

Blocks: Great Learning Tools From Infancy Through the Primary Grades

Sean Durham

Primary Grades



Blocks: “Standard” Equipment for Today’s Primary Classrooms

During physical education time, second-graders Jenna and Mojen play with a large rubber playground ball. They notice that no one is using the unit blocks their teacher recently placed in a cart on the patio near the playground. They go over and begin removing blocks from the cart. Mojen suggests that they make a maze for their ball to travel through, “like the corn maze on the farm we visited.” After several minutes of discussing, building, and walking through their maze, they decide to roll the ball through it and into a bucket lying on its side at the end. After thinking about how to move the ball, they decide to roll it hard. Jenna pushes the ball forcefully down the first corridor. When it hits the bucket, blocks fall over and the ball bounces outside of the maze and rolls into the grass. They laugh, get the ball, and consider how to make the wall strong enough so the ball won’t bounce outside.

Mojen suggests building it five blocks high because “that’s how tall the ball is.” Jenna disagrees and says, “Tall doesn’t mean strong.” As their conversation continues, Ms. Johnson notices the children’s use of critical thinking and makes notes about how they negotiate and problem solve. She recognizes that Jenna and Mojen’s play is related to several new learning standards emphasized in the school district.

Photos courtesy of the author

THE INITIATION OF NEW LEARNING STANDARDS such as the Common Core State Standards (NGA & CCSSO 2014a) and the Next Generation Science Standards (NGSS 2013) has provided fresh occasions to reflect on the content of *Developmentally Appropriate Practice in Early Childhood Programs Serving Children From Birth Through Age 8* (Copple & Bredekamp 2009). The implementation of these new standards has been highlighted by NAEYC as an opportunity for incorporating developmentally appropriate practices, with a focus on the whole child, in the primary grades and beyond (NAEYC 2012). This article contributes to that idea, suggesting that the intentional use of block play promotes children's development in the primary grades and enhances teachers' abilities to document children's progress toward reaching learning standards.

Where did the blocks go?

Blocks have held pride of place in early childhood classrooms since the mid-1800s (Hewitt 2001), and environmental rating standards still associate the use of blocks with dimensions of classroom quality (Harms, Clifford, & Cryer 2005). Ideally, the numbers of blocks, spaces for block play, time spent in block play, types and shapes of blocks, and props to enhance block play increase as children get older. Early childhood educators know that blocks provide many possibilities for supporting children's development in all domains. In today's kindergartens, however, time and materials for block play have dramatically declined. In most primary classrooms, they have vanished (Miller & Almon 2009).

The primary challenge

Many primary teachers are eager to find effective strategies that allow students to build and use skills like critical thinking, problem-solving, and analytical skills (NGA & CCSSO 2014b). When children have difficulty grasping certain math and science concepts through approaches such as verbal explanations and worksheets, some adults become frustrated and may misunderstand the value of the learning standards. It can be difficult for young children to construct knowledge about multidimensional concepts in limited, abstract formats. In this article, early educators can consider a case for using blocks as one effective and engaging teaching strategy in primary classrooms.

About the Author

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Blocks support progress toward meeting standards

In my work as an educator, director, and researcher in public schools, lab schools, and community outreach programs, I have observed the way that children's work with blocks creates multiple learning opportunities. Block play naturally meets each child at his unique level of understanding and allows each child to observe the effects of his actions on the materials. Placing blocks in the school environment and being aware of their value as learning tools, teachers can observe children's demonstrations of prior knowledge and experiences, help children notice connections to new ideas, and support children's development of questions and hypotheses. Furthermore, teachers can plan and implement tasks with blocks that promote learning in specific content areas such as math (Park, Chae, & Boyd 2008). This context for inquiry allows teachers to effectively demonstrate the relationship between play and learning.

