



Kindergarten: Bringing Blocks Back to the Kindergarten Classroom

Author(s): Rosanne Regan Hansel

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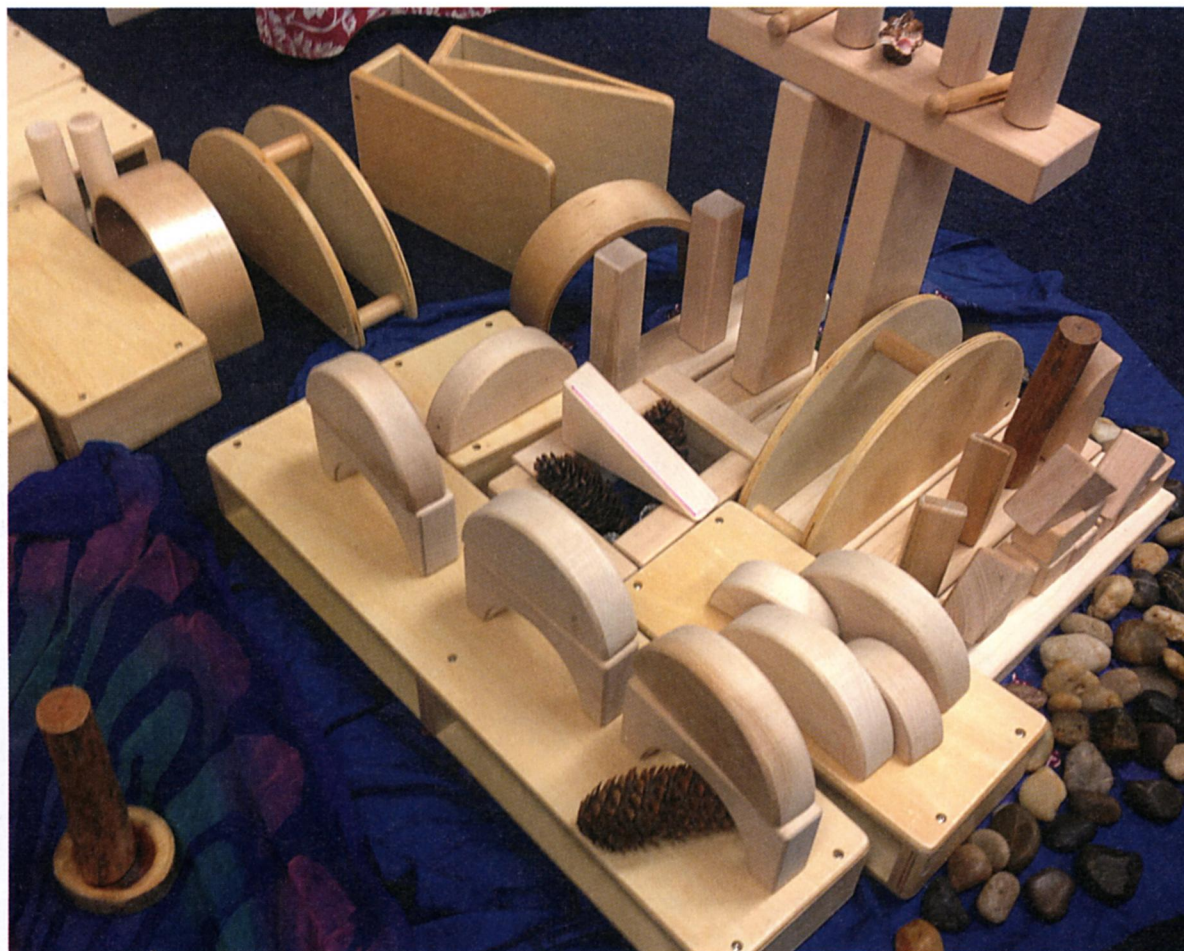


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Blocks: Great Learning Tools From Infancy Through the Primary Grades

