Learning to Grow

MAKING A DIFFERENCE TOGETHER

UNIVERSITY OF HAWAI'I ❤ WINDWARD COMMUNITY COLLEGE

Using "Math Talk" with Your Young Child

Mathematics is more than just numbers and equations. The foundation for mathematical thinking involves skills such as recognizing order and patterns, sorting and classifying, making comparisons, and understanding quantity, size and shapes.

From the moment they are born, children continually form mathematical ideas based on their experiences with their environment. For example, when a baby is able to distinguish between a familiar and unfamiliar adult, he demonstrates the ability to notice similarities and differences (sort and classify); when an infant signals he wants more food, he is using the math concept of quantity.

Children's understanding of math concepts is further increased when an adult talks to them while they are engaged in activities. This is referred to as "math talk." For example voicing an observation such as, "You put the big lid on the big pot and the small lid on the small pot," will stimulate your child to think about size, similarities and differences, comparisons, and classification.

Research has shown that math talk is a powerful strategy for increasing children's mathematical abilities and later academic success.

In this newsletter, we will discuss activities that promote the learning of math concepts at each age level – infants, toddlers and preschoolers – and offer tips and examples for using "math talk" to increase your child's mathematical understanding.

This newsletter includes:

- ❤ ***Age-specific information and suggestions*** about activities to do with your infant, toddler, or preschooler,
- ❤ ***Featured activities*** for each age group,
- ❤ ***How This Helps:*** a summary of your child's development by doing these activities together,
- ❤ ***Resources:*** for more information about this topic, and
- ❤ ***Suggested Books:*** a list of books to read with your child.

4-9-7/18

Infants

Babies naturally explore and interact with the world through their senses. As they do this, they gain a solid base for mathematical thinking. Each new exploration and discovery adds to his mathematical knowledge base.

The table below provides examples of activities that give your infant a solid base for mathematical thinking, the math concepts he learns, and how you can respond to further increase his learning.

Activity	Math concepts learned	Respond with "math talk"
Daily schedule of routines	❤ Order and sequence ❤ Measurement ❤ Recognition of patterns	"*First* you had some milk to drink, *then* we changed your diaper. Now it's time to read a book." "*After* I change your diaper, we will go outside for a short walk."
Exploring/ playing with different types of toys or objects, including containers	❤ Sorting and classification ❤ Similarities and differences ❤ Shapes ❤ Size ❤ Spatial relationships	"Look, this toy makes a sound and this one *doesn't*." "These toys are *round*, and these toys are *square*." "You put the block in the container; now you dumped it out. Can you put it back inside?"
Singing songs with repetitive words and phrases such as "Old MacDonald Had a Farm."	❤ Patterns ❤ Order and relationships ❤ Classification	"What comes *next*?" "*All* of these animals live on a farm."

Activity for Infants: *Let's Count*

What You Need: none

What to Do:

1. Count aloud as often as you can when you are with your infant. Even if your infant is not able to count with you, he will begin to make the association between numbers and what they stand for.
2. For example, count the stairs when you are walking up and down; count the number of apples you put into a bag at the market; count the number of windows in your house, count his toes when changing his diaper, etc.

(See page 5 for information on how doing these kinds of activities with your child helps his development and school readiness.)

Toddlers

Toddlers are active explorers who learn by doing and will begin to use materials in many ways. This is a great time to pay attention to what your child is interested in and deliberately plan opportunities that will help him learn math concepts. Remember to make "math talk" a natural part of your every day interactions with your child.

The table below provides examples of activities that give your toddler a solid base for mathematical thinking, the math concepts he learns, and how you can respond to further increase his learning.