In the opening vignette, Jenna and Mojen's block play demonstrated their understanding of several second grade learning standards. For example, they could

- Describe and classify different kinds of materials by their observable properties (NGSS 2013, 2-PS1-1)
- Analyze data obtained from testing different materials "to determine which have the properties suited for an intended purpose" (NGSS 2013, 2-PS1-2)
- Reason abstractly and quantitatively (NGA & CCSSO 2014a, MP.2)
- Use appropriate tools strategically (NGA & CCSSO 2014a, MP.5)

Their desire to construct a maze that could contain the bouncing ball caused them to

- "Ask questions, make observations, and gather information" in order to solve a problem "through the development of a new or improved object or tool" (NGSS 2013, K-2-ETS 1-1)
- Analyze the strengths and weaknesses of multiple attempts to solve a problem (NGSS 2013, K-2-ETS 1-3)

After documenting Jenna's and Mojen's experiments, Ms. Johnson called their classmates to the patio to collect additional data and develop hypotheses about how to design a successful maze. The authentic, intellectual work that began with two children during P.E. became a meaningful science and math lesson for the entire class.

Some teachers feel very cautious when the benefits of such "incidental" situations are discussed. It may seem that children's learning and achievement is somehow being left to chance. However, a balanced approach that includes both intentionally planned teaching moments and a keen awareness of the emergent nature of intellectual development is developmentally appropriate.

Intentional teaching

Teachers can address learning standards by using blocks in deliberate ways. Children love challenges, and teachers can create multiple tasks and activities that focus on specific learning objectives.

Recently, Ms. Sykes has become concerned about second-graders Brian and Jamal, who, based on her observations, could benefit from some additional challenges to accompany the standard math and science curriculum. Ms. Sykes is concerned about the children's academic progress and also about their dispositions and approaches to learning. She wants to find activities that engage them in meaningful ways.

After a walking field trip during which children observed different types of buildings in the neighborhood, Ms. Sykes offers Brian and Jamal individual challenges. She gathers construction blueprints and shares them with the students, asking them to try to match the blueprints to photographs of the final constructions. She feels that this activity might connect to their prior experiences and engage them in activities that would further develop their mathematical process skills and approaches to learning. Ms. Sykes suggests that they try to draw their own plans and then create a model house. Brian and Jamal eagerly study the blueprints and design elaborate and detailed house plans that include room sketches, a symbol system, and a legend. Consistent with young children's imaginations, the boys' houses include plans for a heliport, an elevator, and multiple stories and rooms. They make mathematical conversions so that their 3-D models match the dimensions specified by their plans.

After exploring blocks and other materials available for construction, they decide to use cardboard for the framework, walls, and roof sections. They "prefabricate"—measure, draw, and cut—the cardboard to match the detailed blueprints they had drafted. While assembling the parts of their houses, Brian notices that he has incorrectly cut a rectangle for a window on the wrong end of one of the walls. He wonders whether to start over or change his sketched plan. With the suggestion of his friend Jamal, he decides to recut the window from a new piece of cardboard so that it matches the blueprint. Later, when Brian is installing the elevator in his house, he runs into another problem. As he pulls up the elevator car by an attached cord, it gets hung up as it swings between floors. Brian decides that the elevator car needs weight, so after several trials he installs three small marbles at the bottom to provide weight so the car can move from floor to floor.

These students' experiences mirrored many challenges that real-world architects, engineers, and contractors encounter. Brian and Jamal learned about managing resources, dealing with the results of errors, and enjoying the pleasure of solving problems. They exhibited great pride when they shared their work and explained their process to their peers. Ms. Sykes created a classroom display that documented their work and its connection to multiple grade level standards. Now that's rigorous curriculum!

This initial lesson plan inspired the whole group of children to use large cardboard blocks to build scale models of landmark buildings in their community.

Suggestions for Getting Started

- **Start small.** Many teachers begin with a basic set of unit blocks or LEGOs from their own home. To enhance your block area look for items at garage sales or thrift stores and ask parents for help. As your collection grows, the opportunities and strategies to incorporate blocks into the curriculum will grow as well.
- **Proceed slowly.** Block play, especially more open-ended play, may be unfamiliar to children in today's schools. It is important to begin with a limited amount of basic materials, such as unit blocks. Provide some large-group instruction about how to use and respect materials and peers during block play. An environment of autonomy, rich conversation, and openness to children's ideas will soon have children requiring more and more complex materials. Include books, photographs, and other resources to enliven children's imaginations, creativity, and problem solving.
- **Value the power of children's prior knowledge and experiences.** Children enter each grade with varying levels of both intuitive and constructed knowledge (Copley 2009). Their ability to construct new knowledge greatly depends on opportunities that teachers provide that allow them to build on prior knowledge. Therefore, offer open-ended materials and designate time to observe, listen, and record what children are thinking about when playing with blocks. These practices are a necessary foundation for adding more complex materials and resources and for guiding children toward new questions and hypotheses.
- **Be brave and persistent!** You might encounter opposition from well-meaning adults. If you do, cheerfully offer professional articles or prepared handouts that effectively characterize block play as evidence-based practice for your grade level. More than anything, use newsletters, classroom blogs, and other documentation to bring visibility to the deep thinking and meaningful learning that children are doing when afforded with authentic, intellectual, developmentally appropriate opportunities.

