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ABSTRACT

A collaborative approach to program evaluation combined with the use of a variety of evaluation methods using currently available technology can yield valuable information about the effectiveness of family literacy programs. Such an approach was used for McCosh Even Start, a federally-funded family literacy program located at McCosh School in an inner city Chicago neighborhood, a partnership between Northeastern Illinois University and the Chicago Public Schools. The program is comprised of an adult literacy component and a parent-child component. The adult literacy component includes computer instruction, photography and video classes, a parent club for literacy career development skills, and parent field trips. The parent-child component includes home visiting, an after-school family literacy program, parent-child field trips, computer classes, and the use of videotaping and photography to document learning. Computers, video technology, and photography were used as literacy development tools, but also to document the literacy progress of parents and children. Evaluation used to show literacy improvement included video documentation, interviews, parent interest questionnaires, observations, book logs, photo collections with personalized captions, portfolios, information reading inventories, and parent self-evaluations. Based on evaluation findings, it was concluded that the evolving, continuous feedback model of evaluation made it possible to use a wide range of evaluation strategies to obtain an authentic picture of the program's strengths and weaknesses and made it possible to make changes as a result of all participants' feedback, and to approach target goals. (Contains 30 references.) (KB)

A COLLABORATIVE APPROACH TO FAMILY LITERACY EVALUATION STRATEGIES

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Running Head: Collaborative evaluation in Even Start

A Collaborative Approach to Family Literacy Evaluation Strategies.

Abstract

McCosh Even Start, a federally funded project located at McCosh School in inner-city Chicago neighborhood, is a partnership between Northeastern Illinois University and The Chicago Public School. The parent/child components of the program are: home visiting, an after school family literacy program, parent/child field trips, computer classes, and the use of videotaping and photography to document learning. The adult literacy component includes computer, photography and video classes, a parent club for literacy career development skills and parent field trips. Computer, video technology and photography were used as tools to develop literacy, but they were also used to document the literacy progress of parents and children. To evaluate the results of the program, staff, parents, children and a video documenter collaborated to use a wide range of evaluation. These strategies used to show literacy improvement included video documentation and interviews, parent interest questionnaires, observations and book logs, photo collections with personalized captions, portfolios, information reading inventories and parent self-evaluations.

A Collaborative Approach to Family Literacy Evaluation Strategies.

In an Even Start Family Literacy Program, literacy is the main goal and focus for parents and children. To recruit parents it is necessary to catch their attention. Computers and video technology are able to do just that. Nowadays, many preschools and kindergarten-primary classes have computers in the classroom. It is not new to have computers in the classroom. Video technology, however, with the use of the scanner to scan photos into the computer, and the use of digital cameras, is just beginning to be used in preschool/kindergarten/ primary classes. In addition, the use of computer, video technology, digital technology, photographs by parents, children and staff to document learning is a new development. In the early and late 70's, when computers were first being introduced into the early childhood classrooms, researchers asked questions about:

- the age at which children would be able to use the computer
- the characteristics of children who were frequent computer users
- the gender of frequent users
- the content areas for which the computer is most useful
- the effect of the computer on social interaction
- the type of software used most frequently
- the choice of the computer area compared to early learning centers

A review of the literature suggests that researchers have found that children of preschool and primary age can learn to enjoy using the computer (Clements, 1987, Shade & Watson, 1990, Hohmann, 1990, Landerholm, 1994, 1998), that preschool children generally prefer to work together with another child on the computer rather than alone, (Buckleitner & Hohmann, 1988, Buckleitner, 1993, Clements, 1987), that children tutor and learn from each other, that they develop positive attitudes toward the computer, increased social interaction at the computer. A computer learning center fits well with traditional learning centers and computers can help facilitate learning through discovery and experimentation (Shade and Watson, 1990, Fishman, 1991, Landerholm, 1994, 1998). Increased social interaction at the computer and positive attitudes toward the computer correlates with increased language use (Buckleitner & Hohmann, 1998, Clements, 1987, Landerholm, 1994, 1998).

