

Play Materials That Facilitate Thinking and Problem-Solving Skills

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Very young children use the knowledge and understanding they construct to think and problem solve. The best way for them to develop these important cognitive skills is through play that is meaningful and interesting to them (Bruce 2023). As Dewey ([1922] 2018) said, give children “something to do, not something to learn; the doing is of such a nature as to demand thinking, or the intentional noting of connection: learning naturally results” (98). Play materials can begin to support children’s emerging ability to use working memory, understand cause and effect, change from trial-and-error problem solving to symbolic problem solving, and begin to match, sort, and recognize patterns. These experiences lead children to question what comes next, which is important in developing hypotheses and making predictions. It is also the question that keeps their mind curious, active, and engaged in its search for ways to explain things they encounter. As Alison Gopnik (personal communication) notes, “For young children, quite literally, seeking explanations is as deeply rooted a drive as seeking food or water.”

Engaging with Older Infants During Block Play

Leah Bruton, a teacher at the Explore + Discover Early Learning Center in New York City, reflects on her observations of older infants engaging in block play and how she has responded:

Throughout my journey as a teacher, I have come to understand our most important role as teachers is to be facilitators and joyful observers of children’s lives and development. I learned to trust the infant as a scientist who has the drive, initiative, and ability to make and test hypotheses about their world. This trust allows them the freedom to explore materials on a deep level and promotes mastery through exploration.

The teachers at our center value long periods of continuous time throughout the day to allow in-depth play with quality materials. We slowly make additions and modifications that are necessary or meaningful and are based on our observations as opposed to predetermined weekly plans. This approach demonstrates a real appreciation for the depth of knowledge the children have and are acquiring. We are especially proud of creating successful opportunities for block play over the past two years. We are continuously surprised by the innovation and skilled building we see in the block area. We believe that the strong relationships between children and staff fueled deeper engagement and learning over time.

In my room, I introduced blocks and other toys in baskets during the summer before children transitioned to the 2s room. A 19-month-old child had set up cylinders in descending order by size on the windowsill. She found a round block that fit perfectly to extend the set. Seeing this child’s creativity and understanding was a powerful visual reminder for me to never limit what I think children are noticing or absorbing.

At the beginning of one year, I offered a limited, curated selection of blocks for children to explore. I observed the children transporting, stacking, and lining up the blocks and creating enclosures. *The Block Book* (edited by Elisabeth S. Hirsch) was my guide to a quality block area. I simplified the ideas to create a space where the children could build collaboratively. At first, I offered fewer shapes and numbers of each block to facilitate building. I gradually added more blocks until one-third of the room was devoted to building. I found that incorporating toys from other areas in the room is the key to engaging many children in the block area. I saw baby dolls in beds, cars in garages, and eventually the symbolic use of blocks for goats in a pen. I offered drawing materials in the block area as a way to engage children’s creativity and interest in writing. I saw the children experience learning across the developmental domains in the block area.

Using the child's interests to create added excitement about blocks was a very successful way to extend engagement. How I handled the children bringing materials into the block area has become an important and recurring topic in our team meetings. I believe the children needed the freedom to incorporate materials from throughout the room and our trust as they experimented. I acknowledged the crucial role of teachers as engaged observers. I wanted to give the children as much freedom as possible while maintaining a safe environment. For instance, in the block area are two big, beautiful windowsills. The children love building on these windowsills with the blocks that have colored Plexiglas shapes. Being rough on the window or on the windowsill is a boundary that is frequently tested. I feel it is important to allow the children the freedom to build on the windowsill, while at the same time providing predictable limits within a fluid boundary.

I expected that blocks would provide a rich backdrop for math and spatial reasoning learning to occur. Over time, I was pleased to see evidence of learning across all domains.

Children's Thinking and Problem-Solving Skills from Birth to Age 3

As you carefully observe and interact with infants and toddlers, watch for the development of these amazing skills:

- › **Working (short-term) memory.** The capacity to hold a memory of something, like a toy, long enough to use the information for exploration and experimentation (Bjorklund 2022). This skill is particularly important in planning, following directions, problem solving, reflecting, and imagining, as well as in being able to imitate something observed in the past (Better Kid Care 2016).
- › **Understanding of cause and effect.** Recognition that something causes something else to happen, or has an effect on it. This skill allows the child to hypothesize, predict, make inferences, and reason why things happen the way they do (Sobel & Kirkham 2006).

- › **Matching, sorting, and pattern recognition.** Skills that support the child in putting things into categories and hypothesizing about them. This is the basis for more complex mathematics and reasoning (Harris & Petersen 2017; Jung, Kloosterman, & McMullen 2007).
- › **Problem solving.** An ongoing critical thinking skill. It starts with young infants learning that crying helps get their needs met (Gouge 2022; Zero to Three 2010), progresses to sensorimotor (trial-and-error) problem solving in mobile infants and toddlers, and then to symbolic problem solving in 2-year-olds that allows them to think about things and ideas and consider solutions before trying them out (Bjorklund 2022; McMullen 1998).

Suggested Play Materials

Here are some materials that hold a fascination for infants and toddlers and support their thinking and problem-solving skills:

- › Beads to string
- › Blocks to stack (e.g., wood, plastic, cloth)
- › Boxes, baskets, carrier bags, and other containers to fill and empty
- › Busy boards or boxes and activity cubes
- › Feely bags and boxes
- › Felt board with felt figures
- › Grasping toys to hold, shake, and squeeze
- › Lacing toys (e.g., cubes, boards, cards) or wooden shoes to practice lacing
- › Links to hook or chain together
- › Mobiles and baby play gyms
- › Nesting cups
- › Pegboards and pegs of different colors
- › Pop (or snap-lock) beads
- › Pounding or hammering toys, cobbler's benches, and xylophones

- › Push toys (e.g., popcorn popper, lawn mower, vacuum cleaner)
- › Puzzles with few pieces and knobs or handles
- › Shape sorters of different types
- › Simple games (e.g., guessing, matching)
- › Small toys that fit in one hand (e.g., animals, vehicles)
- › Sorting baskets or bowls
- › Stacking rings
- › Toys that respond with sound or visual effects
- › Windup toys, hand-crank music boxes, and jacks-in-the-box

Your Role as Teacher

Provide play materials that spark children’s curiosity and interest, allowing children freedom to explore and experiment. Help only when necessary (e.g., by scaffolding, reorienting a toy, asking open-ended questions), but encourage children by using a positive tone of voice and words. Model and provide opportunities for them to practice making hypotheses and predictions.

Conclusion

Increasingly sophisticated skills related to thinking and problem solving emerge through the first three years of life. These skills help the very young child solve problems, such as getting your attention to tell you they’re ready to get out of their crib, finding a temporarily lost toy, or figuring out which button to push to make music. Providing challenges for very young children to solve is important to inspiring learning because “when they are successful [at problem solving], children feel confident and proud, which motivates them to explore and learn more from the people and world around them” (Zero to Three 2010).

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