Rosanne Regan Hansel

Kindergarten



Bringing Blocks Back to the Kindergarten Classroom

EARLY CHILDHOOD EDUCATION HAS evolved considerably over the past century. Looking at my bookshelves filled with writings by the important contributors to the field, I often reflect on the great strides that have been made in understanding how young children learn. And yet given what we know now about the importance of play as a powerful learning context for children, why is play absent in so many kindergartens today? Lucy Sprague Mitchell, an educator who inspired me personally, was an advocate for play-based learning in the early 1900s. If she were to walk into a kindergarten classroom today, what would she think? Would she be astonished to see 5-year-olds completing workbook pages at their desks?

As part of my work for the New Jersey office that oversees state-funded preschools, I have visited numerous kindergarten classrooms. Looking around them, I often observe that dramatic play and spaces for art making and block building have all but disappeared, making them look more and more like first grade classrooms. In contrast, when I visited early childhood programs in Auckland, New Zealand, I saw kindergarten-age children joyfully and actively engaged in intellectually inspiring, wonder-filled indoor and outdoor learning environments.

The difference between the two kindergarten environments is shocking: How has more than a century of groundbreaking research and literature extolling the importance of developmentally appropriate environments and play-

Photos courtesy of the author

based learning in the early childhood years been replaced by silent, joyless classrooms in the United States with one-size-fits-all curricula? And where have all the blocks gone?

That jolt—and the strong convictions of my colleagues, who strive to build high-quality, developmentally appropriate public preschool programs—was the impetus for our team to write new state guidelines for kindergarten. After developing the guidelines, we (the New Jersey Division of Early Childhood Education) followed up by facilitating a series of professional development seminars for kindergarten teachers and administrators to begin to reverse what the Alliance for Childhood calls the crisis in kindergarten (Miller & Almon 2009). Participants in our kindergarten seminars come from a variety of public school districts throughout New Jersey: rural, suburban, and urban areas, and neighborhoods with low and high incomes. All of the districts, however, include children with a wide range of abilities and prior experiences, and many who are learning a home language and English.

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Hundreds of New Jersey kindergarten teachers have taken part in these seminars, now in their fourth year. An important focus is collaborating to create kindergarten classroom environments that are developmentally appropriate. We consider blocks to be an essential material in those environments.

Why blocks are important

What do blocks offer that other learning materials don't? One of the most important features of blocks is that they are three-dimensional: they offer children ways to understand shapes by exploring and manipulating them with their hands. Piaget would say that this is the only way to truly understand a concept. A worksheet, workbook, or even a flat screen with objects that can be rotated or flipped cannot provide the sensory and visual experiences of a solid object. Constructing with blocks offers a unique opportunity for learning that has benefitted engineers, designers, architects, and artists—"while children build and explore

with unit blocks, they solve problems in spatial visualization, spatial orientation, planning and problem solving, and implicit measurement" (Golbeck 2005, 80).

As a former art teacher, I understand how important visual-spatial work is in developing children's conceptual understanding of many complex ideas. Scientists and researchers (Chalufour & Worth 2004; Miller 2004; Golbeck 2005) recommend that children represent their block structures using drawings—a form of visual note taking. When children have time to observe closely and to draw what they see, they notice structural details, part-whole relationships, and the differences between two-dimensional and three-dimensional shapes.

Blocks allow children to develop and practice many different skills (Miller 2004). When children plan, construct, create, and represent their experiences with blocks, they progress in each development and learning domain—social-emotional, cognitive, and physical.

Social-emotional. Block building offers many rich opportunities for boys and girls to develop social and emotional competencies through dramatic play (Strasser & Murfson Koeppel 2010). Miller (2004) reported that in the wake of the September 11, 2001, terrorist attacks, for example, teachers observed children building towers and knocking them down over and over again, providing an outlet for confronting their fears and for coping with a frightening situation.

