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ABSTRACT

This document consists of a brief final report and a handbook from a project conducted to develop family numeracy activities and incorporate them into adult basic and literacy education (ABLE) classes in two Pennsylvania counties. The 10 activities, which were designed to help adult learners foster the development of numeracy concepts/skills in their young children, cover the following topics: sizing, ordering, classification, one-to-one correspondence, counting, geometric shapes, units of length/distance, money, arithmetic operations, time, temperature, and fractions. The activities were pilot tested with 28 students in an ABLE classroom and packaged into learning packets that were distributed to parents involved in Even Start, Head Start, and adult basic education programs in Washington and Greene counties. Appended to the final report are the following: a chart detailing student/tutor evaluations of the activities, sample parent evaluations and staff/tutor questionnaires, and the staff/tutor handbook. Included in the handbook are information on numeracy and parents' role in teaching numeracy skills, descriptions of the 10 activities, and sample staff/tutor and parent evaluations for each activity. (MN)

ADDING FAMILY NUMERACY TO ABLE PROGRAMS

Project Director: Dr. Barbara Mooney
Project Coordinator: Jane Schrock
Project Implementors: Verona Yanak
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PDE 353 Project: PA FY 93-94

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USDOE/PDE Disclaimer:

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ABSTRACT

Title: Adding Family Numeracy to ABLE Programs

Project No.: 99-4019 Funding: $6,375.00

Project Director: Dr. Barbara Mooney Phone No.: (412)852-2893

Contact Person: same as above

Agency Address: 22 West High Street
Waynesburg, Pennsylvania 15370

Purpose: The project proposed to develop materials of basic numeracy concepts and skills that were presented to adult students in ABLE classrooms and tutoring sessions. Specific activities were provided to these students to foster the development of the concepts and skills with their young children.

Procedures: Project staff developed ten Family Numeracy Activities that were used by 28 ABLE students and staff in Washington and Greene counties. These activities were compiled into packets which included a directions page and all the materials needed to teach the numeracy concept. The packaged activities were presented to ten tutors in Greene county. The packets were used with adult students enrolled in ABLE Classes, Head Start and Even Start. The students completed an evaluation on the activity they used. Staff and tutors also reported their use by completing a questionnaire and log.

Summary of Findings: The Family Numeracy Activities are a good resource for volunteers and staff who work with students that have young children. The activity packets will enhance student's ability to teach math and give confidence to learn math.

Comments: The Family Numeracy Activities gave parents the confidence to teach math to their children. Some were amazed that they were able to teach math concepts with products in their own home.

Products: A final report which includes a copy of the handbook developed for the training.

Descriptors: (To be completed only by Bureau staff):

INTRODUCTION

This staff development project created a series of family numeracy activities to be used in ABLE programs and a training guide for staff and volunteers. The handbook identifies materials, provides background principles and concepts for numeracy activities and indicates ways the activities can be incorporated into parent-child interactions.

Adult students are learning the importance of reading to children through the development of Family Literacy in many ABLE programs. Many adult students, though, neglect to develop "numeracy" skills in themselves and their children. Educators began noticing an identified phobia, "Math Anxiety", within their students. These inadequate numeracy skills became a barrier for translating numeracy concepts to children. Math materials used in ABLE programs are traditionally workbooks aimed at basic skills. They do not usually provide a means for adult students to translate or present numeracy concepts and foundations to their children. One way of breaking this barrier was to develop "Math Confidence" within the family.

The numeracy packets were compiled from September to December and were piloted from September to May. Materials were ordered for the numeracy packets in September. Trainings on the materials were conducted in January.

This project operated from July 1, 1993 to June 30, 1994. The sponsoring agency was Washington-Greene Community Action. The contributing staff were the agency's personnel: Dr. Barbara Mooney, Project Director; Jane Schrock, Project Coordinator;

Verona Yanak, Project Coordinator Assistant; Pam Marcavitch and Pamela King, Adult Education Instructors.

This report is directed towards staff, volunteers, and program planners who work with Adult Basic and Literacy Education students who are the parents or guardians of young children. Permanent copies of the report are on file with the Pennsylvania Department of Education, Division of Adult Basic and Literacy Education Programs, 333 Market Street, Harrisburg, PA 17126-0333; AdvancE, Pennsylvania Department of Education Resource Center, Department of Education, 333 Market Street, Harrisburg, PA 17126-0333; and Western Pennsylvania Adult Literacy Resource Center, 5347 William Flynn Highway, Rt. 8, Gibsonia, PA 15044-9644.

BODY OF THE REPORT

A. Statement of the Problem

The development of Family Literacy has become an integral part of many ABLE programs across the nation. Many adult students are learning the importance of reading, demonstrating the value of reading, and teaching pre-reading skills to their children. As these aspects are readily accepted in the needs addressed in the development of Family Literacy programs, the problem of inadequate adult numeracy skills begins to surface as a separate but related need. An identified phobia, "Math Anxiety", is accepted as a barrier by many, and ABLE program staff needs to break this barrier. Commercial math materials for ABLE programs do address development of thinking skills and basic computational skills, but they do not provide a means for the ABLE student to translate newly learned competency into a way of presenting numeracy concepts and foundations to their children. "Math Confidence" needs to be developed within the family early to avoid anxieties.

B. Goals and Objectives

1. To develop a series of Ten Family Numeracy Activity Packages to be used by Family Literacy programs to aid them to include family numeracy education in their services. The packages will be used by adult students who are parents of Head Start children or are Even Start parents with preschool, kindergarten or first grade children.

2. To pilot the activity packages with 12 students assigned to an ABLE "classroom" program; record the experiences of project staff (in logs and questionnaires) in working with these students, including their observations about how the students reacted to the materials, activities and concepts presented.

3. To develop staff training materials to facilitate the use of the Family Numeracy Activity Packages by ABLE staff and volunteers. This will include explaining the underlying numeracy principle that each activity is designed to teach to the ABLE student, and illustrating ways the activity can be incorporated into the existing curriculum.

4. To train 12 tutors in Washington and Greene counties as a part of our ongoing training program for ABLE tutors; ask the tutors to use the packages and report back (questionnaires) on their experiences and the reception of their adult students.

