Block Play Improves Early Math Skills for Preschoolers

Written by Jennifer Moncayo-Hida
May 25, 2017

A castle for Minnie Mouse, a skyscraper for Elmo, or a racetrack for garbage trucks, the options are endless when you combine block play and your child's imagination. When children play with blocks, they are practicing math skills as they count, compare height and volume, and transform, compose, and decompose shapes. Studies show that block play during the preschool years leads to higher math achievement as far out as high school.

In addition, when kids play and build with blocks with their peers it leads to an increase in spatial reasoning (or the ability to think about objects in three dimensions and mentally manipulate shapes). In a study by the University of Maryland, a group of preschoolers were asked to build a house with specific features (like a door, walls, and rooms) with large colorful blocks, but not given explicit instructions on how to do so. Scientists found that the children actively engaged in discussion with each other about the design of their houses ("I'm going to put more blocks on top"); the symbolic meaning of the blocks ("I'm making a door"); and the spatial relations of the placement of blocks ("Move this closer to here"). Through collaborative block play children develop spatial language and reasoning, which is linked to better math skills.

> *"Parents can promote learning during block play by providing prompts like 'Let's build a castle with a tower' and then allowing the child to take the lead"*

Bust out your favorite blocks and encourage your mini-me to design, build, and then do it all over again. "Parents can promote learning during block play by providing prompts like 'Let's build a castle with a tower' and then allowing the child to take the lead," says Helen Hadani, Head of Research at the Center for Childhood Creativity at the Bay Area Discovery Museum. "This is known as guided play, a combination of adult initiation and child direction, which is shown to be an effective method to foster exploration and learning in young children."

---

6 Stages of Block Building

The more time and exposure your child has with blocks the more complex their block building will become! Adapted from the book *Block Play: The Complete Guide to Learning and Playing With Blocks* by Sharon MacDonald, M.Ed., here are six stages of block building children experience. What stage of block building is your child at?

1. Block Exploration

Children touch, carry around, drop, and pack and repack blocks into containers. At this stage, children are discovering the physical properties of blocks.

2. Rows and Towers

Children stack blocks to make a tower or lay them on the ground in rows. At this stage, children use a lot of repetition in their building. They also start to incorporate dramatic play as rows become roads for vehicles.

3. Bridges and Passageways

Children explore trial and error as they attempt to connect two blocks with a third block to make tunnel and bridge structures. Children start to consider measurements as they guess and check whether a block can span the distance between two other blocks.

4. Enclosures

Children use blocks to create enclosed spaces. They stack blocks to create walls, then use these enclosed spaces as a setting for imaginary play and storytelling using props like animals, people, and signs.

5. Symmetry, Balance, and Detail

Children begin to seek symmetry and balance as they become more precise and attend to detail in their structures. They engage in patternmaking and sorting and seek equivalent or matching sized shapes.

6. Planning, Building, and Imaginary Play

Children not only build elaborate structures, but they plan ahead, revise plans, and assign roles to other children throughout the building process. They incorporate materials other than blocks to achieve a desired effect and sort, match, and rearrange. Imaginary play becomes a central element of their block projects.

Learn More

To learn more about school readiness, read *Reimagining School Readiness: A Position Paper with Key Findings* by the Center for Childhood Creativity at the Bay Area Discovery Museum.

About the Contributor

Jennifer Moncayo-Hida is a Senior Communications Manager at the Bay Area Discovery Museum.

More posts by Jennifer

SHARE THIS PAGE

TOPICS

Early STEM

TAGS

Bay Area Discovery Museum | Block Play | Center for Childhood Creativity | Early Math | Guided Play | Imagination | Preschool | Pretend Play | School Readiness | Toddler