computer training off-site, so that teaching staff can give all their attention to the task of learning about the computer and software.

Multiple ways to train teachers

Four training approaches are described in more detail below. They include ***training workshops***, ***site liaison***, ***practice***, and ***sharing ideas among staff members***.

Training Workshops

After the initial two days of hands-on training provided through the Head Start/IBM Partnership Project, several sites received additional training through workshops and have found them helpful (Lexington-Fayette, Beauregard, Greater Toledo). For example, in Beauregard, staff members are receiving 15 credit hours for attending workshops to enhance their understanding of the computer, DOS (the disk operating system software), and addi-

tional software packages used to help with classroom records. The Greater Toledo Head Start is planning to implement evening and Saturday workshops for staff with paid time for staff. You may be able to locate technical assistance and support at a nearby university to give these workshops (Lexington-Fayette, Beauregard). The Metro Delta staff suggested that at least an hour of each monthly staff training day be devoted to some type of computer activity. St. Bernardine's Head Start recommended two to three workshops during the year involving several sites in the area to share techniques that worked well in each site.

Most staff feel it is best to start hands-on training with hardware first, then software, and lastly DOS (Action, Metro Delta, Lexington-Fayette, Cold Spring). DOS can be taught in small groups with individual help and practice (Metro Delta).

Recommendation: Offer academic credit, continuing education units, and certificates to teaching staff for participating in training.

Site Liaison

The Head Start sites have found it important to have ongoing support. As part of the Head Start/IBM Partnership Project, a specially trained site liaison person was provided for each Head Start.

The site liaison, on a regular basis, helped with hardware, software, DOS, introduction of computers into classroom, and integration of software into the curriculum. The Cold Spring Head Start suggested that another responsibility of the site liaison could be to train new volunteers for the computer learning center. Several sites have found their site liaisons through nearby community colleges, technical schools, or universities (Lexington-Fayette, Metro Delta, Greater Toledo, Action). Because, initially, site liaisons are required to spend considerable time at their site, it is helpful if they live close to their site.

Recommendation: Offer teaching staff regularly scheduled on-site support, especially during the introductory stages of using computers in the classroom.

Recommendation: Locate a local source of training and technical assistance to provide ongoing support for teaching staff. A department of early childhood education or child development at a nearby university or community college would be a good beginning point.

Practice

"Hands-on" time with the computer is essential in order for teachers to feel comfortable with it (Greater Toledo, Montgomery County, Action). Therefore it is useful to set aside time during the day (several hours each week) to practice using the computer and software.

If finding time during the day is difficult, several sites have found solutions. The Greater Toledo staff has suggested a "computer co-op time bank" where one staff member substitutes for another to allow the other staff member time to work with the computer. The time spent substituting can be logged and recorded so that staff members that offer to substitute have the same amount of time allotted to them to practice on the computer. Using parent volunteers to help manage the class, can provide staff members with time to practice during the day.

Several Head Start staff members have suggested practicing during children's naptime (Lexington-Fayette, Beauregard, St. Veronica's). Teachers can also gain experience with the computer and ease their workload by using the computer for other classroom applications, such as newsletters and daily paperwork (Metro Delta, Beauregard, Lexington-Fayette, St Bernardine's). Allowing teachers to take the computer home with them is also a good solution to scheduling problems (providing insurance regulations are followed).

Recommendation: Set aside special time for teachers to practice using the computer. Teaching staff will only gain the necessary confidence if they are given the time to explore and "play" with the computer themselves.

Sharing Ideas Among Staff Members

Another way staff can learn how to create a successful learning center, and find solutions to problems that arise, is through discussions with other staff. By sharing new ideas and effective strategies staff members can be helpful to each other.

The Greater Toledo Head Start has weekly meetings with staff members to determine their individual needs at the computer learning center. Another way to encourage sharing of ideas is through peer teaching. Pairing a staff member experienced with computers with one that is inexperienced is a good way to share knowledge and to help inexperienced staff members to feel more comfortable with the computer and to run their computer learning centers more effectively (Lexington-Fayette). In the Greater Toledo program, which has multiple sites, it was helpful to have at least two classrooms at each center equipped with computers. In addition to fostering mutual support for teaching staff, this arrangement permits sharing of software and peripherals if there are temporary problems.

Recommendation: Plan specific meetings that offer teaching staff a forum focused on sharing their experiences in using the computer learning center.

Recommendation: If possible, set up at least two classrooms per Head Start center with computer learning centers. This way teaching staff can support each other as they explore and develop strategies for using computers in the classroom.

Involving parents and volunteers

Parent and community volunteers can play an important role supplementing teaching staff in the computer learning center. Parent volunteers working in the computer learning center can create enthusiasm within the community and encourage other parents to get involved. At home they can promote concepts learned in the classroom.

How do you get parents involved?

Staff and volunteers, including parents, were invited to participate in the initial two days of training provided at each of the computer sites. Parents can be encouraged to volunteer in the classroom using the direct approach. The St. Veronica's Head Start calls their parents and asks them when they can come down to assist children in the computer learning center. Parents are allowed to visit at any time and are told "whatever they can do is fine" By keeping the times of visits and the length of these visits flexible, parents may feel more willing to come and volunteer.