5. To record feedback from students, tutors and staff regarding the usefulness of the activity packages in promoting the development of numeracy concepts and math confidence; to record responses from students, tutors and staff regarding the usefulness of these materials to enable adult students to transfer newly learned concepts to their children.

C. Procedures

Research for the numeracy activities was conducted in August and September. Various books and materials were reviewed to incorporate basic techniques into the existing curriculum. A bibliography is included in the handbook (page 48).

Materials for the Family Numeracy Packets were ordered in

September and October and development of the packets continued until December. Materials for the packets included: play money, coin board, teaching clocks, thermometers, pizza fraction game, scale, mosaic board, colored buttons, rulers, and various games and materials. The training handbook and numeracy packets were completed in December. As adult students progressed through numeracy packets they completed questionnaires that would aid staff in compiling the training materials.

A staff training, conducted by project coordinator Jane Schrock, was held in January for five staff members from Community Action's ABLE program and the West Greene Even Start program. This gave staff an opportunity to discuss the barriers they face with teaching math to their students and to review the Family Numeracy Packets. Even Start staff in Washington County did not participate in the training but used the materials under special direction of the project coordinator. The tutor training on the importance of "Math Confidence" and the use of the numeracy activities were conducted on January 25, 1994 at the Greene County Community Action Building. Ten volunteers attended this training. (See Appendix A)

The ten Family Numeracy Activity Packets were distributed to parents involved in the Even Start programs in Washington and Greene counties, the Head Start program in Greene county and ABE classes in Washington county.

D. Positive Objectives Met

1. We successfully developed ten Family Numeracy Activities and they were used in ABLE classes by parents of preschool,

kindergarten, and first grade children.

2. We piloted the packages with 28 students in classroom education programs in Washington and Greene counties. (target: 12)

3. We developed training materials and compiled the information into a handbook for staff and volunteers to keep and use. (A copy of the handbook is included with this report.)

4. A training was conducted in January on the use of the Family Numeracy Activity Packets. (10 tutors were trained, target:12)

5. Recorded feedback from staff and parents who participated by completing questionnaires and logs.

E. Objectives Not Met

Objective 4 was partially not met.

4. A staff and tutor training was conducted in January in Greene County. While we proposed to train 12 tutors, only 10 tutors attended the training session. A training was not conducted in Washington County because it was not needed. The project coordinator worked directly with parents in the Washington County Even Start and Head Start programs.

F. Evaluation

Evaluations were completed on each family numeracy concept by staff and parents that participated. A statistical chart is included with the results of these evaluations. (See Appendix B), Copies of the staff, volunteer, and parent survey forms are also included. (See Appendix C)

G. Distribution

Copies of the report on Adding Family Numeracy to ABLE Programs are available through the Department of Education and AdvancE at 333 Market Street, Harrisburg, PA 17126-0333; and at the Western Pennsylvania Adult Literacy Resource Center, 5347 William Flynn Highway, Rt. 8, Gibsonia, PA 15044-9644.

APPENDIX A

TRAINING ATTENDANCE

TUTOR INSERVICE TRAINING 17 JANUARY 25, 1994

6:00 - 8:00 p.m.

SIGN UP SHEET

NAME:	ADDRESS	TELEPHONE
Lynn Otty		
Jodi Smith		
Jan Mutschler		
Dawn Alger		
Vicki H. Hill		
Tahwana Deems		
Debra Pollock		
Don Dunlap		
Brad Henry		
Kristin Walker		

STAFF
+
TUTOR INSERVICE TRAINING

Jan. 31, 1994

1994

SIGN UP SHEET

NAME: ADDRESS TELEPHONE

Verna Yanek
Pamela King
Pamela C. Marcantel
Tissa Bristol
Nancy Gorley

APPENDIX B

STATISTICAL CHART

NUMERACY ACTIVITY

USE OF ACTIVITY	Pom-pom Matching	Thermometer Math	Button Button	Part of the Whole	It's Time	Long Straw	Ten Feathers	Stick Shapes	Paying the Price	Big & Small
# Students	3	2	1	4	2	2	2	4	2	6
# Tutors	2	1	1	2	1	1	1	2	1	5
Total use	5	3	2	6	3	3	3	6	3	11
Parental Response										-
Easy	2		1			1	1	1	1	4
Difficult		1		2						1
Challenging					1			1		
Improvement in Math Confidence										
Little						1				1
Some	2	1	1	2	1		1	1		3
Noticeable								1	1	1

APPENDIX C

SAMPLE

PARENT EVALUATIONS

AND

STAFF AND TUTOR

QUESTIONAIRE

FAMILY NUMERACY
ACTIVITY EVALUATION

1. Name of activity_____
2. Mathematical concept_____
3. Age of child/children this activity was used with_____
4. Approximate time spent on this activity_____
5. Did you find everything you needed in the packet for this activity?_____
6. Did you change or add to this activity in any way?_____
   In what way?_____
   _____
7. Was this activity easy for you and your child to use?_____
8. Do you have any suggestions that might improve this a activity for future use?_____
   _____
9. Was this math concept new to your child?_____
10. If this was not an new concept, has your child had difficulty with this type of math in the past?_____
11. Please write your observations about how your child reacted to this activity and note any improvements you noticed in your child's ability to tackle this type of math concept._____
    _____
    _____
    _____

THANK YOU FOR PARTICIPATING IN FAMILY MATH ACTIVITIES!

FAMILY NUMERACY QUESTIONAIRE
STAFF AND TUTORS

Name of Activity _____

Numeracy Principle _____

1. Do you feel the activity will increase numeracy skills?
   YES OR NO

2. State your observations of the impact the activity had on child. _____

   _____

3. Did the activity enhance the student's existing knowledge?
   YES OR NO

4. How much time did the child spend participating in activity?

   _____

5. State child's general attitude toward the activity.

   _____

   _____

6. Do you feel the parent/guardian delivered the numeracy concept to child successfully?
   YES OR NO

   Explain. _____

   _____

7. Did the activity need any changes? YES OR NO

   Explain. _____

   _____

8. Was there any change from "math anxiety" to "math confidence" in child? YES OR NO

APPENDIX D

ADDING FAMILY

NUMERACY

TO ABLE

PROGRAMS

HANDBOOK

ADDING FAMILY NUMERACY TO ABLE PROGRAMS

HANDBOOK

INTRODUCTION

This handbook is a series of family numeracy activities to be used in ABLE programs and a training guide for staff and volunteers. The handbook identifies materials, provides background principles and concepts for numeracy activities and indicates ways the activities can be incorporated into parent-child interactions.

