

Contents and Containers: Exploring Space with Infants and Toddlers

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PURPOSE OF INTRODUCING CONTENTS AND CONTAINERS

Infants and toddlers are constantly exploring the space around them. They work hard to figure out how to navigate their bodies through space. They are curious in how various objects fit together. These early experiences are necessary for children to begin to make sense of space (size, shapes, volume, distance, etc.) and their place within it. The foundation of their spatial reasoning and geometrical thinking begins with these early experiences.

Children must have many opportunities to manipulate objects in order to understand their properties such as hard, soft, smooth, rough, flat, or round. These opportunities allow babies and children to problem solve, question, predict, imagine, speculate and develop independent choices as they make decisions about materials and space in a place where they feel safe and supported by adults. Children will discover their own problems to solve by exploring objects, noticing their qualities, and how those objects take up space.

The repetitive actions of infant and toddler play allow children to construct meaning in what they are doing. It is important to understand that babies and young children use play to develop a systematic collection of information in order to make sense of their world. When adults 1) select materials based on observations of the children, 2) provide time and opportunity for infants and toddlers to explore them, 3) adjust the materials or the environment when they notice that children's interest is waning, and 4) make comments or ask questions to promote thinking, and integrate other curricular areas, infants and toddlers will engage in play that supports problem solving, and engages them in all of the components of STEM.

All of this within the context of contents and containers provides the basis for inquiry, analysis, and logical thought. Infants and toddlers must have opportunities to explore objects and space in order to develop spatial reasoning, which is critical in the STEM disciplines.

BEGINNING WITH CONTENTS AND CONTAINERS



Most infants and toddlers have had some experience with open-ended materials such as pots and pans from the kitchen, boxes from holiday gifts, or items placed in the sand table or bathtub. Typically, adults select the materials, model use of the selected materials, offer them to the child, and use comments and modeling to guide the play.

In order to gain full benefit from contents and containers play, children should have the opportunity to make their own selections from a wide array of materials, use the materials in the way they choose, discover problems as they manipulate the materials, and find solutions to the problems they have encountered.

Certain kinds of materials are essential for infants and toddlers in order to build neuronal networks that will form the basis for everything they will do. Materials stimulate the senses, which respond by developing networks in the brain that enable us to use high-level brain functions and to build relationships among complex ideas (Lewin-Benham, 2010, p. 7).



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MATERIALS TO CONSIDER

Below are suggestions for materials. You do not need all of the items to start your center. Examine materials frequently and remove cracked or chipped objects. Some brands of plastic are more durable and safer. Use a choke tube (or empty paper towel roll) to check items for size if there are questions about choking hazards.

Muffin pans - standard and/or mini	Water bomb soft balls, wooden balls
Plastic strainers of various sizes	Plastic pitcher with balls – (hard, soft, large, small)
Clear plastic container with handle & lid filled with soft balls	Colored Scarves
Large & small hard plastic balls in 13 cup square container	Measuring cups
Clear plastic container with handle & lid with soft balls	Plastic bottle with lid
Clear plastic containers with lids - square (various sizes)	Salsa Bowls
Colorful plastic balls & water bomb soft balls	Plastic bottle with lid
Plastic pitcher with balls - hard, soft, large, small	Clear plastic round containers with lids - variety
Large & small hard plastic balls in 12-cup square container	Clear plastic rectangular containers with lids - variety