Staff members have found that once parents begin to assist children at the computer learning center, they too develop an interest in the computer and

that after the children's worktime, these parents like to play with the software themselves (Montgomery County, H. E. L. P.). In fact, at the St. Bernardine's Head Start, a group of parents who had experience from the previous year with computers offered to take charge of the computer learning center for a new teacher until she had time to learn the software.

Using the six step orientation model described above, parents can be encouraged to assist in the computer learning center. As they observe their children choose icons, sign on, and learn one of the simpler software programs they can begin to develop an interest in the computer learning center.

Some staff members have created a form to gain the background information needed for the personal words in *Fun with Letters and Words*, a software program that presents personalized pictures, such as the members of a child's own family at the press of the "f" key. Asking parents to fill out these forms is another way of involving them in the computer project (Greater Toledo, St. Bernardine's). Using a parent/program newsletter helps to keep parents, as well as staff, informed of activities.

Recommendation: Offer parents opportunities to visit classrooms and observe their children using the computers. Often parents' interest is stimulated by the printouts children bring home and by the excitement children convey about their use of computers.

How do you train parent volunteers?

Parents can access the computer during classtime, during children's naptime, after school, during parent meetings, and in the evenings. During these times, various methods can be used to train parents. In many cases, parents learn about the software through children; by observing children as they play with the software and by using the software with the children (Greater Toledo, St. Veronica's, Montgomery County, H. E. L. P.). Observing teachers as they work with children can also provide useful training information for parents (H. E. L. P. , Metro Delta).

At the Metro Delta Head Start, staff members are careful to model the teaching methods of the site liaison and Mobius training. If time permits, parents can also be trained by staff members or by the site liaison (Montgomery County, St. Veronica's, Metro Delta, Cold Spring). Evening classes, focusing on computer skills, and training workshops have been used to familiarize parents with the computer (Beauregard, Lexington-Fayette).

Several Head Start grantees have extended parent volunteer activities using computers to focus on increasing parents' own economic self-sufficiency (Beauregard, St. Bernardine's, Greater Toledo). For example, special training sessions on computers have been added to the "Classroom Training Apprenticeship" program for parents interested in developing child care skills for the purpose of em-

ployment. In the this way these parents will be trained for future classroom opportunities in Head Start that require knowledge of using computers.

In another example, joint funding from Head Start and the Job Training Partnership Act (JTPA) has provided computer-based employment training for Head Start parents. In evening classes parents work on the same computers that their children used during the day.

Using computers has extended the capabilities of a comprchensive Head Start family support center. Through a variety of funding sources and donations, a computer-based program is delivered within a family empowerment model. Computers are used to provide literacy and basic skills, graduate equivalency diploma (GED), and employment training.

Recommendation: Conduct a needs assessment for parents to identify basic skills and employment training needs that can be fulfilled by computer software geared to adult use.

Recommendation: Use computers for basic skills and literacy training when parents show interest.

Recommendation: Conduct evening classes and training workshops for parents.

Head Start characteristics needed for success

As you can see from these recommendations, setting up a successful computer center requires an effort on the part of the teaching staff. Therefore it is important that staff in Head Start programs who are thinking about starting a computer learning center ask themselves whether they have the right characteristics. Here are some of the most important characteristics.

Successful grantee characteristics

1) The director and staff must truly believe in the computer project. This commitment is needed because setting up a computer center requires putting in extra time and dealing with the problems that are involved in trying something new. The director is especially important because she sets the tone for the rest of the staff regarding the importance of the project and its priority in the curriculum.

2) The computer learning center must be one of your priorities, because creating a computer learning center requires extra time, effort, and financial resources. Therefore, it is important to evaluate whether you can devote what is required. This means considering the other needs of your program and your priorities. If there are many important things that must be done at your Head Start and if the computer center is not a priority, it may be best to wait before setting up this learning center.

3) The director and staff must also believe in the children's ability to eventually master and control the computer. Teachers' underlying attitudes are often communicated to their students (i.e., through their actions, the set up of materials in the computer center, what they say).

4) Good communication between director and staff is necessary so that problems can be solved and staff needs be met.

Successful classroom characteristics

Classrooms with an active successful computer learning center shared the following characteristics:

1) Teachers were enthusiastic -- they practiced on the computers, read the curriculum and software guides, used their own creativity while integrating the computer into the classroom.

2) Two computers were used in each computer learning center.

3) Staff introduced the software gradually.

4) Teachers used planned approaches for introducing children to the computer learning center.

5) Children worked in pairs or small groups, thus promoting peer teaching and cooperative learning (learning how to take turns and share ideas).

6) The computer learning center was integrated with other classroom activities. It was integrated through classroom themes and units, and through using computer during small group time and circle time.

Appendix A: HDS Head Start Information Memorandum: Computers as an Early Childhood Learning Tool

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INFORMATION MEMORANDUM

TO: Head Start Grantees and Delegate Agencies

SUBJECT: Computers As An Early Childhood Learning Tool

INFORMATION: The purpose of this Information Memorandum is to rescind the moratorium which has been in place since 1984 regarding the purchase of computers as early childhood learning tools. This Memorandum also provides information that will assist Head Start grantees and delegate agencies in making decisions about the use of computers in the Head Start center-based program option.