Adult students are learning the importance of reading to children through the development of Family Literacy in many ABLE programs. Many adult students, though, neglect to develop "numeracy" skills in themselves and their children. Educators began noticing an identified phobia, "Math Anxiety", within their students. These inadequate numeracy skills became a barrier for translating numeracy concepts to children. Math materials used in ABLE programs are traditionally workbooks aimed at basic skills. They do not usually provide a means for adult students to translate or present numeracy concepts and foundations to their children. One way of breaking this barrier was to develop "Math Confidence" within the family.

The next page, "What does it take to function in life?", is used as an introductory awareness activity for staff and tutors. Participants rate everyday tasks on the amount of math and reading/writing skills needed to perform the task. Participants will then see the relationship between math and reading/writing skills and everyday tasks.

What does it take to function in life? (Gal, NCAL, 2/92)

Below is a list of everyday tasks that might come up in the lives of many clients of adult literacy programs. Please rate each one of them on a 1-5 scale, regarding the balance between the amount of "math" and "reading/writing" skills that are needed in each. (If a task involves *only* reading/writing, rate it 1. If it involves *only* math, rate it 5. If the amount of "math" and "reading/writing" is roughly equal, rate it 3.

	only read/write		both equally needed		only math	
a)	1	2	3	4	5	Shopping for groceries in a supermarket.
b)	1	2	3	4	5	Filling out tax forms.
c)	1	2	3	4	5	Paying an electricity bill with a check.
d)	1	2	3	4	5	Listening to the weather report on TV.
e)	1	2	3	4	5	Watching a soap opera on TV.
f)	1	2	3	4	5	Deciding how much tip to leave in a restaurant.
g)	1	2	3	4	5	Writing an application for a home mortgage.
h)	1	2	3	4	5	Using a street map to find a location.
i)	1	2	3	4	5	Deciding how many wallpaper rolls are needed to redo the living-room walls
j)	1	2	3	4	5	Using a recipe (from a new cookbook) for cooking.
k)	1	2	3	4	5	Sewing a dress by using a 'pattern'.
l)	1	2	3	4	5	Reading a bus timetable.
m)	1	2	3	4	5	Reading a newspaper article with results of a national poll on presidential candidates.
n)	1	2	3	4	5	Reading the label on a prescription bottle.
o)	1	2	3	4	5	Helping your first-grade child with homework in math.

☞ What is your role in adult education (circle all that apply):

1. Tutor/Teacher 2. Manager/Administrator 3. Learner 4. Academia/ Research

5. Other:_____(specify)

Numeracy: What is it?

NUMERACY - "An individual's ability to compute and solve problems at levels of proficiency necessary to function on the job and in society, to achieve one's goals, and develop one's knowledge and potential." (U.S. National Literacy Act)

WHY DOES MATH MATTER?

Children have parents/guardians that read to them daily, teach them the alphabet, and administer pre-reading skills. Through this behavior children develop an understanding of the importance of literacy. However, these same children have little or no "numeracy" concepts introduced to them before entering school. This can lead to an identifiable phobia called "math anxiety". Once entering school, children feel apprehensive toward the math concepts being introduced to them. This apprehension is sometimes due to the fact that the math concepts being taught do not relate to their daily life.

Adult Basic Literacy Education (ABLE) program staff can present numeracy concepts to their students who have children. The parents can then administer these newly learned competencies to their children. One way to address the problem is through the development of "math confidence" as a family matter. Learning begins at home, and a family that is literate in numbers can provide activities which students can use to achieve numeracy.

The negative feelings that most adults and children have about "math" is learned. Many people become excited by the systematic approach of mathematics, the fun of manipulating numbers, the scientific results of math, and solving a puzzling problem. Others were pressured to learn something they saw as incomprehensible or boring. If children are bored or frustrated, changes in the presentation of the numeracy concepts can be made. If the correct changes are made, children's natural exploration, pleasure, and interest will increase. When children enjoy what they are learning and see its relevance in their lives, they will learn more and develop an interest in numeracy concepts. This can inspire a life long proficiency towards computing and problem solving.

PARENTS ROLE

Parents of young children can help them see numeracy in everyday life. They are able to give them the time to puzzle, think, and reflect. Listening is a very important factor. By listening to their children's needs, parents can stimulate them to take charge of their own learning. Parents can also motivate their children to learn basic concepts and then encourage them to explain ideas and problem solving techniques. Sometimes the child's process may be different, but may also be correct. Parents should not insist their children to adopt any rigid method of solution. Parents should have expectations for their children, but these expectations should be reasonable and should allow for flexible

thinking patterns. If their expectations are too high or if they have none at all, children will not respond as well to learning opportunities.

HOW THESE PACKETS CAN HELP

1. They provide parents and teachers with basic numeracy concepts for toddlers and elementary age children and with manipulative activities that help children learn these concepts.

2. They provide teachers with take-home materials for adult students that allow them to communicate their learning to their children.

3. The take-home activities take into account teacher's time and budget restrictions. The activities are easy to prepare and require inexpensive or free materials that are found around the house.

4. Each activity has a description sheet that states the objective and appropriate age level for that activity. This takes into consideration the needs and abilities of young children.

5. The packets provide an opportunity for communicating with parents about hands-on numeracy activities and their importance for establishing a computational and problem solving foundation.

NUMERACY ACTIVITIES

The following pages are the instruction sheets to the math activities. Each activity is preceded by the staff observations which prompted the creation of these activities. These activities should be compiled together neatly in folders and given to the parents. Materials should be provided in the folders if the parent does not have access to them. Encourage the parent to make notes about the concepts and how they relate them to life. After each description is a sample questionnaire response from staff and tutors to see what the participants in our project thought about the activity. Instructors should do the numeracy activity with the parent first to model the behavior the parent will use with child. Good Luck!