Block play, role playing, artwork, and, later, creative writing permit children to come to terms with other difficult experiences, such as hospitalization, accidents, or the birth of a new baby. The growth of competence acquired through a sense of mastery in play helps children to reduce the sense of helplessness that comes from being little in a big world. (Brody & Hirsch 1996, 66)

By becoming more keenly aware of the themes of children's play in the block area, teachers can better encourage positive social-emotional skills by offering children more targeted feedback.

Cognitive. Block play hones construction skills, helping children acquire knowledge about the function of objects and structures even before they have the ability to verbalize it (Miller 2004). This gives teachers valuable information about what children actually know and understand. And because most children are interested in building, they are highly motivated to use more sophisticated vocabulary to

About the Author

Rosanne Regan Hansel, MEd, is an education program development specialist for the New Jersey Department of Education, Division of Early Childhood Education. Rosanne coauthored the New Jersey Kindergarten Implementation Guidelines and facilitates statewide kindergarten seminars. Previously, Rosanne was an administrator and teacher in a variety of early childhood and elementary settings.

RosanneHansel@doe.state.nj.us

Author's Note

New Jersey teachers and kindergarten seminar participants featured in this article include Kathleen Spadola from the Paterson and Garfield school districts, Heather Merrigan and April Intile from South Orange Maplewood School District, and Arlene Calafut and Sally Kacar from the New Brunswick School District.

communicate about what they are creating. Teachers who see this happening more often in the block area than in the literacy center realize that they can provide individualized support for language and vocabulary development in the context of building.

With the national focus on STEM (science, technology, engineering, and mathematics—or STEAM, which includes the arts), introducing foundational concepts in these areas through block play offers children concrete experiences and investigations that promote problem-solving skills and improve understanding of more abstract concepts, such as spatial relations, balance, and motion. For example, when teachers add to the block area materials such as rolling objects, like balls or marbles, and vinyl gutter or cove molding to build ramps and chutes, children can practice science inquiry skills as they observe objects in motion (DeVries & Sales 2011).

Physical. When children carefully balance blocks as they stack them or position blocks in intricate patterns, they develop eye–hand coordination and fine and large motor skills at the developmental level that is just right for them. They may not be ready to write a paragraph about their home, but many can build it and even draw what they have built. These refined motor skills eventually lead to the successful use of a writing utensil or keyboard.

Introducing Blocks

Some kindergarten teachers make the block area off limits for children due to “fighting over blocks, structures being accidentally knocked down, and children resisting cleaning up after block play” (Tunks 2013). Even when teachers demonstrate and explain how blocks are to be used and put away, they may need to devote extra time to ensure children can explore freely on their own following basic safety rules, caring for materials, and using negotiation skills.

Encouraging children to build in an area defined by tape on the floor—away from heavy traffic areas—and offering enough blocks to reduce fights are first steps. If cleanup seems too overwhelming, teachers can allow extra time, develop a system such as forming an assembly line to pass blocks for storage, ask other children to assist, and assign children to return specific shapes to the shelves (Tunks 2013).

It is important for teachers to schedule sufficient time for block play—45 to 60 uninterrupted minutes. “If a child’s play is constantly interrupted . . . it prevents them from becoming involved in more sophisticated play and stifles their creative ability” (Wellhousen & Kieff 2000). Once children have learned these simple rules and have plenty of time to freely explore with blocks, they will be ready to build more elaborate structures.

Reading, writing, speaking, and counting are critical skills in kindergarten, but there are other skills children need. To succeed in the 21st century, children need to develop approaches to learning (Hyson 2008) that will help them persevere when faced with challenges, work collaboratively to solve increasingly complex problems in a diverse world, and become critical, creative, and innovative thinkers. In addition to the academic learning that block building promotes, another strength of this material is that it gives young children endless opportunities to practice those 21st century life skills.