During the past two years, based on recommendations from the Head Start Computer Task Force that was established by former Commissioner Lucy Biggs in 1985, the Head Start Bureau has worked with a cluster of 11 demonstration grantees to evaluate the desirability of using computers in Head Start classrooms. The Task Force recommended to the Administration for Children, Youth and Families (ACYF) that three major recommendations be incorporated in the work of the demonstration sites:

1. Support be provided to grantees to develop, implement, evaluate and revise curriculum to accommodate the addition of a computer learning center.

2. Prepare grantee staff and parents to participate in computer hardware and software evaluation and selection.

3. Provide a pre-service and in-service training program for administrators, education component staff, parents and volunteers. In addition, provide staff with ready access to ongoing support to solve problems encountered.

Each of the recommendations was addressed by 11 grantees and delegate agencies located in Ohio (2), New York, Maryland (4), Kentucky, Louisiana, Georgia and New Mexico. Each participating grantee received on-site training for staff and parents from MOBIUS Corporation, an IBM Corporation systems integrator. They also received ongoing technical assistance to support the proper use of hardware and software and the collection of formative evaluation information, as well as the opportunity to use a toll-free line for technical assistance.

All of the demonstration grantees have had at least six months of actual field experience using computers in their Head Start classrooms. These grantees have found that computers can be a useful learning tool for many preschool children, depending upon (1) the quality of the software, (2) the amount of time it is used, and (3) the way in which it is used.

Based on the experiences of these 11 Head Start demonstration grantees, I am rescinding the moratorium against the purchase of computers for Head Start classrooms announced to grantees in an Information Memorandum dated March 12, 1984 (Attachment A). Head Start grantees may now request approval from their Regional Offices to purchase computers in order to improve and enrich the educational experiences of Head Start children. This is an appropriate request for one-time funds as well as for equipping classrooms being set up with expansion funds.

The decision to use computers in the classroom is an important one and must be carefully thought out by staff and parents. If such is your decision, then the Education Services Component plan must be revised to include a rationale for the use of computers as well as plans for staff and parent training and appropriate child use of this new teaching equipment. However, computers should only be added to classrooms that are appropriately equipped with furniture and equipment which is attractive and in good repair and includes such basic learning materials as hardwood unit blocks and wooden floor toys.

The attached report, entitled "Computers in Head Start Classrooms: Recommendations From The Head Start IBM Partnership Project" (Attachment B), should be of assistance in helping you make your decisions about computer learning centers. The report contains basic information on the ideal number of computers to include in each classroom (two per classroom are recommended), selecting software, and training staff and parents, as well as suggestions on organizing the equipment within the computer learning center, introducing the children to the computer and new software, and managing their access to the computer.

The report also covers techniques on involving parents, cost considerations and the hardware and software used in the demonstration project. In addition, it includes a technology self-assessment readiness tool for staff and a readiness checklist for the grantee organization. For additional copies of this report, please contact MOBIUS Corporation, 405 North Henry Street, Alexandria, Virginia 22314. Toll-free number: 800-426-2710.

As you proceed with incorporating computers as a learning tool in your programs, my staff and I would appreciate hearing from you regarding your experiences. Please direct your letters to the Education Services Branch, Head Start Bureau, P.O. Box 1182, Washington, D.C. 20013. Attention: E. Dollie Wolverton.

Wade F. Horn, Ph.D.
Commissioner

Attachment

cc: Regional Administrators, OHDS
Regions I-X

Appendix B: Description of Hardware and Software 1990 and 1994

Appendix B: Description of Hardware and Software 1990 and 1994

Hardware and Software used in the Head Start/IBM Partnership Project in 1990

The hardware configuration used by participants in each of their computer learning centers included one or two computers, a printer, and related peripherals placed on special, child-height computer tables. The standard computer was an IBM PS/2 Model 25 with 640K RAM and two 3.5" 720K diskette drives, a color monitor, a full-sized keyboard, an IBM speech adapter, a mouse, and a PowerPad (a touch sensitive input device with a 12 inch by 12 inch active surface that can accept paper overlays with different designs for different software programs). The printer was an IBM Proprinter, standard width (8" wide by 11" high, trimmed).

The software included eleven separate programs, all accessed through a standard interface, called KidsWay. The overall software package was specifically designed to run the IBM PS/2 Model 25 as configured above, or on other computers that can provide VGA video capabilities and accept the IBM Speech Adapter, such as the IBM PS/2 Model 30-286.

The KidsWay interface is based on voiced instructions and on icons, little pictures of familiar objects. It can easily be used without adult assistance by most pre-reading three-and four-year-old children. Teachers can set many aspects of the software specifically for each child, for each class, and for each program. Standard materials with the software included a classroom integration guide, a software technical guide, and supplementary materials, such as children's books.

The following software was used by the participants as part of the standard KidsWay package.

NAMES. This software holds recorded names of children. When this disk is in drive B and a child is logging in through KidsWay, the computer will spell out his name and then say it.