ACTIVITIES

1 -- BIG AND SMALL

September 1993

Ordering and sizing is sometimes a difficult concept for young children to grasp. I had observed some children when ordering objects could not understand "first, second, third" and would consistently say "one, two, three". Also these children could not differentiate between the terms small, smaller, smallest without visual aids. I ran across some Halloween figures that were patterned in different sizes. After copying, coloring, cutting and laminating these shapes, I developed the activity titled "Big and Small". This activity will require the child to order the different patterns from smallest to largest. It will also reinforce usage of words, such as small, smaller, smallest, big, bigger, biggest, and first, second and third, etc. Children will also be introduced to classifying according to certain attributes, such color, size, and various characteristics.

VLY

BIG AND SMALL

OBJECTIVE: To become familiar with sizing, ordering and classifying.

AGE LEVEL: Preschool to Early Primary

MATERIALS: Several objects in five to six different sizes.

WHAT TO DO:
*Lay out one object in various sizes.
*Help your child arrange the items in order from smallest to largest.
*Talk with your child describing the items using words such as SMALL, SMALLER, SMALLEST, BIG, BIGGER, and BIGGEST.
*Continue to do this with each group of items.

EXTENDED:
*When all of the items have been ordered according to size mix them all up and ask your child if they can group them together in another way.
*For example your child may group all of the large items together and all of the small items together. Your child may also group the forks with the spoons because they use them to eat with. There may be many different classifications, as long as your child has an explanation for grouping those items together, the child is classifying correctly.

FAMILY NUMERACY QUESTIONAIRE
STAFF AND TUTORS

Name of Activity Big and Small

Numeracy Principle Familiarize sizing, ordering, & classifying

1. Do you feel the activity will increase numeracy skills?
(YES) OR NO

2. State your observations of the impact the activity had on child. The child enjoyed the activity and thought it was easy.

3. Did the activity enhance the student's existing knowledge?
(YES) OR NO

4. How much time did the child spend participating in activity?
45 minutes

5. State child's general attitude toward the activity.
enjoyed grouping the shapes; child made up story with shapes used.

6. Do you feel the parent/guardian delivered the numeracy concept to child successfully?
(YES) OR NO

Explain.

7. Did the activity need any changes? YES OR (NO)

Explain.

8. Was there any change from "math anxiety" to "math confidence" in child? YES OR NO unable to determine

FAMILY NUMERACY
ACTIVITY EVALUATION

1. Name of activity Big and Small
2. Mathematical concept Comparing + Ordering
3. Age of child/children this activity was used with 4
4. Approximate time spent on this activity 1 hour
5. Did you find everything you needed in the packet for this activity? yes
6. Did you change or add to this activity in any way? no
   In what way?
7. Was this activity easy for you and your child to use? yes
8. Do you have any suggestions that might improve this a activity for future use? no
9. Was this math concept new to your child? yes
10. If this was not an new concept, has your child had difficulty with this type of math in the past?
11. Please write your observations about how your child reacted to this activity and note any improvements you noticed in your child's ability to tackle this type of math concept. She enjoyed putting the shapes into different groups.

THANK YOU FOR PARTICIPATING IN FAMILY MATH ACTIVITIES!

2 -- POM-POM MATCH

September 1993

During family visits for our program, I noticed that some of the children would try to count objects in books and skip over the objects while still counting numbers. I thought that if they had actual objects to hold and to place while counting there would be a better understanding of the practice of counting (Pom-Pom Match).

Parents would be able to interact with the child while placing the soft, colorful pom-poms on the matching cards.

PCM

POM - POM MATCHING

OBJECTIVE: To become familiar with one to one correspondence

AGE LEVEL: Toddler to Preschool

MATERIALS: 10 large, unruled file cards marked with large dots. One dot on one card,two dots on next card, etc. up to ten dots on the last card. Pom Poms in various colors & sizes.

WHAT TO DO:
* Place the one-dot card in front of the child.
* Ask him to match the dot with a pom-pom.
* Go to the next vcard with two dots.
* The child will match one dot with a pom pom then the second dot with another pom pom, etc.

EXTENDED:
* The child can match the dots with only the small sized pom poms, the medium sized pom poms or the large sized pom poms.
* The child can match the dots with pom poms of all the same color.

FAMILY NUMERACY QUESTIONAIRE
STAFF AND TUTORS

Name of Activity Pom-Pom Matching

Numeracy Principle One to one Correspondence

1. Do you feel ~~the~~ activity will increase numeracy skills?
(YES) OR NO

2. State your observations of the impact the activity had on child. The child liked the softness of the pom-poms. She became very teacher-like when matching them.

3. Did the activity enhance the student's existing knowledge?
YES OR NO

4. How much time did the child spend participating in activity?
The home visit session was spent with the child and parent participating

5. State child's general attitude toward the activity.
The child enjoyed the various activities very much.

6. Do you feel the parent/guardian delivered the numeracy concept to child successfully?
(YES) OR NO

Explain. _____

7. Did the activity need any changes? YES OR (NO)

Explain. _____

8. Was there ~~any~~ change from "math anxiety" to "math confidence" in child? (YES) OR NO

FAMILY NUMERACY
ACTIVITY EVALUATION

1. Name of activity Pom Pom matching (math Activity)
2. Mathematical concept To count to ten
3. Age of child/children this activity was used with 3
4. Approximate time spent on this activity 20 minutes
5. Did you find everything you needed in the packet for this activity? yes
6. Did you change or add to this activity in any way? NO
   In what way? _____
7. Was this activity easy for you and your child to use? yes
8. Do you have any suggestions that might improve this a activity for future use? _____
9. Was this math concept new to your child? only the pom poms.
10. If this was not an new concept, has your child had difficulty with this type of math in the past? yes
11. Please write your observations about how your child reacted to this activity and note any improvements you noticed in your child's ability to tackle this type of math concept. My child did pretty good. He lost interest after about 20 minutes. He just wanted to play with the pom-poms.

THANK YOU FOR PARTICIPATING IN FAMILY MATH ACTIVITIES!