Developing language during block building

During meeting time, Ms. Spadola and the children briefly revisit the documentation of the five-week study of buildings in the community. She surprises the kindergartners with a large box of wood scraps in different shapes. As the teacher and children sort the shapes into clear bins according to their attributes, Kimora announces, “Small pointy triangles go here.” Then children place the sorted shapes in the block area and the art center. At center time, Kimora spends the entire time playing with the wooden scraps, assigning different roles to the shapes and inventing stories for each. Ms. Spadola listens intently to Kimora’s imaginative language, observing that she uses more descriptive vocabulary during her self-talk as she works with the wood shapes than she does when engaged in any other conversation or activity. Ms. Spadola usually captures Kimora’s language “as is,” although she sometimes offers a prompt such as “Tell me about the shape you are holding” or “How were you able to get the shape to stand up that way?”

Using the wood shapes in this creative way encourages more sophisticated language than when children use commercial toys or accessories for closed-ended purposes. These open-ended materials also encourage children to make visual analogies when they intentionally select shapes to represent other objects.

Normally, you would not call Nathan a chatterbox. But today, as he bends over his block structure to place another block, Nathan is talking a mile a minute! Although building on his own, this kindergartner with language delays uses vocabulary-rich self-talk to describe his construction. His teacher, Ms. Merrigan, takes photographs of Nathan’s constructions and encourages him to write down the words he is using. She attaches his handwritten descriptions, such as *brij* (bridge) and *tunl* (tunnel), to the photographs she displays on the bulletin board. Ms. Merrigan knows that this display will remind the children of what they have built previously, give them practice writing words that they can attach to an experience and an object, and will convey to them that their block play is seen and valued.

Nathan's Individual Education Plan (IEP) goals, such as improving expressive language, increasing vocabulary, and having collaborative interactions with other children, can be achieved through block play (Wellhousen & Kieff 2000). Block building allows Nathan to use language in a context that is meaningful to him. Because Nathan is not yet building with other children, Ms. Merrigan understands that she needs to schedule opportunities for Nathan to play and communicate with peers who do not have special needs, so that he can build important social and language skills.

Block building and science

With the Next Generation Science Standards (NGSS 2013), teachers need to devote more time and space for science explorations. In the physical sciences, blocks are an ideal material to offer children as they experiment with properties of matter, motion, and stability.

When children engage in open-ended explorations with blocks, they can ask questions and develop hypotheses about why blocks do or don't fall when stacked high. Teachers can build on this understanding by offering a focused exploration to investigate a concept more deeply (Chalufour & Worth 2004).

In the block area, Mrs. Calafut, shows Marissa and Antonio a photo of a structure they built the previous week. "This is your tower," she reminds them. Using gestures and pointing to the photo, she helps these dual language learners interact with her about the blocks. "Marissa, in the photo you are standing next to your tower. How tall is it?" Marissa points to her chin. "It reaches your chin. *Tu barbilla*. Can you and Antonio build one even higher?" The children use every block from the shelves to build a very tall tower, and Mrs. Calafut snaps a photo of them next to it and shows them the image. Marissa sees that this tower is higher than her head and shouts, "Is bigger than me!" Mrs. Calafut puts both photos on the display board in the block area. "Now, let's write about your towers in English and Spanish: *tower/torre, tall/alto, taller/mas alto, and the tower is taller than me/el torre es mas alto que yo*."

When teachers don't speak a child's home language, it is important to use gestures, objects, and visuals, and to learn some basic words and phrases in the child's home language to teach key concepts. In addition to teaching concepts and vocabulary, teachers can encourage children's hands-on experiences with blocks and provide paper and drawing tools for representing what they have built. They can use a concept or word



in a meaningful context. For example, when Mrs. Calafut notices that the children understand the importance of building strong foundations so that their towers don't fall down, she introduces the words *balance* and *equilibrio* and challenges the children to come up with new strategies to build even more complex towers that include elements of symmetry and balance.