SPEECH SAVER. This software is one of the KidsWay teacher utilities. This software was specifically created to personalize the learning experience for the child. Speech Saver provides the teacher with the option of recording children's names. When a child signs on using his or her individual picture icon, the child's name appears on the screen accompanied by the spoken name. It can also be used to record software instructions in other languages or dialects to improve cultural appropriateness.

ELECTRONIC EASEL. This voice-supported software program allows children to mix colors and draw pictures using the PowerPad as the primary input device. It provides a printout of a child's computer drawings.

TRANSPORTATION. This software lets children match vehicles with drivers, such as a firefighter with a fire engine, or police officer with a police car. It provides children a beginning exploration of cause and effect related to the microcomputer. Touching the PowerPad provides response in the form of voiced feedback, graphics, or animation. Children can begin to make the connection between touching the PowerPad and what happens on the computer screen in response to their input. They discover that they have control over the response that the computer provides

FANTASTIC ANIMALS. Children can choose to match animal parts to make a real animal, or mix up animal parts and create an original animal. If children indicate a preference to use the keyboard, this program is a good beginning since keyboard commands are limited to three keys .

FUN WITH LETTERS AND WORDS. This software displays a picture in response to each character key a child presses. It is a multi-level program that supports both keyboard and PowerPad input. It includes voice, animation, and color graphics. The program can be personalized by the teacher to provide for individual children's language differences and personal experiences.

COSTUME BALL. This software is accompanied by an original story about children having a Halloween or Mardi Gras party. After the story has been read, children can use the software program to dress Ricochet (the central character) in a number of different costumes. The costumes they create via PowerPad input are combinations of parts of costumes the other story book children have shared with Ricochet. This software includes a sim-

ple program that permits the teacher to type a story dictated by the child, and then to print that story with a picture of the costume she or he created for Ricochet to wear to the costume party.

I CAN COUNT THE PETALS OF A FLOWER. This software uses digitized photographs of wild flowers to help children develop counting strategies. It is accompanied by a book from the National Council of Teachers of Mathematics and a color poster.

ELECTRONIC BUILDER. This software lets children pick simple shapes, such as circles, triangles, and squares, and copy the shapes anywhere on the screen as many times as they wish. Then children can color them on the computer display and print them. This software provides children a simple introduction to the concept of using shapes to create designs and pictures. The open- ended nature of the software program promotes creative exploration. It offers practice in using the mouse as an input device. Teachers can define the level of difficulty according to the child's individual skill in using the mouse by deciding whether to introduce advanced challenges described in the guide.

MY OWN GARDEN. This software program lets children simulate planting a garden. They are provided with a garden plot and a selection of seeds including pumpkin, squash, lettuce, cucumber, cauliflower, and nasturtium seeds. The child selects a seed and then "plants" it by pressing, on a colored PowerPad overlay, a part of the furrow where he wants the plant to grow. The garden is watered, the sun is shining, the seed sprouts, and matures into a vegetable or flower. The child can plant an entire garden in this way, selecting a vari-

ety of seeds to grow. Then the teacher can type a story dictated by the child. Both the picture and the story can then be printed.

WORD PROCESSOR FOR KIDS. This software is primarily designated as a teacher program. Children who display interest in "writing" using the keyboard can explore with this simple word processor. However, as with access to any of the levels and software programs included within the KIDWARE Learning Center, the judgment of appropriateness remains with the teacher.

FACEMAKER. This program lets children select eyes, noses, ears, hair, etc. to create their own cartoon faces on the computer display. It requires some familiarity with the keyboard, and does not support voiced instructions. The program was included because it offers children challenges to which they can apply their cooperative problem solving abilities and because with some initial adult assistance, groups of children enjoy this software immensely.

MIXED-UP MOTHER GOOSE. This software program provides an adventure format for exploring the rhymes of Mother Goose. The software is personalized by permitting the child to sign on and choose a character with skin and hair color like hers or his. A child has control over her character and can "walk" her freely while exploring all the houses, castles, pumpkins, forests, and hills within the wide boundaries of Mother Goose Land. A game format provides challenges for older youngsters with sustained attention who are quite familiar with the verse and nuances of the rhymes. For younger children the opportunity to freely explore houses inside and out is sufficiently enjoyable. A

colorful map accompanies this software and supports children's efforts to play the game and return lost items to their nursery rhymes owners. This program requires more familiarity with the keyboard, and at this time does not support voiced instructions. The program is included because it offers children challenges to which they can apply their cooperative problem solving abilities, and because with some initial adult assistance, groups of children greatly enjoy these challenges.

CURRICULUM GUIDE. The curriculum guide had a twofold purpose: (1) to provide a conceptual and theoretical framework to help the Partnership Project teachers to understand the potential value of microcomputers to children's learning and (2) to offer practical strategies that support implementation of an effective computer learning center. The thrust of this guide is both from a theoretical ("why do it") perspective and a pragmatic ("how to do it") perspective.

GUIDE TO EQUIPMENT AND PROGRAMS. This guide offers detailed directions to the hardware, set-up and operation of the KIDWARE Learning Center in the early childhood classroom. It is the software technical reference.