Activity	Math concepts learned	Respond with "math talk"
Playground activities	❤ Spatial relationships ❤ Number sense	"*10-9-8-7-6-5-4-3-2-1*-blastoff!" (count down before pushing child on a swing, or before running to a tree) "You are on *top* of the slide." "Now you are sliding *down*." "You're going *around* me."
Playing with sand and water and containers of different sizes	❤ Volume ❤ Measurement ❤ Quantity ❤ Number sense	"Which container has *more*? *Less*?" "Which is *heavier*? *Lighter*?" "Which is *bigger*? Can you pour the water from the *small* container into the *big* container? *How many* times does it take to fill the big container?"
Setting the table Snack/ Meal time	❤ Number sense ❤ Quantity ❤ Order ❤ Sorting and classification	"Can you put *one* plate, *one* fork and *one* cup at each place at the table?" "Today you have *circle* and *square shaped* snacks (e.g., cereal and cracker). Can you put *all* the *circle* snacks together and *all* the *square snacks* together? Which do you have *more* of? *Less*? Let's *count* them."
Clean up time	❤ Sorting and classification ❤ Spatial relationships	"The stuffed animals and dolls go in *this bin*." "*Where* does this block belong? That's right, it belongs on the *bottom* shelf."

Activity for Toddlers: *Where's the Other Slipper?*

What You Need:

Pairs of slippers and shoes

What to Do:

1. Put several pairs of slippers or shoes into a pile and explain to your child that a "pair" is a set of two things that are same or similar.
2. Pull one slipper or shoe out of the pile. Ask your child to find the matching slipper or shoe.
3. Have him continue until each "pair" is matched.
4. Talk about why they match. For example, "These two slippers are the same color and length."
5. After he has matched all the shoes or slippers, count the number of pairs.
6. Remember to wash your/your child's hands after playing this matching game.

(See page 5 for information on how doing these kinds of activities with your child helps his development and school readiness.)

Preschoolers

As children enter the preschool years, their curiosity and inquisitiveness increases. They interact with materials and their surroundings with more purpose. You may see your child sorting and matching materials, fitting things together, arranging them in patterns and designs, and building and creating. As child development experts, Jean Piaget and Lev Vygotsky explained, young children need many opportunities to explore and manipulate interesting objects in their environment. They need to be with adults who take an interest in what they are doing and talk to them about their discoveries.

See the table below for examples of activities that give your preschooler a solid base for mathematical thinking, the math concepts he learns, and how you can respond to further increase his learning.

Activity	Math concepts learned	Respond with "math talk"
Simple games (matching, board games)	❤ Number sense ❤ Order and sequence ❤ Sorting and classification	"Can you find the card with the *same* picture?" "Let's *take turns* choosing a card. It's Malia's turn but you'll be *next*." "You rolled the die. Let's *count* the dots together - 1, 2, 3."
Physical activity	❤ Number sense ❤ Measuring ❤ Spatial relationships ❤ Order and sequence ❤ Patterns	"*How far* can you throw a ball?" "*How many* jumping jacks can you do in a minute? Try it!" "Here's an obstacle course. *First* run around the chair *one time*, then crawl *through* the tunnel and *last*, hop *3 times*." "Clap, clap, jump, clap, clap, jump, that's a pattern!"
Exploring materials	❤ Sorting and classification ❤ Patterns ❤ Quantity ❤ Comparisons ❤ Measurement ❤ Spatial relationships	"*How high* can you build that stack of blocks? Is it *taller* than you?" "*How many* cubes do you need to make it *as long as* this book?" "Let's make a *pattern* with beads. What is your *pattern*? What comes *next*?" "*Which* color do you have *more of*?" "*How many* will be left if I take *one away*? "Can you *line them up* from the smallest to the largest?"

Activity for Preschoolers: *Nature Walk*

What You Need:

Collection of leaves, Paper

What to Do:

1. During a walk outside with your child collect different types of leaves.
2. Talk about the characteristics of the leaves. Ask questions such as, "Which leaf is the longest?" "Which one is the shortest?" and "What colors are they?"
3. Once you have an assortment of leaves, put them in one pile. Ask your child to divide the leaves into different piles. Let him decide how to group the leaves and ask him why he sorted them that way.
4. Together, count the number of leaves in each group and show him how to tally his findings on a piece of paper.

(See page 5 for information on how doing these kinds of activities with your child helps his development and school readiness.)