Many studies have found no gender difference in young children's use of the computer

(Clements, 1987, Perimutter, et, al, 1985, Landerholm, 1994). However, Rosengren, 1985, found that both children and teachers more often perceived boys as expert computer users rather than girls. (Elliott, (1993), found that boys' and girls' routes to competence on the computer differ, though both genders display similar play behaviors and learning outcomes. Caftori (1994) in her study of K-3rd graders use of the computer found that even when both boys and girls had a computer at home, boys used the computer more. Boys and girls also used the computer in different ways. Girls used more educational software at home while boys used more games. Weinman and Haag (1999) report a variety of new studies which reinforce the older ones: boys are more attracted to the computer, use the world wide web more, take more computer application and design courses and describe the computer in more inviting terms. A report by the American Association of University Women (1998) found that girls of all ethnicities rated themselves significantly lower than boys on computer abilities and were less likely than boys to think computers help them to do better in school.

In terms of content areas, children can achieve prereading, readiness and writing skills through using the computer (Buckleitner & Hohmann, 1988, Buckleitner, 1994. With the computer, children write more, are less worried about making mistakes, take increased pride in their writing because text looks better, have fewer fine motor control problems and are more willing to take risks and revise (Clements, 1987, Moore, 1991). Several researchers found that a talking version of a word processor significantly increased the amount of editing children performed on their compositions (McArthur, 1988). Other studies have reported children's gains in mathematics and problem solving skills (Clements, 1987, Buckleitner & Hohmann, 1988, Faulkner and Anderson, 1991).

As researchers have continued studying young children's use of the computer, research has shifted from looking at how, when, and how long children use the computer, to what type of software is most effective for educational purposes (Haughland & Shade, 1988, Fishman, 1991, Buckleitner, 1992, 1993, 1994, 1996). The High Scope program in Michigan (Buckleitner, 1996) has found that the success of computer based learning for young children depends on:

- the quality of the overall preschool or kindergarten curriculum
- the quality of the computer software
- the software's match with the curriculum

Video Technology

Currently, besides using computers, a whole new variety of video technology is available for home use and in the classroom. Scanners, digital cameras are available to bring visual images into the computer. Computer software is available that enables the student to include sounds, video images, and photographs into the text. Video cameras enable children, parents and teachers to record field trips and classroom experiences and play them back for immediate feedback. Children can explore the web and see and hear video images from across the world. Tapscott (1999) describes the current generation as the "Net Generation". He says that children of the net generation are surrounded by digital media, and to them digital technology is no more intimidating than a VCR or a toaster. Lewin (1999) describes children improving their reading by using the world wide web. Pastor and Kerns (1997) describe Kindergarten children using digital cameras for documenting experience. They decided that they would experiment to facilitate reading and writing literacy through the use of the computer. After looking for software to assist their educational goals, they shifted to the use of the digital camera. This decision was reinforced from the book, The Hundred Languages of Children (Edwards, 1993) which describes the Reggio Emilia approach to education (from Italy). This approach stress the importance of observation of real experiences and objects. It also uses photography to document those experiences. In the Reggio Emilia approach, documentation of experiences through photography, drawings, journal writing is seen as being very important for children because it boosts memory, helps guide thinking, helps children become more aware of experiences and more able to articulate what they see.

Overview of the Project

A family literacy project was set up in a black, inner city public school on the south side of Chicago. The project was set up through a partnership sponsored by an Even Start grant from the Illinois State Board of Education where Northeastern Illinois University (a state university) worked in a partnership with a Chicago public school. A university professor, several graduate assistants, the principal, the assistant principal, several teachers, parents and the school community representative worked together to design an Even Start program which included the components of an after school program for parents and children to learn together two days a week, a home visiting component, an adult literacy component (Parent club), and a component of field trips for parents