1994 Hardware and Software Descriptions

The hardware configuration currently used includes one or two computers, a printer, and related peripherals placed on child-height computer tables. The standard computer is an IBM or compatible with a fixed disk drive, one or more MB RAM, a color monitor, a full-sized keyboard, a speech device that records and plays back voice files, and a mouse. Color and standard dot matrix printers are supported.

The **KIDWARE2+** software includes sixteen separate programs, all accessed through a standard interface, called KidsWay. The software package is designed to run on any IBM-compatible computer with the above configuration.

The KidsWay interface incorporates voiced instructions and icons, little pictures of familiar objects. With this special voice-based interface, the computer is easily used without adult assistance by most pre-reading three- and four-year-old children. Teachers set levels within the children's software to meet the needs of an individual child or a small group of children. Voiced feedback supports multiple languages including Spanish and Vietnamese. Standard materials with the software include a classroom integration guide, a software technical guide, and supplementary materials, such as children's books.

The following software is currently used in Head Start classrooms. Since the 1990 version of **KIDWARE** was published, we have continued to observe children and teachers using computers in early childhood settings. We have talked with teachers about their most effective uses of computers. We have continued to respond to their suggestions and feedback by creating more flexible software. Results of this ongoing dialogue are reflected in **KIDWARE2+**.

FUN WITH ANIMALS. Children choose from the body parts of 20 different animals to create their own real or mixed-up animals. Record noises for these animals and hear them voiced in the program. In the Take Animals Home activity, children place the animals in their habitats: farm, desert, grassland, or arctic. Children can make printouts and dictate or write stories about the animals.

ELECTRONIC EASEL (Enhanced). This open-ended software lets children make discoveries about mixing colors. They can mix red with blue or yellow to create secondary colors. Children can choose the size of line for drawing and create a picture. They can print in color and then write or dictate a story about their creations.

I CAN COUNT THE PETALS OF A FLOWER (Enhanced). Children practice counting skills in a natural way, by counting the petals of various wild flowers. Developed in cooperation with the National Council of Teachers of Mathematics, this program contains photograph-like pictures of flowers taken from the book I can count the petals of a flower. An animated ladybug helps children count the flower petals, by tracing each petal one-by-one. Teachers can set levels and number ranges.

NEIGHBORHOODS. The primary focus of Neighborhoods is to help children gain acceptance and understanding of cultural diversity. This series of software programs currently includes three neighborhoods that represent rural and urban community life. The digitized speech capability of the software enhances children's opportunities to explore, create and affirm native language.

FUN WITH LETTERS AND WORDS. Children press on a letter key and a word appears beginning with that letter along with a picture illustrating this word. Pressing the space bar voices the word. Teachers can add children's own personal words (family members, friends, pets, etc.) to the list of available words. Children can make printouts of the word and associated picture.

ELECTRONIC BUILDER. Children pick simple shapes and copy the shapes anywhere on the screen as many times as they wish. Then children can color them on the computer screen and print their creations. This software provides children a simple introduction to the concept of using shapes to create designs and pictures. The open-ended nature of the software program stimulates creative exploration. Teachers can define the level of difficulty according to the child's individual skill and offer advanced challenges described in the guide.

WORD PROCESSOR FOR KIDS (Enhanced). This basic word processor is easy to use for typing, editing, and printing out stories. Children make selections from pictorial menus. Words are typed out and printed in large, primary print (20 column mode). This program can be accessed directly from the other KIDWARE2+ software programs. This program also runs with the PowerPad

to enable young learners to type unhampered by the complexities of the keyboard.

MUSIC MAKER. Children use this program to compose their own musical tunes. The color-coded system makes it easy to explore, combine, and discriminate between the different notes. Children record and replay their own musical creations as well as listen to "old favorites". Tunes can be printed out along with accompanying words or stories to make song books to share with others.

FACEMAKER. Children select eyes, noses, ears, hair, body, and props to construct their own personalized character. Children can then animate their creations. The picture and child's story can be printed on the same page.

MIXED-UP MOTHER GOOSE. The Mother Goose characters have misplaced their belongings. Children choose a character to represent themselves from the selection of multi-cultural characters. Then they search Mother Goose Land for these lost items and return them to their owners. They peek in houses, hike through hills and forests, visit Ole King Cole in his palace -- an accompanying map help them find their way.

TOOL KIT FOR KIDS. This software includes several features that support children's review of their products. It offers children a systematic way to organize, review and describe the creations included in their portfolios. Using *Slide Show for Kids* and *Speech Saver for Kids*, children create and narrate a slide show of selected work samples. Once these shows are created, they can be shared with peers, teachers, and family members, or on a disk with anyone in the global community.

TEACHER UTILITIES (Enhanced). The KIDWARE2+ software provides dozens of unique teacher tools. These tools enable educators to customize computer experiences to suit the needs and interests of children and to help manage the computer learning center. Using the teacher utilities,

- Create up to five separate groups to correspond to children's different learning needs (language background, levels of ability);
- Personalize the software so that children enter KIDWARE2+ through a symbol (icon) that they have chosen to represent themselves, see as well as hear their names spelled, and hear their names spoken;
- Track children's choices and use of software programs;
- Set the levels of software programs available to children; and
- Adjust software programs to accommodate specific abilities, interests, and themes reflected within the class.

