Why blocks? Perhaps because no other single classroom tool provides as much support for social, literacy, physical science, language, art, mathematical, muscle, or problem-solving skill development.

Consider these results of block play:
- Jena accurately compares sizes, shapes, and numbers.
- Zena describes how she matched the shelf template with block shapes.
- Benny and Zach argue and solve the problem of which tower is taller—without a teacher’s input.
- Shakela and Manny draw a picture of a bridge and then build it.
- Paula and Seth chart the weights of different sizes and numbers of blocks.
- Bill and LaTonya push toy trucks up an inclined plane and watch the trucks roll down again.
- Liz and Luis clap (and ask for a picture to be taken) when they finally achieve symmetry in their barn construction.

Too often, early childhood teachers ignore the potential for learning and cooperative play that blocks offer. Instead of pushing a tiny collection of mismatched wood cubes to a back corner (or closet bin), join the legions of experienced teachers who choose blocks as the tool they can’t teach without.

Encouraging block play
Block play is a primary tool for math skill development. That would make the purchase and use of blocks worthwhile in itself. But the value of blocks goes far beyond math and number skills. Consider this summary of developmental hallmarks:

Math and science skills: space, shape, comparisons, size, order, stability, problem solving, experimentation, number, counting, diversity, patterns, classification, symmetry, interdependence, estimates, fractions, weight, balance, operations, negative space, correspondence, seriation, gravity, and mapping

Language and literacy skills: labeling, vocabulary, signs, planning, making comparisons, directionality, interpreting pictures, making up stories, rhyming, sequence, order, representation, and symbols

Physical skills: fine motor control, coordination, visual perception, large motor control, balance, spatial orientation, moving in space, body awareness, hand-eye coordination, sensory exploration, and integrating left and right sides of the body to move as one

Social and emotional skills: making choices, autonomy, initiative, cooperation, leadership, problem recognition, risk taking, creativity, problem solving, responsibility, appreciation, negotiation, equality, respect, associations, interdependence, discovery, self-expression, trial and error, role play, symbolic representation, and divergent thinking

Ages and stages
Rapid growth and development in early childhood make open-ended toys essential. Blocks fill the bill by being infinitely flexible and a great learning tool for children from toddlerhood through school age. As you observe children’s interests and skills change, modify the block and construction materials to include a greater variety of block styles.
**Toddlers**

Children as young as toddlers can become involved in block play. It helps them increase large muscle skills (crawling, pulling up to stand, and walking independently) and small muscle skills (carrying an object with two hands, using a pincer grip, and manipulating objects). These skills enable children to explore size, texture, weight, and color.

Health and safety considerations are paramount with toddler block play. They continue to mouth objects as part of discovery, their mobility isn’t yet fluid, and sharing is difficult.

Following standard safety guidelines can help minimize accidents when toddlers play with blocks and other construction toys.

- Make sure all materials are smooth, splinter-free, nonflammable, nontoxic, and washable.
- Routinely wash and sanitize toddler playthings.
- Offer blocks that are larger than 1-inch square and can’t fit into a toddler’s mouth.
- Make sure there aren’t any small pieces that can become detached and create a choking hazard.
- Avoid strings and ribbons that can entangle or choke the toddler.

Some suggestions for block and construction toys for toddlers:

**Soft stacking blocks:** These cloth-covered foam cubes are inexpensive, colorful, and easy for toddlers to carry. The standard size is about 4-inches square. Jumbo-sized blocks are also available.

**Texture blocks:** Each side of these foam cubes is covered with a different texture to stimulate sensory exploration.

**Stacking cups:** These colorful vinyl cups usually come in sets of 10. Toddlers can stack them to make towers or nest them one inside the other to explore size and gradation.

**Stacking rings:** Colored plastic rings in graduated sizes fit over a form. Toddlers can explore shapes—and the hole in the center of each ring.

**Soft unit blocks:** These dense-foam blocks are built in the same mathematical proportion as wooden unit blocks but are lightweight for easy portability. Mouthing and teething toddlers will leave permanent bite marks!