and parents and children together. The Even Start guidelines for recruitment of parent participants included having children in the age range of 0-7, and needing to look for a job or work on adult literacy themselves. Funding and time was contributed by the school, the university and the Even Start grant. The program was designed to include support activities to build rapport, such as providing snacks, providing free books, providing activities for older and younger children not enrolled in Even Start, and providing hands on, enjoyable activities for parents. The project was also designed to include educational, achievement type activities related to family literacy, science, math and computers. The curriculum used was the High Scope model developed by David Weikart (1989). This is an open ended curriculum framework emphasizing active learning, where activities are developed to fit the needs and interests of the children and parents. Parents and children choose the activities they want to participate in from an array of choices. Activities were designed that were easy to do, enjoyable, inexpensive, and involving materials that were easy to find at a local store. Activities were also designed so that they could be replicated at home with their other children at a range of ages and levels. The after school program was scheduled two afternoons a week for parents and children together and the parents' club was scheduled one morning a week for parents to work on adult literacy and job and career related skills. Field trips were scheduled for parents and children throughout the year.

Goals of the Project

The goals of the project were:

1) to help parents become involved with the school program by becoming comfortable at the school, making friends, having enjoyable experiences.

2) to help parents enjoy reading and writing and replicate these experiences with their children.

3) to help parents enjoy and understand science, math, computer and video technology and replicate these processes with their children.

4) to help parents improve their own literacy and job hunting skills.

Overall Evaluation of the Program

Evaluation is generally defined as the process of selecting, gathering and interpreting information to make personal decisions, or to form judgments about the worth of a product or program or about the value of an approach to solve a problem of accomplish an objective

(Roopnarine and Johnson, 1993). Evaluation has become an integral part of programs and policies (Alkin, 1990).

According to the Madaus, Scriven and Stufflebeam (1993) taxonomy of major evaluation models, the systems approach was the most utilized one in the 1960s and 1970s. In this approach goals are known, and the major question of evaluation is whether the expected effects are achieved. The Context, Input, Process and Product (CIPP) model (Stufflebeam 1971) which employed the systems approach was used widely in institutions in the United States. The famous CIPP model was based on objectives, testing, and experimental design. Although the systems approach and the CIPP model in particular were widely utilized, probably because of its focus on objectives, the model was considered inappropriate for this program for several reasons. The reasons include unrealistic fragmentation of evaluation into four separate areas (context, input, process and product), underestimation of the evolution of process, and overlooking actual continual learning to focus on easily measured attributes.

The nature and design of evaluation depends on the purpose of the evaluation. Evaluation of the Even Start Family Literacy Project was aimed at collecting various types of evidence to determine whether the step-by-step milestones achieved were consistent with the goals of the program. Due to the nature of the project, which involved a wide variety of activities, it was necessary to employ flexibility in terms of time and method of collecting the information. Rather than pre-designing the evaluation approach, flexibility was maintained throughout the program in tapping pieces of evidence as they became apparent. No evaluation approach or method will guarantee validity in advance (House 1980).

The Evolving, Continuous Feedback Model of Evaluation

The authors of this paper decided to name their evaluation approach "The Evolving, Continuous Feedback Model of Evaluation" (ECFME). Like in the case of the CIPP Model, the goals of the program were an important aspect of the evaluation. However, the ECFME included flexibility and a level of integration that would match the nature of activities in the program. This model was mainly characterized by five important collaborative components:

a. Evolving varieties of equipment, activities and evaluation strategies based on our participants feedback.

b. Continuous monitoring of activities.

c. Immediate and authentic feedback.

d. Inclusion of participants' (Parents, children, teachers, parent assistants, administrators, consultants.) perspectives and collaboration in the evaluation process.

e. Cross-checking meanings to enhance validity.

In this program, evaluation information was derived from various sources including live interactions between parents and children, teachers and children, and among children themselves. The information was collected through various media: photography, videotaping, interviews, formal and informal observations, discussions, book logs, reading inventories and attendance sheets. Assessment of the products that were developed by parents and children was another source of evaluation information. The products included: pictures, books, stories, children's reading levels and parents, teachers and children's attitudes towards different types of technology and skills. Another source of information was the number of parents who obtained jobs as they improved their skills in reading, writing, computer use and word processing, and developed self confidence and job readiness skills.