3 -- BUTTON BUTTON

September 1993

The activity "Button Button" was developed to reinforce the concepts of counting and to relate it to "more" and "less". This mathematical process is sometimes a difficult one for preschool children to understand, but it is expected of them as early as the kindergarten level. Preschool children need to see and physically count the objects to help them grasp the concept of more or less. Often the spatial area the objects are in will confuse a child at first glance. For example five objects close together will seem less to a child than two objects spread apart. When the child can count the objects he can then see that five is more than two.

For the Early Elementary child, this activity can be expanded to simple addition or subtraction by choosing two Button cards and adding the number of buttons together or subtracting the number of buttons on one card from the other.

VLY

BUTTON BUTTON

OBJECTIVE: To develop an understanding of numbers in the concept of more or less.

AGE LEVEL: Preschool and Early Elementary

MATERIALS:
* Ten 3" x 5" index cards
* Fifty-five various size, shape, and colored buttons.

WHAT TO DO: Glue buttons onto the index cards. Begin with one card: glue one button on the card. On the next card, glue two buttons. On the next, glue three, and so on until the tenth card has ten buttons glued on it.

The parent will show the child the different cards and the number of buttons on the cards by counting the buttons together.

The parent will mix the cards up and choose two of the cards. The parent will then ask the child how many buttons are on each card.

The parent will ask the child to point to the card that has MORE buttons on it.

The parent will choose two more cards and then ask the child to count the buttons on each card.

The parent will then ask the child to point to the card that has LESS buttons on it.

The activity will continue until the concept of more or less is known.

EXTENDED: Choose two or more cards and ask the child how many buttons are on all of the cards together.

FAMILY NUMERACY
ACTIVITY EVALUATION

1. Name of activity Button - Button
2. Mathematical concept More or Less - numbers
3. Age of child/children this activity was used with 7
4. Approximate time spent on this activity 1 week
5. Did you find everything you needed in the packet for this activity? yes
6. Did you change or add to this activity in any way? no
   In what way?
7. Was this activity easy for you and your child to use? yes
8. Do you have any suggestions that might improve this a activity for future use? no
9. Was this math concept new to your child? no
10. If this was not an new concept, has your child had difficulty with this type of math in the past? yes
11. Please write your observations about how your child reacted to this activity and note any improvements you noticed in your child's ability to tackle this type of math concept. She had problems with this in school. But, now she understands it better.

THANK YOU FOR PARTICIPATING IN FAMILY MATH ACTIVITIES!

FAMILY NUMERACY QUESTIONAIRE
STAFF AND TUTORS

Name of Activity Button Button

Numeracy Principle Understanding numbers with more or less.

1. Do you feel ~~the~~ activity will increase numeracy skills?
(YES) OR NO

2. State your observations of the impact the activity had on child. The child could visualize the concept.

3. Did the activity enhance the student's existing knowledge?
(YES) OR NO

4. How much time did the child spend participating in activity?
1 hour

5. State child's general attitude toward the activity.
She loved the buttons!

6. Do you feel the parent/guardian delivered the numeracy concept to child successfully?
(YES) OR NO

Explain. _____

7. Did the activity need any changes? YES OR (NO)

Explain. _____

8. Was there ~~any~~ change from "math anxiety" to "math confidence" in child? (YES) OR NO

4 -- TEN FEATHERS IN A HEADBAND

October 1993

As I was singing "Ten Little Indians" to the children in our program during late October, I thought it would help them in their counting to see and count the feathers in a headband. I decided to turn the song into an art activity as well as a counting game. The children would be able to see a feather and correspond it to a number. They would also have practice counting from one to ten and be able to relate the numbers and counting to the song "Ten Little Indians".

PCM

TEN FEATHER IN A HEADBAND

OBJECTIVE: Children will learn to count from one to ten.

AGE LEVEL: Toddler to Preschool.

MATERIALS: Picture of Indian with a construction paper headband.
Bag of small feathers.

WHAT TO DO:
* Child will place one feather in the headband and say "one".
* Child places second feather in the headband and says "two".
* Continue on until number 10 is reached.

FAMILY NUMERACY
ACTIVITY EVALUATION

1. Name of activity 10 Feathers on an Indian headband.
2. Mathematical concept Count.
3. Age of child/children this activity was used with 3
4. Approximate time spent on this activity ½ hr.
5. Did you find everything you needed in the packet for this activity? yes
6. Did you change or add to this activity in any way? no
   In what way?
7. Was this activity easy for you and your child to use? yes
8. Do you have any suggestions that might improve this a activity for future use? no not really
9. Was this math concept new to your child? yes
10. If this was not an new concept, has your child had difficulty with this type of math in the past? new to him
11. Please write your observations about how your child reacted to this activity and note any improvements you noticed in your child's ability to tackle this type of math concept. he was excited to do it hisself.

THANK YOU FOR PARTICIPATING IN FAMILY MATH ACTIVITIES!

FAMILY NUMERACY QUESTIONAIRE
STAFF AND TUTORS

Name of Activity Ten Feathers

Numeracy Principle Counting

1. Do you feel the activity will increase numeracy skills?
(YES) OR NO

2. State your observations of the impact the activity had on child. The child was able to say one number for each feather. He slowed down his counting.

3. Did the activity enhance the student's existing knowledge?
(YES) OR NO

4. How much time did the child spend participating in activity?
We spent the home visit session doing this activity.

5. State child's general attitude toward the activity.
The child was very excited. He went back to the "Indian" several times after we had finished

6. Do you feel the parent/guardian delivered the numeracy concept to child successfully?
(YES) OR NO
Explain. Mom helped him to touch each feather when he used a number word.

7. Did the activity need any changes? YES OR (NO)
Explain.

8. Was there any change from "math anxiety" to "math confidence" in child? (YES) OR NO

5 -- STICK SHAPES

October 1993

Knowledge of geometrical shapes is a concept that is introduced to children at an early age, usually before they enter formal schooling. The activity "Stick Shapes" was developed to introduce four geometrical shapes (square, triangle, diamond and rectangle). Children see these shapes all around them in their daily lives but don't relate them to being of a geometrical shape, such as the door a rectangle, window a square, etc. With the activity "Stick Shapes" children can make the shapes with sticks, see their attributes and relate the shape to objects in their daily lives, noting what they have in common (for example all squares have four sides the same size).