**Duplo® bricks:** These large bricks are colorful and easy for toddlers to grasp, stack, and pull apart.

**Cardboard bricks:** These blocks are shaped and printed to look like bricks. They are large, lightweight, easy to stack, and crush resistant. You can make your own with cardboard milk cartons or detergent boxes. Just empty the container, fill it with crushed paper or packing polystyrene, fold into a rectangle, and tape shut. Cover the box with colored, adhesive-backed plastic.

**Preschool children**

Most preschool children have some experience with a variety of blocks and construction toys. Depending on the range of experience, some children may still need to experiment with simple enclosures and bridges, while others are eager to explore the ways blocks can symbolize other things. These developmental differences make it important to help children develop respect for another’s work, to build cooperative relationships, and to allow space and time for experimentation and knowledge building.

Consider making block play available both indoors and on the playground. Each offers unique opportunities for creative experimentation, material variety, social responsibility, and problem solving. Outdoor construction play invites the use of unusual building materials like tires, crates, rocks, logs, sticks, and bricks that aren’t easily negotiated indoors.
Large hollow blocks offer preschoolers and older children a unique opportunity for cooperative building experiences. Because the blocks are large and heavy, most require at least two children to work together—negotiating, evaluating, and agreeing—to construct the desired structure. Children are able to make child-sized buildings—a perfect setting for creative dramatic play.

Hollow blocks, like unit blocks, are built in mathematical proportion. The square is 5 ½ inches by 11 inches by 11 inches. There is a half square, double square, and half double square. Typical sets (about 20 blocks) of hollow blocks include ramps as well as long and short boards.

Preschool block accessories include scarves, containers, and signs as well as other types of construction materials like Lego® bricks, stacking cubes, and Magnet Blocks®. See the lists on Page 33 for more ideas.

**Kindergarten and school-age children**

Blocks and other construction materials are valuable tools in traditional elementary school classrooms because they foster increasingly refined skills, including the ability to use symbols in play.

Children in primary grades have greater mental energy and acuity than younger children. They can delay immediate gratification, negotiate verbally, collaborate, sustain activity and attention, solve problems, recognize mistakes, use logic, and understand that another child may have a different point of view. These skills change the nature of block and construction play, making it better planned and more symbolic.

Primary grade teachers, under pressure to teach to standardized tests, too often forsake the opportunity to make blocks part of both curriculum-generated play and recreational play for their classes. Block play can be a productive instructional strategy (Wellhousen and Kieff 2001). It invites children to engage in directed investigations, symbolic constructions and models, language, mathematics, and community explorations of big ideas like estimations, balance, and symmetry.

Choose blocks and other building materials according to the skills, interests, and experiences of
Unit blocks

Typically, early childhood block play focuses on unit blocks. These blocks, like the large hollow blocks described earlier, were developed in the early years of the last century by Caroline Pratt, an innovative progressive educator in New York.

Unit blocks then—and now—are a flexible and adaptable material that establishes a base line for early childhood education. Pratt developed an authentic teaching tool—one that encourages children to think about and then represent their experiences. This authenticity is the foundation for much of the learning-through-play philosophy of early care and education today.

Unit blocks are hard wood (usually maple) shapes, sanded smooth, and unembellished. They are cut to specific mathematical proportions. The base block measures 5 ½-inches long, 3 ¾-inches wide, and 1 ¾-inches thick. A half unit is exactly one-half the length of the unit, and a quadruple is exactly four times the length of a unit. Other blocks in the set—triangles, pillars, columns, and arches—are cut in proportion and are designed to stack evenly.

Unit blocks are versatile, offer endless opportunities for exploration and experimentation, and support play as a child’s skills and creativity develop. Harriet Johnson, a colleague of Pratt, described the stages of block building in a classic book on the topic. In doing so, she offers teachers an essential tool for observing a child’s cognitive, motor, and social growth and development.

All children move through specific stages of block play—even older children who have no experience with blocks. Keep these stages in mind as you provide materials and design experiences with blocks.

1. Younger children carry blocks but don’t use them for construction. Older children often skip this stage and instead examine the block’s surfaces and textures with their eyes and fingers.

   In this stage, we see the familiar gather-and-dump activities of toddlerhood. As they gather blocks, these young learners are gaining hands-on, sensory information on math concepts like more, less, few, many, and heavy. They are learning about texture and balance while refining their large and small motor skills.