Getting started

Child-guided play with blocks and other open-ended materials, combined with focused construction and experimental activities, are essential to adequately meeting children's developmental and learning needs in the primary grades. Narrow academic activities that ask children to think critically and creatively about concrete, real-world problems without the benefit of concrete, real-world resources are neither fair nor consistent with the development of 21st century skills such as critical thinking and problem solving. In the primary grades, children require and deserve experiences that use their hands, bodies, and minds to construct knowledge.

Integrating block play demands a multifaceted strategy. It is essential to prepare the physical environment, decide when and how block activities fit into the overall curriculum, and communicate effectively with parents and colleagues how and why children benefit from these strategies.

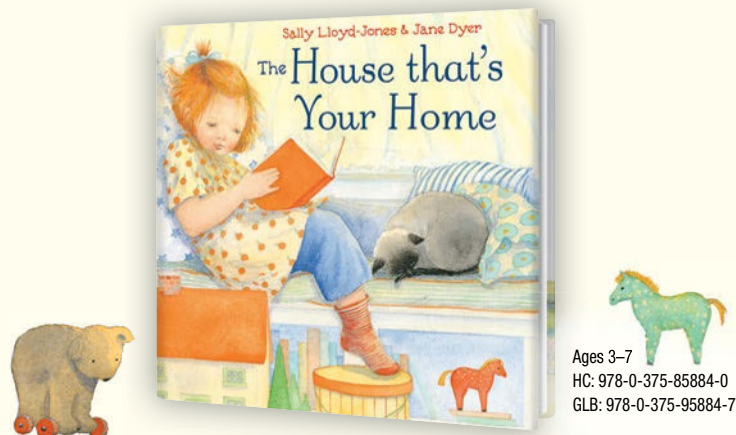
Space and furnishings

Meaningful block play can be achieved only when it aligns with children's individual characteristics, interests, and needs. Due to space constraints and the number of growing bodies in primary classrooms, many teachers never consider blocks as a standard option in the curriculum. Although a block area in a primary classroom may not be as large or prominent as in a preschool classroom, we should not be discouraged. We can model creativity!

First, look for an area that is not being used to its full potential or is being used as a storage area. For example, in many classrooms the science area might have an aquarium or miscellaneous nature materials and observation tools. Consider clearing out that space, finding a new home for the old



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materials, and creating a physical knowledge station complete with various wood blocks and other types of blocks, ramp-making materials (DeVries & Sales 2011), pendulums, and pulleys. Imagine the possibilities!

Many classroom libraries store so many books on their shelves that children no longer notice them. Consider setting up an attractive display of fewer books. Although a large, comfortable area for book reading is good, in most primary classrooms children have their own desks, which can be a retreat during choice times. The additional space created can make room for new materials like blocks and the new learning experiences they offer.

The outdoors can be fantastic spaces for placing various types of blocks, other construction materials, and loose parts.

If you feel that it's impossible to create a space for block play, consider sharing spaces. Teachers with nearby classrooms may be able to share interest areas at specific times with planned supervision. Regardless, feel free to start small with small blocks or a single shelf of blocks, LEGOs, or smaller pieces of wood organized in storage containers. Children can carry the materials to a table for use. Observing children's initial work with blocks will help you understand their interests, their capacities to learn with these materials, and the next steps you can take to develop your block resources (Wellhausen & Kieff 2000).