Children learn a great deal from their peers, but intentional teaching is key in reinforcing understanding and proficiency. Young dual language learners need ample opportunities to play, work, and learn in their home language. Adding books about construction and engineering



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in the home language and finding community and parent volunteers to spend time with children in the block area to reinforce vocabulary and concepts in the home language makes the block area more inviting (Nemeth 2012).

Block building and mathematics

Block play helps children build a foundation in mathematics, not only in number and operations but also in measurement, geometry, and spatial relations. Describing the position of blocks (*on top of, next to, in front of*) helps children learn about directions and relationships in space. Children sometimes use their whole bodies as they build, which helps them understand how the body moves through space—another component of mathematics that can't be learned through worksheets. Children count, sort, and classify blocks; compare quantities; measure length, width, and height; add and subtract with blocks; and understand the differences between two- and three-dimensional shapes through manipulation of both.

Describing the position of blocks (*on top of, next to, in front of*) helps children learn about directions and relationships in space.

The kindergartners Ms. Spadola teaches are studying architecture. Using digital tablets, the children take photos of the school's exterior and make drawings inspired by their photographs. Noticing the children's interest in this topic, Ms. Spadola projects the photos on an interactive whiteboard so the children can trace and name common building shapes. Making connections with shapes in the environment, such as doors being rectangles and windows being arched, encourages children's in-depth understanding of geometric shapes in mathematics. These experiences offer children a reference for building block structures.

Observing children's understanding through block building

To learn about symmetry, Mrs. Intile gives small groups of kindergartners their own type of blocks, inviting them to create symmetrical patterns. She notices that the children in one group are struggling because they do not have sufficient pairs of unit blocks. She responds by offering them small colored foam blocks to use to make the patterns. Sophia and Cameron begin making identical patterns on each side of a line on the carpet. Seeing that Dominick's block patterns don't match on each side of the line, Sophia tells him, "No, Dominick, you have to make them the same on both sides," and then shows him how to make the blocks symmetrical. Mrs. Intile sees that the majority of the children are deeply engaged in creating symmetrical

Recommended Books on Building for Kindergartners

- *At a Construction Site* (2006), by Don Kilby
- *Beautiful Oops!* (2010), by Barney Saltzberg
- *Bruno the Carpenter* (1996), by Lars Klinting
- *Building Machines and What They Do* (1994), by Derek Radford
- *Construction Zone* (1997), by Tana Hoban
- *Cubes, Cones, Cylinders, and Spheres* (2000), by Tana Hoban
- *Dazzling Diggers* (2000), by Tony Mitton and Ant Parker
- *How a House Is Built* (1996), by Gail Gibbons
- *The Lot at the End of My Block* (2001), by Kevin Lewis, illus. by Reg Cartwright
- *The Magic Toolbox* (2003), by Mie Araki
- *Old MacDonald Had a Workshop* (2004), by Lisa Shulman, illus. by Ashley Wolff
- *Roberto, the Insect Architect* (2000), by Nina Laden
- *Shapes in Buildings* (2009), by Rebecca Rissman
- *The Three Little Javelinas* (1992), by Susan Lowell, illus. by Jim Harris
- *The Toolbox* (2006), by Anne and Harlow Rockwell
- *Tool Book* (1982), by Gail Gibbons
- *When I Build With Blocks* (2012), by Niki Alling

patterns. Only later does she realize that the Common Core State Standards for mathematics don't introduce symmetry until fifth grade. In Mrs. Intile's experience, kindergartners enjoy and are capable of making structures symmetrical, so why not give them the word to describe what they design? It is also a chance to individualize mathematics learning for the children who are more than ready to stretch beyond the kindergarten standards.

The Common Core State Standards are a framework that guides teachers in knowing what to teach at a particular level. While teachers should definitely be familiar with the standards, it is even more important that they get to know each child in order to recognize when a child has mastered a concept or skill and is ready for a new challenge. The children in Mrs. Intile's class were all joyfully engaged in manipulating the blocks to create symmetrical patterns, whether they understood symmetry or not.