OBSERVING AND RESPONDING TO CHILDREN'S ACTIONS IN CONTENTS AND CONTAINERS

WHAT DO CHILDREN DO?	WHAT WILL YOU SEE?	HOW CAN YOU SUPPORT LEARNING?
Accumulate	Carry the object(s) around Repeat the same action on similar objects Fill a container with objects Empty a container one object at a time	Provide a variety of containers with lids and a variety of objects of different sizes and colors.
Distribute	Repeat the same action on similar objects such as pushing a ball and then push all of the balls to see the result.	Provide pitchers of various sizes and a variety of balls and scarves, or a muffin tin with balls in a variety of sizes.
Collect	Put together what belongs together	Provide several categories of items so that children can begin to sort and categorize (such as putting balls in one container and spoons in another or finding the lids for containers and placing them together.)
Nest	Put objects inside each other according to size Older children will seek sets of similar objects Infants and toddlers will simply insert items inside each other in a series of at least three	Provide containers that can be nested (such as bowls of the same type but different size, measuring cups, nesting cup sets.)
One-to-one correspondence	Match one object to one container Match one object to one section of a multi-section container	Provide large and small muffin tins and objects of various sizes that will fit into the muffin tins or containers with matching lids.
Create	Design and build structures with the materials Fit materials together in interesting ways	Provide several sizes of bowls- some with lids and some without lids, a variety of cups. Allow children to gather materials from the classroom in order to spark ideas.

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INQUIRY TEACHING MODEL- HOW CAN TEACHERS SUPPORT YOUNG CHILDREN?

The Inquiry Teaching Model was developed to capture the process of inquiry teaching. It encompasses all of the important components of the teacher's role in facilitating the curriculum. **Observation** of children serves as the foundation in this model. Observation must occur continuously in order for teachers to have a sense of children's experiences, their interests, and how to meet their needs.

Engaging Learners:

This section of the model illustrates that children (learners) need to be engaged. Through observation, the adult can identify interests and experiences, stimulate interest, and capitalize on natural curiosity by provoking engagement with new materials.

Provide Opportunities:

After engaging the children, teachers continue to observe what children do and provide opportunities to explore the properties of objects, use materials to problem solving, scaffold experimentation, and foster communication.

Make Informed Decisions:

As teachers observe children at work, they can make informed decisions in order to find out what children know and can do, make comments or ask questions to promote thinking, and integrate other curricular areas.

Inquiry Teaching Model



EXAMPLES OF COMMENTS AND QUESTIONS FOR INFANTS AND TODDLERS ENGAGED IN CONTENTS AND CONTAINERS

COMMENTS

Let's see what happens when you put these together.
Look how big that one is. I wonder how many balls will fit.
Oooh, you put some different ones in that pitcher.
That ball won't go in? Can you look for another ball?
I see that you tried the blue lid on that one. It fit there.
You found all of the hard balls.
You put all the hard balls in the big pitcher.
You put 1-2-3-4-5-6 balls in that bowl.
I wonder why that ball won't fit there. Hmmmmm.



QUESTIONS

Could you do this another way?
Can you find a ball that fits in here?
What else could you find that might work?
That's a problem! What can you do about it?
What happened to all of these balls?
Which balls did you use to fill that one?
Can you find the one that fits there?
Which ball is like this one?
Can you find the ball that is different?
Do you think you can make that one fit?
What happened when you did that?
You look frustrated. Is there something I can do to help you?

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THE IMPORTANCE OF PROVIDING OPPORTUNITIES TO DEVELOP SPATIAL REASONING

Spatial reasoning begins to develop during the sensorimotor period from birth to approximately 12 months. Spatial relationships develop sequentially. However, the development in each area is cumulative and continues to expand and become more sophisticated as the child gains more experiences in each area.

Six spatial relationships:

- 1) **Proximity** - how close together or far apart are objects within the child's gaze (1-3 months).
- 2) **Separation** - the child's ability to recognize that one element is not a part of another element (4-10 months).
- 3) **Order** - (spatial succession) When two close, but separate elements are arranged one before another or when a series of events are organized in space and time, such as the sound of a garage door opening, a door slamming, and footsteps alert the child that a parent has returned from an errand. (4-12 months and beyond).
- 4) **Enclosure** - (surrounding) "insiderness" of the object such as a block inside a box or features inside a face.
- 5) **Continuity** - With three-dimensional objects, children can perceive the part of the object they see (surface), but don't realize the object continues on the other side without picking it up, turning it around, feeling the various sides and surfaces, and looking at it from many different angles.
- 6) **Constancy of shape and size** - The same ball fits into the same container every time. This the beginning of object permanence. (Piaget & Inhelder, 1967)

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