Computer Equipment

At the beginning of the project, the computer equipment in the Even Start classroom consisted of the following donated computers: a variety of Apple lle, Apple llc, Apple llGs, Tandy, and old IBM computers. One new Macintosh Performa 6300CD was purchased. We also had two Stylewriter printers, a printer for the IBM computer and a new Hewlett Packer computer for the Macintosh. After four years in the project, the equipment consisted of 3 power Macs with cd-roms, (purchased, two new and one rebuilt) 3 Macs (quadras that were donated) and 3 Apple llGS. The rest of the older equipment was given to parents in a lottery.

Photography and Video Equipment

At the beginning of the project, the photography and video equipment consisted of: an Olympus zoom camera, a university Sony high 8 video camera, some inexpensive cameras (under $20) and a couple of Polaroid instant cameras. By year four of the project, the equipment consisted of: a second Olympus zoom camera, a Sony 8mm video camera, a second Sony high 8 video camera, and a scanner.

Use of Photography, Videotaping, and Scanner for Literacy Instruction and Documentation, an Evaluation Strategy

In year one of the project, the staff used photography. At first, the project director, teachers and parent assistants took photos of the children and parents doing classroom projects and going on field trips. Two sets of photos were developed, one set for documentation and the other set to give to the parents and children. The original idea was to use the photos for literacy. When the parents got the photos, they would ask their children to tell them about the photos and they would write down what they said and make small books. Later the parents started portfolios (scrapbooks) and included photos from the whole year. The project hired a video documenter to evaluate the program. The video documenter videotaped the classroom experiences and the field trips. She also taught photography classes to the parents and staff members. This expanded the number of people taking photos. It expanded what they saw, how they saw things and what they wrote about. The parents took photos at home and in the community as well as in the program. A parent assistant was hired to do the day to day videotaping. Better equipment was purchased as the inexpensive cameras did not last well: they broke quickly and did not take good pictures. The zoom cameras worked well and all staff became more skilled at photography. At first an inexpensive video camera was purchased, but was not as useful for editing. Later, a Sony-high-8 camera was purchased. Then a scanner was purchased. Some of the parents and teachers who were not as interested in the computer at first, were fascinated by the scanner. Photos could be scanned into the computer, cropped, changed and printed out. Multiple copies of books could be printed and laminated. Children and parents could share their stories with other children and parents. The teachers and parent assistants in the project began to work with the scanner, with photos, with the laminator, with video taping and editing as well as continuing with photography. All the field trips were videotaped, and photographs were taken by parents and teachers. In the after-school program photos and videotapes were made. Afterwards, photos were used with the parents and children to make portfolios, and write stories. The scanner made it possible to scan photos into the computer, change photos, write text and print out multiple copies of the stories.

As well as the use for motivation for literacy, photos were wonderful for documentation. At the end of the year, when a final evaluation report needed to be written, the photos of the year's happenings were a useful way to jog memory and to see children's and parents' progress. The

portfolios were a year long progress report.

Evaluation and Selection of the Software

In year one of the project, the teachers weren't very familiar with computer use and also wanted help in choosing software to match with the goals of their curriculum. Therefore, the university professor used High Scope's Survey of Early Childhood Software (Buckleitner, 1996) which reviews early childhood software programs, rating them on user friendliness, educational value, and instructional design, and lists them by conceptual area. It also lists and rates old software that can be used with all varieties of old computers, and lists prices and where this software can be ordered. Using this source, the researcher helped the teachers select software programs with which to begin the after-school computer program for parents and children (2-4) software for 5-7 and software for older children (8-10) and software for parents' use. Each computer was set up with one piece of software which was changes 2 or 3 times a year. By year 4 of the project, teachers selected software from a variety of sources, the cd rom software was very popular, and the teachers' had their own opinion on the best software to fit the curriculum. The software evaluation was a continuous feedback method as children selected computers based on the software. Teachers selected software based on educational goals and children's reactions on use.