Kindergarten teachers in our seminar this year are learning to use a new performance-based assessment instrument. As they collect evidence of children's growth in multiple content areas and developmental domains, photo documentation from the block area provides valuable information about each child, as Mrs. Intile experienced. Using technologies such as video recordings, digital cameras, tablets, and tape recordings to capture children's works and words are new ways to collect documentation over time. This becomes a record of the process and outcomes of learning—which is of far greater value than testing alone. It gives teachers and families a new perspective of their children and a better understanding of how and what they have learned.

How can kindergarten teachers bring blocks back?

Following are a few recommendations for bringing blocks back to the classroom.

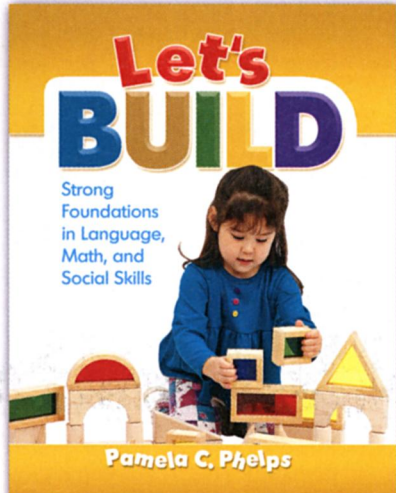
Talk to your administrator

- Share research on why block building is an effective tool for teaching and learning, and how you plan to use it to meet school goals and state standards. Examples are included in this article and the reference list.
- Demonstrate a way to include block building in the classroom schedule by offering choice time twice a day. (See "Sample Full-Day Kindergarten Schedule," p. 50.)
- Request a set of quality wooden unit blocks and a storage shelf or cart. If your budget is tight, order a small set of wooden blocks or inexpensive foam or cardboard blocks. You can also use recycled materials like tissue boxes, wood scraps,



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and natural materials that are easily obtained and free. Go to thrift stores, yard sales, and flea markets. Several teachers from our seminars have had success in writing proposals to DonorsChoose.org, ClassWish.org, and other crowdsourcing websites for classroom materials and equipment.

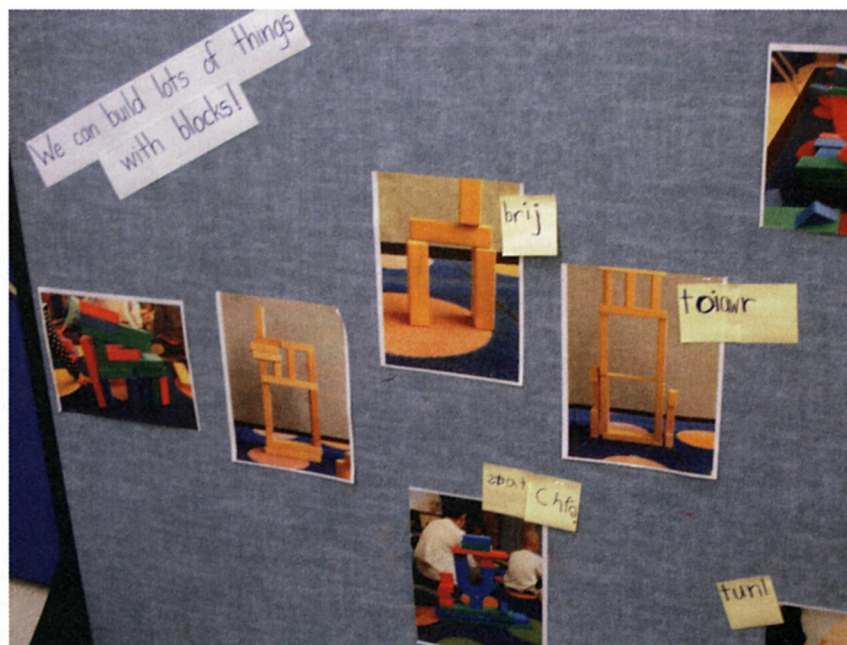
- Work together with colleagues to plan a joint strategy for approaching your administrator as a team.