SPEECH SAVER (Enhanced). Use this tool to record any of the prompts, feedback, and instructions voiced in the KIDWARE2+ software. As a result, children from different language backgrounds can have feedback in their native language. Children can hear their names spoken in their own voices and have fun recording animal noises and more.

SURPRISE BOX. You can add another software program of your choice to the collection of KIDWARE2+ software programs already available. When children wish to use this program, they enter

the **KIDWARE2+** system as usual, through their icons, and select the "Surprise Box" symbol from a pictorial menu. Select a new program for the surprise box as often as you wish. **KIDWARE2+** will track children's use of this program, too.

CURRICULUM INTEGRATION GUIDE. This guide has a twofold purpose: (1) to provide a conceptual and theoretical framework to help teachers understand the potential value of microcomputers to children's learning and (2) to offer practical strategies that support implementation of an effective computer learning center.

CLASSROOM GUIDE. This guide offers detailed directions to the hardware, set-up and operation of the **KIDWARE2+** Learning Center in the early childhood classroom. It is the software technical reference.

Appendix C: Participating Organizations

HEAD START/IBM PARTNERSHIP PARTICIPANTS

Special thanks to Cindy Balsley, Project Administrator, (IBM Educational Systems, Atlanta, Georgia) for her commitment and continuing support during this partnership project.

Action Head Start
211 W. Midland Avenue
Winder, GA 30680
(404) 867-6167

Director: Margie Barry
Current Contact: Peggy Stillwell

Beauregard Community Action Association, Inc.
P.O. Box 573
DeRidder, LA 70634
(318) 463-7895

Director: Winkie Kite
Current Contact: Estella Scott

Cardinal Spellman Head Start
137 E. Second Street
New York, NY 10009
(212) 982-6380

Director: Joann Milano
Current Contact: Ellen Sydor

Cold Spring Family Center
4849 Pimlico Road
Baltimore, MD 21214
(301) 543-4242

Director: Jennifer Branch

Community Action Lexington-Fayette County, Inc.
913 Georgetown Street
Lexington, KY 40576
(606) 233-4600
Director: Jane Bryant
Current Contact: Beth Geran

Economic Opportunity Planning Association of Greater Toledo, Inc.
124 West Woodruff
Toledo, OH 43624
(419) 255-7125

Director: Mary Hodge Current Contact: Jerome Lee

Home Education Livelihood Program (H.E.L.P.)
105 N. Alameda
Las Cruces, NM 88005
(505) 523-2411

Director: Loui Reyes

Metro Delta Head Start
2001 Park Avenue
Baltimore, MD 21217
(301) 669-8656

Director: Ann Washington Current Contact: Edward Young

Montgomery County Community Action Agency
313 S. Main
Dayton, OH 45402
(513) 225-5161

Director: Beverly Conley Current Contact: Bertha Sauers

St. Bernardine's Learning Center
3814 Edmondson Avneue
Baltimore, MD 21225
(301) 233-4500

Director: Sheila Tucker Current Contact: Akil Rahim

St. Veronica's Head Start
2920 Joseph Avenue
Baltimore, MD 21225
(301) 354-0220 Current Contact: Talibah Kambui

Director: Sister Loretta Rosendale

ACYF Head Start
P.O. Box 1182
Washington, DC 20013

Education Program Specialist: Dr. Trellis Waxler

IBM Corporation
7E-A133 Dept. 21W
6705 Rockledge Drive
Bethesda, MD 20817
(301) 564-2486

Current Contact: Phyllis Shalvey
phone: (404) 238-5479

Account Marketing Representative: Mr. Dave Keuch

IBM Corporation
One Central Plaza
Suite 501
11300 Rockville Pike
Rockville, MD 20852
(301) 571-1448

phone: (301) 229-1067

Dr. Linda Tsantis

MOBIUS Corporation
405 N. Henry Street
Alexandria, VA 22314
(800) 426-2710

Dr. Suzanne Thouvenelle

Appendix D: Readiness Self-Assessment Questionnaires

TECHNOLOGY READINESS SELF-ASSESSMENT
(for individual staff member)

1.	Do you like to "tinker" with things?	Y	N
2.	Do you consider yourself mechanically inclined?	Y	N
3.	Are you willing to spend approximately three hours a week learning something new?	Y	N
4.	Have you ever used a computer?	Y	N
	If yes, did/do you like it?	Y	N
5.	Do you like to try new things?	Y	N
6.	Do you think computers can be used effectively with preschoolers?	Y	N
7.	Are you pleased with the increasing use of computers in schools?	Y	N
8.	Do computers encourage creative thinking?	Y	N
9.	I am not afraid of computers.	Y	N
10.	Do you think most people need to learn about computers?	Y	N
11.	Do you think computer help children learn and think in new ways?	Y	N
12.	Do you want to own a computer?	Y	N
13.	Computers in the classroom are not a gimmick or fad.	Y	N
14.	Do you think people other than computer programmers can use computers?	Y	N
15.	I feel comfortable with the idea of working with a machine.	Y	N
16.	Computers can promote social interactions among preschool children in the classroom.	Y	N
17.	Children do their own thinking when working with computers.	Y	N
18.	I think children need to learn about computers in school.	Y	N
19.	Computers do what people program them to do.	Y	N
20.	Are you willing to try something if you're not sure how to do it and it may involve making mistakes?	Y	N