Childrens' Software Programs

In the first year of the project, the children's software was selected using the Beitleitner (1996) guide to software. Software was selected for the youngest children (ages 2-4) early primary grade children, (ages 5-7) and older children (ages 8-10). By the fourth year of the project, more software was selected on cd-rom, and teachers' evaluated and choose software based on educational goals and their own observations of childrens and parent interest and use.. (See appendix I)

Adult Literacy/Computer Instruction for the Parents for Literacy and for Documentation of Adult Learning

The parents were attracted to come to the program because of the computers. Many of these parents had bad experiences in school, and did not want to do the same old things like workbooks and tutoring, but were curious about the computers and wanted to be involved in the latest technology. Thus having computers was a great way to get parents interested in coming to

the program. Also coming to the after-school program where they would have snacks, read with their children and have choices of doing art projects, science projects, book making projects or computer made the program informal, interesting and less intimidating. The parents did not have to use the computers if they didn't want to. In addition, the parents liked using the computers as a tool for a purpose rather than just typing. When they made a parent directory, they interviewed each other, took pictures, typed up the interviews on the computer and made a directory of all the parents in the program. This was an interesting and functional project. The parents also got interested in the new Macs because they could make birthday and holiday cards. Anything that they could use in their regular life became attractive. Software used for the parents besides the childrens' software were: Claris Works, Appleworks, and Children's Writing and Learning Center, and Print Shop. The projects that the parents completed on the computer were also used for documentation of learning. For example, a birthday card they made at the beginning of the project could be printed out with a copy for documentation and a copy for the person making the card. Work completed throughout the year could be saved and compared to a final project near the end of the year.

Besides the computer, many parents were interested in video technology. Adults like to see themselves on tv and in photographs as well as children do. Adults also love to see their children in videos and photographs. These images paired with the written word is an interesting way to encourage literacy. Parents read stories and were videotaped. These tapes were loaned out in a video library.

Childrens' literacy and computer learning

The children loved the computers. They took to it right away. Children as young as 2 years old could be seen working on Picture Chompers (MECC) on the old Apple11c. They would come right in and sit down and work. Several children would work at every computer. One working and the others watching and telling the other person what to do. The older children would use the cd-rom software and liked the problem solving ones. Again, two or three children would work together and help each other. With the use of the printer, children's work was saved and printed, and put in portfolios so that their learning progress could be documented. The children documented their own work. They participated in the evaluation process, by filling out daily

evaluation forms and end of year forms. The video documenter also videotaped the children and interviewed them about what they were doing on the computer, and in other areas of the curriculum.

Software Selection and Parents' Computer Learning

The parents were more intimidated. Many did not want to have anything to do with the computer. Others would go over and help their children figure out what to do. As the teachers became more comfortable with the computer, they began to share their experiences with the parents and help them begin to work on the computer. As some parents became more comfortable, they would help other parents. In year four of the project, we had a lottery to give away some of the old Apple 11 computers and software. The parents were delighted. In addition, by year four, many of the parents had bought computers at home for their children as they could see how much they learned using them. The evaluation process related to computer learning involved self report questionnaires and the number of parents who now used the computer.

Teachers and Computers

The teachers were also intimidated at first. But gradually they gained more confidence. The key early components were to have a computer consultant who was knowledgeable, but also teacher friendly. This communication aspect was very important. Some technology experts do not know how to put teachers and parents at ease. Later as teachers took classes and went to workshops and practiced on the computer themselves, they became more comfortable. Now all the teachers on the technology committee in the primary building are Even Start Teachers. The other critical component was that the teachers had computers in their classrooms. As the children used the software in the classroom, the teachers became more familiar with the process, and also saw the potential, and the success of the computer. This again is part of a continuous feedback evaluation.