Decide where to place the block area

- Set up the block area away from the flow of traffic and the quieter areas of the room.
- Designate a large floor space or a hard, level platform for building larger, more complex structures. If space is at a premium, look around to see if anything can be moved out of the classroom. Sometimes removing extra tables or an unused teacher's desk offers sufficient space. As a last resort, use the classroom meeting space on the carpet or tables for block building.
- Consider outdoor spaces. Children benefit as they use their entire bodies, especially when they have access to large waffle blocks or hollow blocks to make life-size enclosures or structures.

Decide what to put in the block area

- Ensure you have a sufficient number (about 300 for three children) and variety of blocks (for a specific list of block shapes, see Wellhousen & Kieff 2000, 102). If necessary, begin with a small set of blocks and order more each year.
- Offer a variety of tabletop blocks. Children can build with parquet blocks, straws, connectors, large dominoes, one-inch cubes, and noninterlocking block sets such as Kapla blocks, KEVA planks, or Dr. Drew's Blocks.
- Encourage children to create or invent their own props and accessories. They can make people, animals, vehicles, road signs, and other items.
- Add fiction and nonfiction reference books. Look for books about building, construction workers, simple machines, and vehicles (see "Recommended Books on Building for Kindergartners," p. 48) along with photos of community structures. These items invite children into the block area and build on their interests.



Sample Full-Day Kindergarten Schedule

Time	Duration	Activity
8:30–8:45	15 minutes	Arrival
8:45–9:00	15 minutes	Morning meeting
9:00–9:20	20 minutes	Shared reading
9:20–10:20	60 minutes	Choice time with ongoing investigations/project work and guided reading
10:20–10:35	15 minutes	Cleanup and sharing
10:35–10:50	15 minutes	Snack
10:50–11:20	30 minutes	Outdoor recess
11:20–12:00	40 minutes	Math explorations
12:00–12:30	30 minutes	Lunch
12:30–1:00	30 minutes	Rest and independent reading or read-aloud
1:00–1:30	30 minutes	Writing workshop
1:30–2:10	40 minutes	Choice time with ongoing investigations/project work (times by actual length of school day)
2:10–2:50	40 minutes	Specials
2:50–3:10	20 minutes	Sharing, review, and closing

Adapted, with permission, from the New Jersey Kindergarten Implementation Guidelines. www.state.nj.us/education/ece/guide/KindergartenGuidelines.pdf.

- Make simple adaptations to blocks so all children have access. For example, glue nonskid materials to the blocks so they don't shift, making it easier for children with disabilities to use blocks independently.
- Document the building process and products. Take photos and encourage children to draw their structures to preserve (for their portfolios) or to share with others what they have built. Having drawing paper and writing tools nearby is a good idea in every center, but especially in the block area.

Anticipate families' questions

- Document and share the deep learning that is happening in the block area. This helps you demonstrate how and what children are learning when they build and provides evidence that children are gaining important 21st century skills that incorporate essential kindergarten goals and state standards.
- Include families in the block-building activities. Ask for donated recycled materials and invite them to join the class on neighborhood field trips to note building shapes and architectural features, share expertise in building occupations, or read a story about construction (in English and the children's home languages).
- Create an exhibit of the children's work. Invite families and other classes to tour the exhibit and listen to the kindergartners describe their building projects.

Conclusion

Join the growing number of kindergarten teachers who place experiential learning at the center of the curriculum by restoring blocks to the classroom. You will be amazed by the amount children learn and the way they demonstrate their learning when they are fully engaged with challenging and inviting block materials that captivate their interest and challenge their thinking!

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