Children can also be encouraged to explore and develop their own creative shapes.

VLY

STICK SHAPES

OBJECTIVE: To become familiar with the square, rectangle, diamond, and triangle shapes.

AGE LEVEL: Preschool and Early Primary

MATERIALS: Four squares of stiff paper or poster board
Seventeen popsicle sticks, plus six additional sticks for each child.
Glue

WHAT TO DO:
*Cut the poster board into fourths
*Make one shape on each fourth (square, triangle, diamond, and rectangle)
*Glue each shape to each fourth of poster board.
*Give each child six popsicle sticks.
*Show each shape to the child/children allowing them time to form their own sticks into the shape
*Tell the child the name of the shape and have the child repeat the name.
*Have the child count how many sticks were used to make the sides of the shape.
*Continue the steps until the child has made all of the four shapes.

EXTENDED: *See if your child can make other shapes using the sticks ex.(star)

FAMILY NUMERACY
ACTIVITY EVALUATION

1. Name of activity Stick Shapes
2. Mathematical concept Very Hungry - Shapes
3. Age of child/children this activity was used with 1½ and 4
4. Approximate time spent on this activity 2 months
5. Did you find everything you needed in the packet for this activity? yes
6. Did you change or add to this activity in any way? no
   In what way? (But you could add color to the popsicle sticks)
7. Was this activity easy for you and your child to use? yes
8. Do you have any suggestions that might improve this a activity for future use? yes
9. Was this math concept new to your child? yes
10. If this was not an new concept, has your child had difficulty with this type of math in the past? yes counting
11. Please write your observations about how your child reacted to this activity and note any improvements you noticed in your child's ability to tackle this type of math concept.
    Now he can count to 9. Asking Lacy them down to match the Shape

THANK YOU FOR PARTICIPATING IN FAMILY MATH ACTIVITIES!

FAMILY NUMERACY QUESTIONAIRE
STAFF AND TUTORS

Name of Activity Stick Shapes

Numeracy Principle Become familiar with shapes

1. Do you feel ~~the~~ activity will increase numeracy skills?
(YES) OR NO

2. State your observations of the impact the activity had on child. The child had problems with counting and this activity helped him more with that concept.

3. Did the activity enhance the student's existing knowledge?
(YES) OR NO

4. How much time did the child spend participating in activity?
2 months

5. State child's general attitude toward the activity.
They liked the activity cards because they were large.

6. Do you feel the parent/guardian delivered the numeracy concept to child successfully?
(YES) OR NO
Explain. The parent extended the activity with counting.

7. Did the activity need any changes? (YES) OR NO
Explain. make the activity more colorful

8. Was there any change from "math anxiety" to "math confidence" in child? (YES) OR NO

6 -- LONG STRAW - SHORT STRAW

November 1993

This activity was developed to introduce the basic concept of length. A child often hears the terms "inch, foot, mile, etc" but has no concept of their meaning. A child needs to have an understanding of length in order to comprehend measurement and distance, and understand what is meant by the terms "inch, foot, mile". In this activity the child will be able to visualize the actual differences in lengths. They will also be able to associate the words (long, longer, short, shorter, etc.) while comparing different lengths. Eventually the child will be able to relate the various lengths to measurement.

VLY

FAMILY NUMERACY #6

LONG STRAW, SHORT STRAW

OBJECTIVE: To understand the concept of length.

AGE LEVEL: Preschool and Early Elementary

MATERIALS: Plastic straws
Preschool scissors
Ruler to measure inches

WHAT TO DO: The parent will show the child a straw that hasn't been cut and show the child how LONG it is.

The parent will allow the child to cut the straw into parts (the parts should not be equal). The parent will show the child the two parts calling one LONG and one SHORT.

The parent may continue this activity until the child has picked up on and is using words such as LONG, SHORT, LONGER, SHORTER....

Older children may like using the ruler to measure the different pieces of straws. Being completely accurate at this point is not really important. The parent may use phrases such as "That piece is about one inch long."

EXTENDED: Children may enjoy hooking the straws together by putting one end inside of another to make really long straws.

Children may also like to see who can make the shortest straw.

FAMILY NUMERACY QUESTIONAIRE
STAFF AND TUTORS

Name of Activity Long Straw, Short Straw

Numeracy Principle Concept of length

1. Do you feel the activity will increase numeracy skills?
(YES) OR NO

2. State your observations of the impact the activity had on child. The child easily learned the concept and learned aspects of a ruler.

3. Did the activity enhance the student's existing knowledge?
(YES) OR NO

4. How much time did the child spend participating in activity?
1 hour

5. State child's general attitude toward the activity.
This activity is ideal for older children (above 4 yrs. of age). They enjoyed it!

6. Do you feel the parent/guardian delivered the numeracy concept to child successfully?
(YES) OR NO

Explain. _____

7. Did the activity need any changes? YES OR (NO)

Explain. _____

8. Was there any change from "math anxiety" to "math confidence" in child? (YES) OR NO

FAMILY NUMERACY
ACTIVITY EVALUATION

1. Name of activity Long Straw - Short Straw
2. Mathematical concept measuring
3. Age of child/children this activity was used with 4
4. Approximate time spent on this activity 1 hour
5. Did you find everything you needed in the packet for this activity? yes
6. Did you change or add to this activity in any way? no
   In what way? _____
7. Was this activity easy for you and your child to use? yes
8. Do you have any suggestions that might improve this a activity for future use? could use paper or sticks if you don't have straws
9. Was this math concept new to your child? no
10. If this was not an new concept, has your child had difficulty with this type of math in the past? some
11. Please write your observations about how your child reacted to this activity and note any improvements you noticed in your child's ability to tackle this type of math concept. it was fun he enjoyed cutting with the scissors.

THANK YOU FOR PARTICIPATING IN FAMILY MATH ACTIVITIES!

7 -- PAYING THE PRICE

November 1993

The "Paying the Price" activity came about in an interesting way. As an adult activity we were doing a unit on comparing prices, age appropriate toys, and safe toys. A parent expressed a need to have materials to help her children learn how to count money, spend money, and receive the correct amount of change. While the parent was able to do all of these things herself, she was unable to pass the ability onto her six year old child. This activity involves all of these concepts. The child chooses an item to purchase, pays for the item, and then calculates the amount of change he should receive.