Collaborative use of Reading interest inventories and self report surveys of literacy learning

In years three and four, a reading professor at NEIU conducted informal reading surveys with the parents as a pre-test to check on their reading levels. An end of the year post test was also planned to document progress in literacy. Both years, by the end of the year, the majority of parents had found jobs and were working so were not able to continue attending the program. A

collaborative solution was devised to solve the problem. The professor trained the parent assistants on staff to give the check list over the phone. This instruction took several workshops. The parent assistants conducted the phone surveys and were able to contact all the parents involved. The parents responded well to the parent assistants. They knew the parent assistants who lived in the neighborhood, they were candid in their responses to someone they knew from their neighborhood. They were able to do this in the comfort of their own home. This collaboration provided more candid information about the learning process and the effect of the project, than an outside evaluator could likely obtain. The training of three parent assistants provided the added benefit of completion of the surveys in a more timely and cost effective fashion.

Continuous Monitoring and Immediate Feedback

The parent and children read books together for twenty minutes each day when they came to the after school program. After reading a book, the child wrote up a book report. Prizes were awarded each time a child read five books and wrote up the book reports. A graduate assistant collected the book reports gave out prizes and recorded the data. One child read almost 300 books in one year! The number of books varied from a few up to 300 during the year. Here again, the book reports was a literacy activity. The prizes were awarded to help begin the habit of reading. The book reports were documentation for the prizes, but also, then they were available to document the learning process for a final report for the funder. This again was a collaborative strategy for using an instructional activity for two purposes: as an instructional activity and as a documentation/evaluation activity. This process gave immediate feedback to project staff and participants.

Evolving Varieties of Equipment, Activities and Evaluation Strategies

Given the multitude of needs of children in inner city schools of Chicago, improving family literacy levels while also facilitating learning of content (Buckelitner and Hohmann, 1988; Buckleitner 1994; Butler and Cox, 1992) was an important goal. The project staff wanted to design effective measures to evaluate this goal. Although the program started with no computers in the primary building, obtaining computers was the first step in working with the goal of improving family literacy.

With minimal photography and computer equipment acquired, evolution of equipment,

software and activities was not only desirable, but necessary. During the life of the program computer equipment changed from mainly old to mainly new; photography and video equipment changed from old to new; and software was often changing. Some parents changed from being hesitant, computer-intimidated individuals to being motivated, highly involved, enthusiastic computer users and owners. Activities kept changing. They evolved from simple picture taking, making snacks and using simple software to four well-functioning stations for art, science, bookmaking, and computer skills (including scanning). Given the evolution of equipment and activities, evaluation of learning also kept changing from informal observations and picture taking alone to include video-recording, interviewing, administering reading inventories, and assessing attitudes, enthusiasm and products, i.e. stories written and books produced. It was evident that as parents learned more, their children also learned more. A good example was acquisition of video technology, which became very interesting to parents and children and became part of their activities in the program and at home. Parents learned science, math and computer content. Their learning was evident in the activities especially bookmaking, use of software for word-processing and scanning, picture-taking, planning activities, recipes – portioning ingredients for making snacks, time table and time keeping, playing computer games with their children. Reading, writing, photography and computer technology skills became useful tools for parents in job searching. Eighty percent (80 out of 100) parents got jobs by the fourth year of the program. The jobs were closely related to the skills and attitudes acquired from the program.

Increased reading levels came as a by-product of their involvement in the activities. Aspects of literacy were acquired incrementally and purposefully – using them to accomplish something practical, such as making a book, writing a story, or describing a field trip.

Continuous Monitoring of Activities

Teachers, parents and children worked together to ensure close monitoring of activities so that small milestones would be achieved by completing an activity or part of an activity in meaningful ways. Connectivity between activities or parts of activities were important in facilitating coherent learning of a complete skill or concept. There was particular interest on the underlying relationship between the skill learned and literacy.