If at first it is difficult to find indoor options, the outdoors can be fantastic spaces for placing various types of blocks, other construction materials, and loose parts. Added energy, involvement, and interest can arrive when you inform families of your efforts to promote science, technology, engineering, and math (STEM) education. They

Social-Emotional Benefits of Block Play in the Primary Grades

Child development theory reminds teachers that socioemotional goals must be considered alongside cognitive and academic goals. Block play provides a context for

- **Expressing feelings and ideas.** Whether teacher-suggested or child-directed, block play allows children to share their thinking with others. This builds confidence as well as communication skills.
- **Developing cooperation.** Working with others is an essential life skill. Child-directed activities enhance children's abilities to manage their relationships with others. As children share plans, ideas, and materials while building with blocks, they find ways to balance their initiatives with the rights and needs of others.
- **Forming friendships and collaborations.** Children's early friendships support a positive self-identity and sense of belonging. A classroom block area can be a place where friendships begin and grow during mutually engaging activities.
- **Negotiating with others and resolving conflict.** Conflict goes hand in hand with collaborative work and play. Teachers can welcome conflict as a prime learning opportunity. While trusting children's abilities to solve their own problems during block play, teachers can offer support and, when necessary, suggestions for how to resolve conflicts that arise.
- **Establishing autonomous relationships with adults.** Learning how to relate to adults in a context of mutual respect benefits children in many ways. The block area can be a place where teachers listen, say yes to children's ideas, and allow children to take the lead. When children experience the autonomy of directing their own actions in the context of a supportive adult relationship, their initiative and self-regulation abilities can increase.
- **Neural rest and stress relief.** Everyone needs a mental break now and then! Opportunities to play with loose materials, build and create structures and forms that are satisfying, and gaze upon and evaluate one's creations can be a welcome respite from following an agenda determined by someone else.

will likely want to get involved and contribute supplies and keep track of their children's progress.

Curriculum

An excellent teacher is an intentional teacher (Copple & Bredekamp 2009; Epstein 2014), and using blocks as a part of the curriculum requires careful planning and reflection. One critical consideration for incorporating block play is awareness of the learning standards and objectives for your particular school. I encourage new teachers to create displays of related standards to post in classroom interest areas. Creating these simple displays encourages teachers to reflect on and identify the potential that each interest area has for gaining skills or demonstrating progress. In addition to increasing knowledge of the standards, this practice promotes focused observation. Teachers can be more intentional when they prepare interest areas to support specific learning standards and be better prepared to notice children exhibiting valuable skills.

Using blocks in the primary grades does not mean that other teaching resources and strategies should be abandoned. As you evaluate the teaching responsibilities and curricular obligations for your school, you can identify concepts and objectives that can be reinforced through various types of block play.

Carefully managing time through efficient transitions and routines can open up valuable time for free and focused play with blocks. In addition, children's interests and questions resulting from block play can reveal potential topics for in-depth investigations that include multiple content areas (Wein 2008; Wohlwend 2011).

Make learning visible

The choice to commit space, materials, time, and intention to children's block play in the primary classroom can be very rewarding. However, it is critical to consistently and clearly communicate to various audiences the foundations and results of your practice. Displays including photographs, transcriptions of children's conversations, collections of drawings, and journals about block play and its benefits can substantiate children's growth in conceptual understanding. Teachers' visual depictions of connections between block play and the number of standards being met are powerful representations of the value of developmentally appropriate teaching. Detailed and professional documentation designed for children in the classroom, families and colleagues passing in the hall, and multiple stakeholders in the larger community can have an impact that surpasses reports that detail whether children have met academic benchmarks. Documentation has the power

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to broaden our awareness of what children are thinking and feeling—and allows us greater capacity to understand and respect our unique vulnerabilities, values, and perspectives.

Conclusion

For many years early childhood educators have bemoaned the unintended consequences of “push down” academics. Although this push down has resulted in blocks and other free play opportunities being removed from most classrooms, the adoption of standards such as the Common Core State Standards and the Next Generation Science Standards presents great opportunities to push up expectations for developmentally appropriate experiences for children kindergarten through age 8 (NAEYC 2012). Deliberately designing experiences with blocks for primary grade children allows teachers to capture, define, and illustrate the rich language from these standards (e.g., *design, represent, collaborate, investigate, construct an argument*). By teaching with blocks and other authentic tools, we can expect children to be engaged and enthusiastic learners, reaching higher levels of achievement and intellectual growth than they would through worksheets and teacher-led instruction. As we continue to hold ourselves responsible for creating and maintaining educational cultures that respect the science of children’s development and its implications for children’s well-being, we can anticipate the rewards of a brighter future for our children, families, and communities.

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