VLY

PAYING THE PRICE

OBJECTIVE: To become familiar with the value of coins and to practice making purchases.

AGE LEVEL: Primary to Elementary

MATERIALS: Fifty pennies
Ten nickels
Five dimes
Four quarters
Two fifty cent pieces
Coin board
Articles to purchase

WHAT TO DO: *Let your child choose an item to purchase.
*Help your child find how many different ways you could pay for each of the items using pennies, nickels, dimes, quarters, and/or fifty cent pieces.
*For each way put the coins on a separate row of the coin board to equal the total price of the selected item.
*For example a piece of gum may cost five cents, there would be two ways to pay for the gum: with one nickel or five pennies.

EXTENDED: *Let your child choose more than one item at a time to purchase then have your child add the prices together to figure out how much money he will need to buy them.

FAMILY NUMERACY
ACTIVITY EVALUATION

Paying The Price

1. Name of activity The Money Game
2. Mathematical concept adding + Subtraction, differences
3. Age of child/children this activity was used with 6 7 8
4. Approximate time spent on this activity At Lease 2 hr Week
5. Did you find everything you needed in the packet for this activity? Yes
6. Did you change or add to this activity in any way? NO
   In what way? _____
7. Was this activity easy for you and your child to use? Yes
8. Do you have any suggestions that might improve this a activity for future use? Some of The money was hard to see clearly
9. Was this math concept new to your child? Yes - NO
10. If this was not an new concept, has your child had difficulty with this type of math in the past? Yes
11. Please write your observations about how your child reacted to this activity and note any improvements you noticed in your child's ability to tackle this type of math concept. It shows Abilty of cost, it teaches the child to Add. We Also use it to surbtract, we would Buy 1 or 2 Things, Add them up. Then surbtract Another Thing Away From what our Total WAS.

THANK YOU FOR PARTICIPATING IN FAMILY MATH ACTIVITIES!

FAMILY NUMERACY QUESTIONAIRE
STAFF AND TUTORS

Name of Activity Paying the Price

Numeracy Principle The value of coins and making purchases

1. Do you feel the activity will increase numeracy skills?
(YES) OR NO

2. State your observations of the impact the activity had on child. The child was more aware of the value of money and how to add.

3. Did the activity enhance the student's existing knowledge?
(YES) OR NO

4. How much time did the child spend participating in activity?
2 hours a week

5. State child's general attitude toward the activity.
The children loved it so much, they made their own.

6. Do you feel the parent/guardian delivered the numeracy concept to child successfully?
(YES) OR NO
Explain. She pretended with her children that they were in a store.

7. Did the activity need any changes? YES OR (NO)
Explain.

8. Was there any change from "math anxiety" to "math confidence" in child? (YES) OR NO

8 -- IT'S TIME

December 1993

This activity was developed to reinforce time periods throughout the day. The child will recognize different time periods involved in the child's life, such as: time to get up, eat lunch, eat supper, take a bath, and go to bed. He will also realize that he does things in a certain order and will be able to put his day in a sequence. For example, first he gets up, then he eats breakfast, next he brushes his teeth, etc. The concept of time dealing with past, present and future can also be explored (yesterday I played with Sam, today I will play with Sue, tomorrow I hope to play with Jim).

VLY

FAMILY NUMERACY #8

IT'S TIME

OBJECTIVE: To develop an understanding of the concept of time.

AGE LEVEL: Preschool and Early Elementary

MATERIALS:
* Educational teaching clock with movable hands
* Four 6 to 8 inch round circles cut from construction paper
* Blank construction paper cut into 6 to 8 inch squares

WHAT TO DO: Parent will show the child different times of the day ex. time the child gets up, time the child eats lunch, time the child eats supper, time the child gets his bath, time the child goes to bed.

The parent will help the child to draw pictures of the clocks to show the various times of some of the activities of the day.

The child will draw pictures showing what he does during the day and put them in order. Ex., #1 wakes up, #2 eats breakfast, #3 plays, #4 takes a bath, etc.

EXTENDED: Predict the future by asking questions Ex., What time will it be when we eat lunch?
Review the past by asking questions Ex., What time did you wake up this morning?

FAMILY NUMERACY
ACTIVITY EVALUATION

1. Name of activity Tell time
2. Mathematical concept Telling time
3. Age of child/children this activity was used with 7yr.
4. Approximate time spent on this activity 4-5 hours
5. Did you find everything you needed in the packet for this activity? yes
6. Did you change or add to this activity in any way? yes
   In what way? used a real clock too
7. Was this activity easy for you and your child to use? yes
8. Do you have any suggestions that might improve this a activity for future use? no
9. Was this math concept new to your child? a little
10. If this was not an new concept, has your child had difficulty with this type of math in the past? yes
11. Please write your observations about how your child reacted to this activity and note any improvements you noticed in your child's ability to tackle this type of math concept. We had fun- he knows a little more about telling time

THANK YOU FOR PARTICIPATING IN FAMILY MATH ACTIVITIES!

FAMILY NUMERACY QUESTIONAIRE
STAFF AND TUTORS

Name of Activity It's Time

Numeracy Principle Understanding concept of time

1. Do you feel the activity will increase numeracy skills?
(YES) OR NO

2. State your observations of the impact the activity had on child. The child could relate time with their everyday activities.

3. Did the activity enhance the student's existing knowledge?
(YES) OR NO

4. How much time did the child spend participating in activity?
1 day

5. State child's general attitude toward the activity.
The child was anxious to know what time they will do the next activity.

6. Do you feel the parent/guardian delivered the numeracy concept to child successfully?
(YES) OR NO
Explain. The parent spent the whole day doing the activity.

7. Did the activity need any changes? YES OR (NO)
Explain.

8. Was there any change from "math anxiety" to "math confidence" in child? (YES) OR NO

9 -- THERMOMETER MATH

December 1993

This winter was extremely cold. During a conversation with a family involved in our program, it came out that the mother was having a difficult time expressing just how cold it was. I thought this was a good opportunity to create a math activity on telling temperatures.