TECHNOLOGY READINESS ASSESSMENT
(Head Start Program Level)

1. Do you feel that most of your program services to parents and children are at least adequate? Y N

2. Rank the following areas of program improvement for the coming year:

Program Improvement With Administrative Computers	___
Parent Literacy/Training	___
Classroom Computer Use	___
Playground Improvement	___
Volunteers	___
Parent Involvement	___

3. Do you have a computer for administrative use? Y N

4. If so, what software are you currently using?

CHILDBASE 2000	Y	N
FACTS	Y	N
MOBIUS	Y	N
HEASTARTER (Kaplan)	Y	N
Temple University	Y	N
Other (specify) _____	Y	N

5. Did you purchase training in using your administrative software? Y N
If yes, from whom? _____

6. Are you satisfied with your program's success in computerizing your administrative functions? Y N

7. Are you working on any special initiatives in any other component of your basic program? Y N

8. Are you meeting new certification or licensing requirements? Y N

9. Do you have a majority of new staff? Y N

10. Are you introducing a new curriculum? Y N

11. Are you in the process of upgrading current learning centers? Y N

12. Do you want to expand computer use to your classrooms and/or your parent education program? Y N

13. Do you have a local computer consultant or someone on your staff who has the ability to assist with your program's efforts to purchase and use computers? Y N

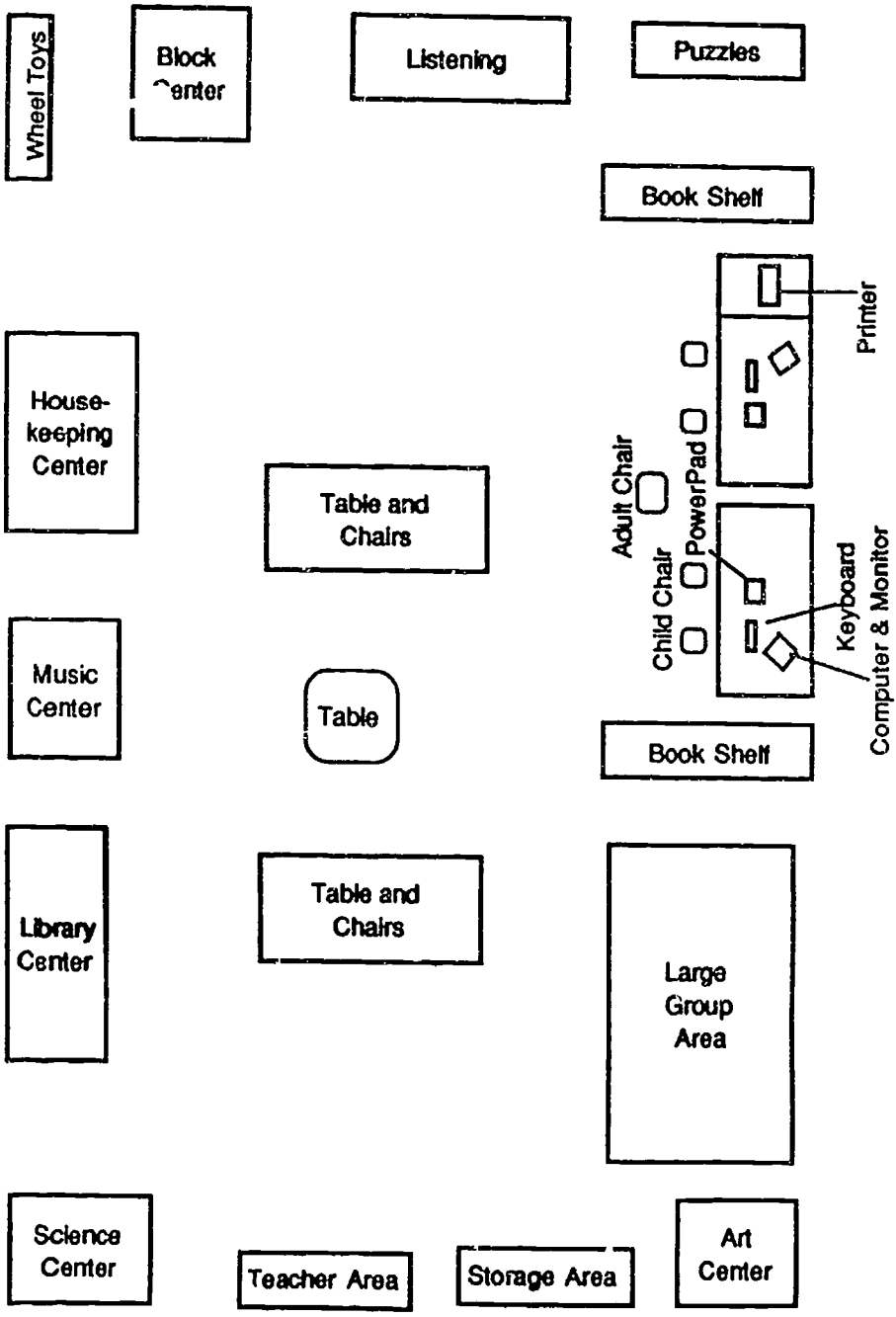
14. Do you have a relationship with an early childhood education department at a local community college or university? Y N