Immediate and Authentic Feedback

Feedback was immediate and authentic. In each activity, parents and children demonstrated

use of skills and potential for using the newly acquired skill as the basis for learning a new literacy-related skill. Necessary help was provided to facilitate successful learning of skills needed in carrying out the varieties of activities. Parents could see each step they were taking in creating a book for example, and they could tell whether they were successful in that one step or not. If they were not successful in accomplishing that step they started over again, and when it was achieved they moved on to the next step. Help was provided as necessary.

Participants' Perspectives

Parents and children chose activities of their interests. They had opportunities to own the activities of their choice and carry them out in ways that were meaningful to them. They brought their experiences to the activities and in the process of documenting and explaining what they were doing, they improved their ability to read and write, word-process, take pictures, scan, video-tape, plan, organize, summarize etc. Parents and children liked putting a personal touch in the stories they wrote and the books they made. They selected the event to describe, e.g. a field trip, pictures to scan into the computer and include in their stories; they changed the pictures the way they wanted; they decided on the size of the books and book covers. All participants in the program: staff, parents and children participated in the evaluation process through interviews, suggestions box, monthly staff planning meetings, daily evaluation forms filled out by children and parents, book logs & national evaluation forms, reading surveys, and self report checklist

Cross-checking Meanings

Interactive ways of obtaining feedback made it possible to crosscheck meanings to increase the validity of the evaluation. The internal validity of an evaluation depends upon whether the evaluation is true, credible, and normatively correct (House, 1980). It was considered important to cross-check the meanings parents, children and staff drew from the activities, in relation to the overall goals of the program. Interviewing and videotaping parents, children and staff revealed that the activities provided enjoyable ways of improving their abilities to read, write, use photography, video and computer technology at various levels, while also learning math and science through practical application. To measure something validly implies that its essence or true nature is known and can be recognized (Katzer, Cook, and Crouch, 1998). Applying literacy skills to the day to day problem solving was a recognizable form of the presence and utilization of those skills.

Summary

In summary, the use of the ECFME model of evaluation made it possible to use a wide range of evaluation strategies to obtain an authentic picture of the program, its strengths and weakness. In addition, the ECFME model made it possible to make changes as a result of all participants evaluation feedback, and to get close to the target goals.

Appendix 1--A Sample of Software

Preschool/Early Primary Programs

Creative Activities

A. Older floppy disk programs for Apples

Puppet Maker (Spinnaker)

Mask Parade (Springboard)

Facemaker (Spinnaker)

B. Newer programs for Macs (floppy or cdrom)

Kid PIX-(Broderbund)

Language and Literacy Activities

A. Older floppy disk programs for Apples

Picture Chompers (Mecc)

Sticky Bear Shapes and Opposites

Children's Writing and Publishing Center (Learning Co.)

Sticky Bear Shapes and Opposites (Learning Co.)

B. Newer programs for Macs (floppy or cd-roms)

Ultimate Writing and Creativity Center (Learning Co.)

Kid PIX Studio Deluxe (Broderbund)

Bailey's Book House (Edmark)

A to Zap (Sunburst)

Numbers, Counting, Space and Time

A. Older floppy disk programs for Apples

Counting critters (Mecc)

Math and me (Davidson and Associates, Inc.)

Math Rabbit (Learning Co.)

B. Newer programs for Macs (floppy or cd-rom)

Sammy's Science House (Edmark)

Millie's Math House (Edmark)

Counting Critters (Mecc)

Math and me (Davidson and Associates, Inc.)

Math Rabbit (Learning Co.)

Older Children (ages 9-10)

Creative Activities/Language and Literacy

A. Older floppy disk programs for Apples

Kid Pix (Broderbund)

Childrens' Writing and Publishing Center. (Learning Co.)

B. Newer programs for Macs (floppy or cd-rom)

Kid Pix (Broderbund)

Childrens' Writing and Publishing Center. (Learning Co.)

Numbers, Counting space and time/Science

A. Older floppy disk programs for Apples

Math Shop Junior, an intriguing math program.

Odell Lake (MECC) A problem solving program.

B. Newer programs for Macs (floppy or cd-rom)

Magic School Bus (Sunburst)

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