How This Helps

The activities suggested in this newsletter help promote many different aspects of development:

Physical Development
- ❤ Develop eye-hand coordination
- ❤ Use strength and control to perform fine motor tasks

Social and Emotional Development
- ❤ Learn to cooperate with others
- ❤ Feel important and good about himself

Language and Literacy Development
- ❤ Build verbal skills, vocabulary and use of descriptive language
- ❤ Increase his observation, listening and understanding skills, and attention span

Cognitive Development
- ❤ Develop early math skills like quantifying, comparing, and sorting; develop math concepts like numbers, sizes, and measurement
- ❤ Develop his thinking and problem solving skills

Kids in the Kitchen

Cooking teaches valuable lessons such as math and science concepts, fine motor skills, and language development. As you make this recipe with your child, ask questions throughout the process to encourage his thinking skills. Talk about kitchen safety. Show him how to handle items safely and allow him to do as much as he is capable of. Most of all, have fun!

Fun Fruit Kabob

Adapted from *KidsHealth*

Ingredients:

A variety of fruits, such as: apple, banana, watermelon, pineapple, and strawberries, cut into chunks
1 cup nonfat yogurt
¼ c. dried coconut, shredded
Wooden skewer sticks

Directions:

1. Arrange the fruit chunks onto a large plate by type. Keep the coconut on a separate plate.
2. Help your child slide pieces of fruit onto the skewer and design his own kabob by putting as much or as little of whatever fruit he wants. Do this until the stick is almost filled from end to end. Count the number of fruits used and encourage your child to make a pattern with the fruit. For example, "You put one apple then one banana then one apple and then one banana, what comes next?"
3. Hold your kabob at the ends and roll it in the yogurt, so the fruit gets covered. Then roll it in the coconut.
4. Eat and enjoy!

Resources

Let's Talk About Math: Early Math Video Series, Zero to Three

www.zerotothree.org/resources/series/let-s-talk-about-math-early-math-video-series
A series of videos highlighting the foundation of early math skills in the first 5 years of life.

More, All Gone, Empty, Full: Math Talk Every Day in Every Way, NAEYC

https://www.naeyc.org/sites/default/files/globally-shared/Images/resources/pubs/rockingandrolling_yc0512.pdf
Article that discusses what math is, how to recognize math opportunities, and tips for using math talk to deepen children's understanding of math concepts.

Suggested Books

Discover these books and more at the **Hawai‘i State Public Library** www.librarieshawaii.org.

Infants and Toddlers

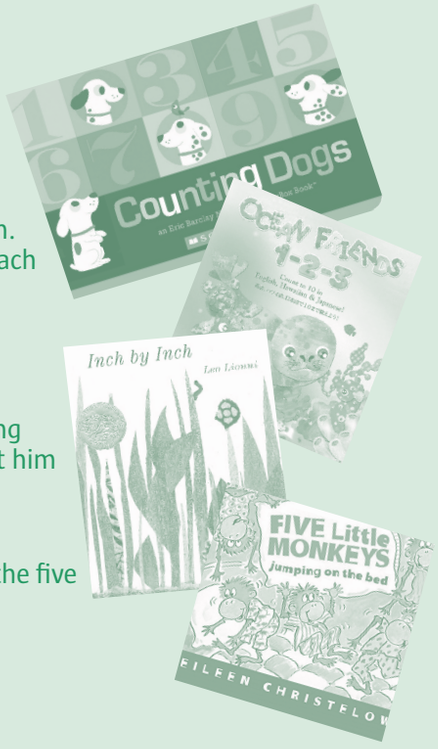
Counting Dogs by Eric Barclay
This hands on storybox die-cut book will expose your child to counting to 10. Follow ten dogs as they count animals around their neighborhood.

Ocean Friends 1-2-3 by Kevin Teruya
A Hawaiian monk seal is on a journey to practice counting from one to ten. He learns facts about his friends in the ocean as he is learning to count. Each page is written in three different languages.

Preschoolers

Inch by Inch by Leo Lionni
A classic picture book about an inch worm who is able to measure anything from a robin's tail to a toucan's beak. When a nightingale threatens to eat him for breakfast, find out how the inchworm cleverly solves the dilemma.

Five Little Monkeys Jumping on the Bed by Eileen Christelow
Children will enjoy helping count down in this family favorite, as each of the five little monkeys falls off the bed and bumps his head.



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