2. Children make rows and stacks of blocks. Usually children use similarly shaped and sized blocks for these constructions and may cover the floor with long snakes of blocks. Early block stacks are irregular and threaten to topple as each new block is added. With developing dexterity, the stacks become straighter and taller.

   Experimenting with stacks and towers is repetitious. Most children need to practice a task over and over to refine skills and reinforce confidence. Eventually rows and stacks reflect a child’s strides in imagination and construction skills.
3. Children make bridges by using two blocks to support a third. This stage reflects a child’s ability to solve a complex mathematical problem that involves spatial relationships. For example, how far apart do two support blocks have to be to support a third? Experimentation, perseverance, observation, and access to a variety of block sizes eventually lead to elaborate bridge-on-top-of-bridge structures.

4. Children use blocks to enclose a space. Enclosing a space, like building a bridge, presents early technical challenges to young builders. Usually early enclosures are skewed—blocks aren’t parallel or square to each other.

   Experimentation and practice lead to eventual success in making enclosures. And once successful, children repeat and refine the process. They may play with embellishments like building a series of joined enclosures, changing the shapes and sizes of the enclosures, creating circular enclosures, or developing patterns of enclosures.

5. Children become more imaginative in construction projects and construct balanced and decorative patterns. They use more blocks, create elaborate designs, and begin to explore symmetry.

   In this stage, children are not likely to name their structures. They are building for the sake of building, and not for dramatic play. Young builders are refining their skills, strengthening their understanding of spatial relationships, and enjoying their own creative impulses.

6. Children realistically name their structures—a barn, horse corral, skyscraper, or spaceship, for example.

   In this stage, children rely on access to a large number of blocks in a variety of shapes. They repeat earlier stages—building bridges and enclosures—with deliberate purpose. Their block play is artistic. The blocks are the medium they use to represent structures in their experience—stairs, towers, and gardens.

   With continued access to blocks and time to experiment, children begin to reflect their understanding of symbols. They use blocks to represent objects in the real world and often interweave block play with dramatic play. Children may announce their building plan before taking the first blocks from the shelf, and assign roles to each cooperative builder.

Managing the block area

A chaotic free-for-all in the block area is not only dangerous but also less likely to lead to constructive play and learning experiences. Keep children safe and maintain classroom order by managing and maintaining the block area. Keep materials in good order, make them accessible to children, and enforce rules consistently.

Organizing space

As you set up block and construction play areas for preschool and school-age builders, use these guidelines:

- Use low, open shelves to store blocks, especially unit blocks. Cut out and laminate a colored template of each unit block shape and affix it to the shelf to assist children in locating and replacing blocks. If a child with a visual impairment is in the group, make the template out of sandpaper so that the texture helps guide the child. Place large heavy blocks on the lower shelves to help stabilize the storage unit.

- Leave space on the shelf for accessories and additional props. Note: Storage bins or deep boxes do not encourage constructive play. Having to dig through the jumble of blocks is often so daunting that children move to a different activity.

- Position the block center in an area of the room that gets little traffic. Locating it near the writing
and dramatic play centers will encourage cross play, material use, and deeper investigations. An 8-foot-by-10-foot space is suitable for four to six children to work.

- Use a low-napped rug to muffle noise, define the boundary, and provide a comfortable surface for floor play.
- Store smaller construction blocks and bricks in clear plastic containers. Label the containers and store them on low shelves to make them accessible to children.

**Number of blocks**

Determining a block-to-child ratio will depend on the children’s ages and their experience with building. Experienced teachers suggest limiting unit block construction to four to six children at a time. A good rule of thumb is 200 unit blocks for a group of 3-year-olds, 300 for 4-year-olds, and 400 to 600 for kindergarteners and school-age children.

School suppliers sell construction materials in sets. Sometimes the packaging gives guidance on amounts to buy. Buy enough to encourage cooperative play and avoid squabbles about ownership.

Usually it’s best to buy large quantities of the best, most open-ended materials like Lego® bricks, wooden train sets, and Unifix® cubes. Experience has shown that buying a variety of small sets of materials won’t sustain children’s interest or hold up under hard classroom use.