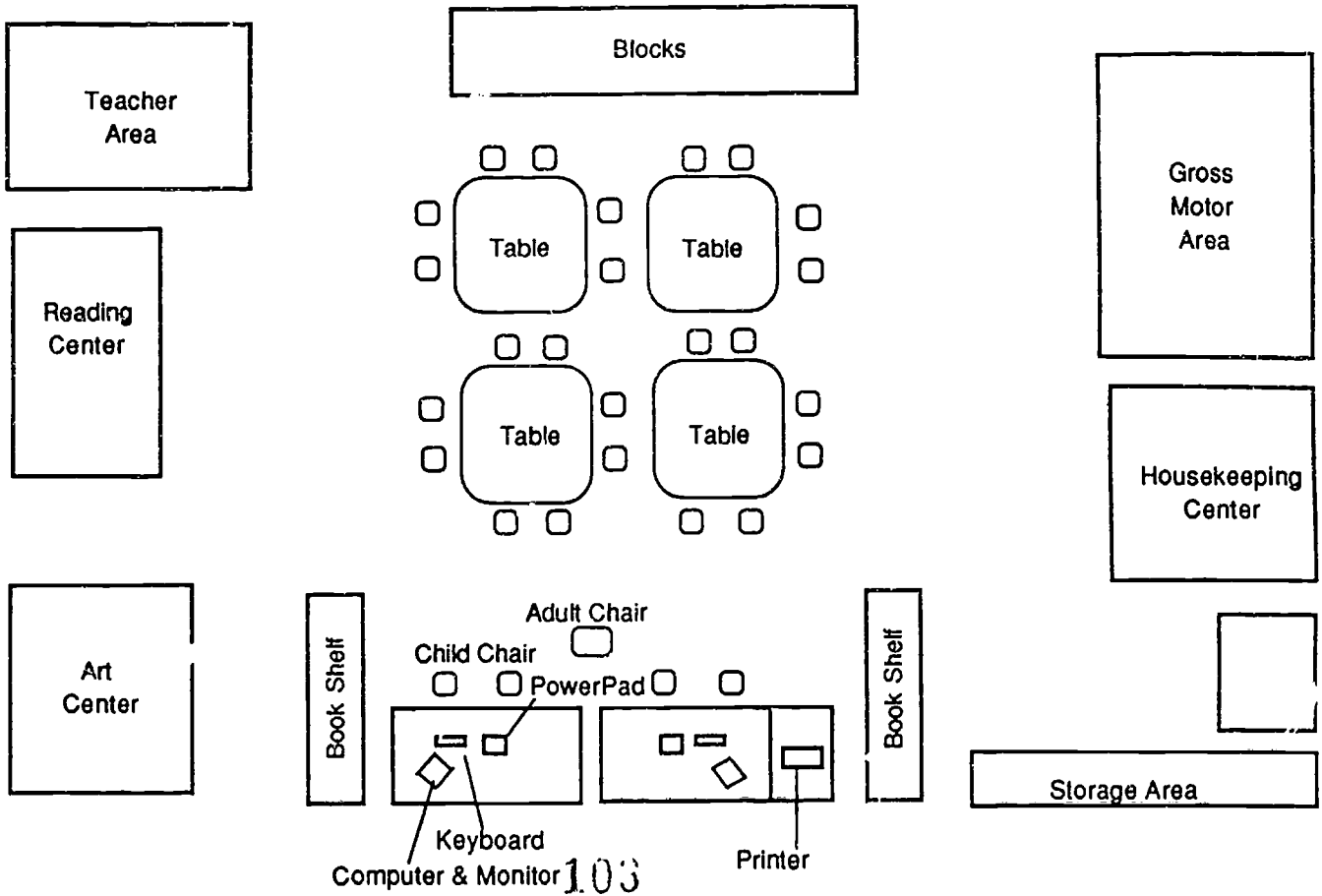
15. Did you set aside funds to support training in using classroom computers? Y N

16. Did you include funds for the following requirements for setting up a computer learning center? Y N

Security of equipment
Insurance
Appropriate Furniture
Maintenance
Expendable supplies (paper, printer, ribbons, and diskettes)

Appendix E: Diagrams of Computer Placement and Organization


Wheel Toys
Block Center
Listening
Puzzles
Book Shelf
Printer
House-keeping Center
Table and Chairs
Adult Chair
PowerPad
Child Chair
Keyboard
Computer & Monitor
Music Center
Table
Book Shelf
Library Center
Table and Chairs
Large Group Area
Science Center
Teacher Area
Storage Area
Art Center


Teacher Area
Blocks
Gross Motor Area
Reading Center
Table
Table
Table
Table
Housekeeping Center
Art Center
Book Shelf
Adult Chair
Child Chair
PowerPad
Book Shelf
Storage Area
Keyboard
Computer & Monitor
Printer