The children and parents could use a thermometer with a ribbon that could easily move up or down. When "making" a new temperature they could read the numbers and talk about what to wear. The children could then draw a picture or match the "degrees" to a picture on the worksheet. The parents and children could also do comparisons, such as the temperature inside and outside their homes, and the temperature over several days. They could chart temperatures as part of the activity to see the relationship between days.

PCM

FAMILY NUMERACY #9

THERMOMETER MATH

OBJECTIVE: To understand the relationship between hot and cold and the numbers on a thermometer.

AGE LEVEL: Toddler, preschool and school age.

MATERIALS:
* Paper thermometer with moveable "mercury".
* Pictures representing hot and cold.
* Temperature worksheet.

WHAT TO DO: Parent will show the thermometer to the child explaining that the red ribbon will show how warm the temperature is outside.
Move the ribbon up or down the numbers to show the degrees.
If the thermometer shows a lot of red ribbon then the temperature is very warm. If very little of the ribbon shows then the temperature is cold.

EXTENDED: Older children can draw pictures to represent the temperature shown on the worksheet.

FAMILY NUMERACY
ACTIVITY EVALUATION

1. Name of activity thermometer math Classifying Ordering
2. Mathematical concept did well well
3. Age of child/children this activity was used with 3
4. Approximate time spent on this activity 1 hr
5. Did you find everything you needed in the packet for this activity? yes
6. Did you change or add to this activity in any way? _____
   In what way? no
7. Was this activity easy for you and your child to use? yes
8. Do you have any suggestions that might improve this a activity for future use? no
9. Was this math concept new to your child? yes
10. If this was not an new concept, has your child had difficulty with this type of math in the past? no
11. Please write your observations about how your child reacted to this activity and note any improvements you noticed in your child's ability to tackle this type of math concept. _____

THANK YOU FOR PARTICIPATING IN FAMILY MATH ACTIVITIES!

FAMILY NUMERACY QUESTIONAIRE
STAFF AND TUTORS

Name of Activity Thermometer Math

Numeracy Principle hot/cold : numbers on thermometer

1. Do you feel the activity will increase numeracy skills?
(YES) OR NO

2. State your observations of the impact the activity had on child. Created an understanding of temperature and dressing appropriately.

3. Did the activity enhance the student's existing knowledge?
(YES) OR NO

4. How much time did the child spend participating in activity?
1 hour

5. State child's general attitude toward the activity.
She loved dressing dolls for the appropriate temperature (number) on thermometer.

6. Do you feel the parent/guardian delivered the numeracy concept to child successfully?
(YES) OR NO
Explain. She even extended the activity by dressing the child's dolls.

7. Did the activity need any changes? YES OR (NO)
Explain.

8. Was there any change from "math anxiety" to "math confidence" in child? (YES) OR NO

10 -- PART OF THE WHOLE

December 1993

We found it necessary to develop an activity to introduce the concept of fractions. Parents often don't feel comfortable with fractions and thus have a dislike when dealing with fractions. They pass this dislike onto their children. This activity will be a way for parents and children to see that they use fractions in everyday life situations. When parents see that children accept the ideas (they do not yet have barriers and are more ready to learn) then the parents may feel more comfortable discussing fractions with their children.

"Part of the Whole" is an activity that introduces the basics of fractions and that it takes a certain amount of parts to make a whole and that a whole can be divided into a certain amount of parts. Very simple addition of fractions with common denominators will be introduced in this activity for those who ready for this.

VLY

FAMILY NUMERACY #10

PART OF THE WHOLE

OBJECTIVE: To develop an understanding of the concept that parts make up a whole thing and that a whole thing can be divided into parts.

AGE LEVEL: Early Elementary to Middle Elementary

MATERIALS:
* Five large circles. The circles should be divided as follows: One circle is whole, one cut in half one in fourths, one in sixths, one into eighths.
* The pieces of the circles should be labeled with the appropriate fraction.(EX. 1/4, 1/6, 1/8)
* The circles may be decorated if you wish as Pizza, Pie, Cakes, etc..

WHAT TO DO: The parent will work with the child using pieces to make the whole. (Ex. it will take two halves to make a whole pizza or it will take four pieces to make a whole pie.)

The parent can use the family as an example and create various situations so that the child would have to solve the problem of how many pieces would be needed (Ex. If Grandma and Grandpa were to come to eat lunch with us how many pieces of pie would we need?)

EXTENDED: Older children will be able to learn the concept of fractions with different denominators. (Ex. 2/4 is the same as 1/2)

FAMILY NUMERACY
ACTIVITY EVALUATION

1. Name of activity Part of the Whole
2. Mathematical concept Fractions
3. Age of child/children this activity was used with 7 year
4. Approximate time spent on this activity week
5. Did you find everything you needed in the packet for this activity? yes
6. Did you change or add to this activity in any way? no
   In what way?
7. Was this activity easy for you and your child to use? yes
8. Do you have any suggestions that might improve this a activity for future use? no
9. Was this math concept new to your child? no
10. If this was not an new concept, has your child had difficulty with this type of math in the past? yes
11. Please write your observations about how your child reacted to this activity and note any improvements you noticed in your child's ability to tackle this type of math concept. She seems to understand fractions better

THANK YOU FOR PARTICIPATING IN FAMILY MATH ACTIVITIES!

FAMILY NUMERACY QUESTIONAIRE
STAFF AND TUTORS

Name of Activity Part of the Whole

Numeracy Principle fractions

1. Do you feel the activity will increase numeracy skills?
(YES) OR NO

2. State your observations of the impact the activity had on child. The child had a better understanding of fractions

3. Did the activity enhance the student's existing knowledge?
(YES) OR NO

4. How much time did the child spend participating in activity?
1 hour

5. State child's general attitude toward the activity.
The child liked figuring which sizes would make a whole.

6. Do you feel the parent/guardian delivered the numeracy concept to child successfully?
(YES) OR NO

Explain. _____

7. Did the activity need any changes? YES OR (NO)

Explain. _____

8. Was there any change from "math anxiety" to "math confidence" in child? (YES) OR NO

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Signature

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