**Accessories**

Props and accessories can turn an ordinary block area into a factory of imaginative, skillful construction. Props change the nature of block play from precision mathematical and muscle building routines into imaginative play with families, animals, occupations, and roles. Prop suggestions include the following:

- writing tools including paper, pencils, tape, markers, index cards, blank books, and clipboards;
- rubber, plastic, and wooden human and animal figures;
- traffic signs;
- cardboard cylinders and sheets (for chimneys, roofs, roads, and smokestacks);
- boxes and baskets;

**Rules for the block area**

Let children help you develop behavior guidelines for block play. Typical classrooms have rules that cover these issues:

- **Access.** Girls and boys have equal access and opportunity to play in the block area.
- **Respect.** Actions such as throwing, crashing another’s structure, and stepping on blocks are not allowed. Before adding to another’s structure, a child must ask the builder’s permission.
- **Cleanup.** Blocks need to be returned to the proper storage area after play.
- **Safety.** Block structures stay on the rug and towers aren’t higher than your shoulders.
ceramic and vinyl floor samples;
- carpet squares;
- wheeled transportation vehicles like trucks, trains, and cars;
- fabric swatches; and
- large pictures of buildings, bridges, cities, farms, and factories.

**Guiding block play**

Children often need a facilitator in their play experiences. The facilitator is a model, an adult who can make play safe, calm frustrations, smooth hurdles, monitor negotiations, encourage problem solving, ask questions, and introduce new ways of learning. Some tips for facilitating block play:

- Focus on the process, not the product. Avoid asking “What is it?” and instead ask open-ended questions that start “Why do you think…?” or “How does…?”
- Listen to children’s conversations and acknowledge and support their ideas.
- Help turn mistakes into constructive learning. If the tower falls down, help children analyze why the construction didn’t work out.
- Encourage both quiet, introspective block play and more vigorous play that might happen outside.

- If children seem uninterested in block play, go to the center yourself. Choose a couple of blocks and start stacking. Soon children will join you. Ask questions that spark curiosity and interest. As the children become increasingly engaged, distance yourself slowly, communicating your trust in their ability to proceed without you.
- Add interest-grabbing props and accessories like traffic signs, architectural renderings, and pictures of cityscapes.
- Provide duplicates of popular props.
- Give children adequate time for planning and building (as much as 45 minutes for experienced builders).
- Give advance warning of clean-up time so children can plan how to end their play. Allow adequate time for children to put blocks away.

**Clean-up time**

Help make clean-up time as fun and instructive as the rest of block play. Some tips:

- Decide in advance whether everyone will pick up blocks or just the children playing with them.
- Develop a system that encourages children to leave a project standing for more than one day.
- Teach fun and cooperative techniques for making cleanup quick: forming an assembly line, gathering blocks in a basket or wheeled toy for moving to the shelf area, and calling out shapes. Make a game of cleanup by making shape or number cards that children can draw out of a stack. The drawn card dictates how many or what kind of block to gather and store.
More materials for construction
Beyond unit blocks, many commercial materials, recycled or repurposed objects, and discarded construction items enhance block play. Ask for donations of materials, scour garage sales and resale shops, and shop carefully to stock your supplies.

The following list is intended to spark ideas.

Building materials
- lumber scraps
- bricks
- metal and PVC pipes and fittings
- Plexiglas® and Masonite® scraps
- logs and tree stumps
- ropes and pulleys
- wheels
- clear plastic tubing
- tape measures and rulers
- spirit level

Household materials
- packing boxes
- carpet and tile scraps
- small boxes
- cardboard, metal, and plastic tubes
- polystyrene sheets used in packing appliances
- buckets, crates, baskets, and cartons
- empty sewing spools
- sea shells and stones
- flower pots
- maps
- digital camera

Purchased materials
- unit blocks, as many shapes and sizes as possible
- small wooden cubes
- Lego® bricks and accessories
- Dr. Drew’s Discovery Blocks®
- balance scales
- Unifix® cubes
- straws and connectors
- Tinkertoys®
- interlocking bricks and building baseboards
- interlocking train tracks
- large dominoes
- Matchbox® cars and trucks
- snap-together cars, trucks, and trains
- large wooden and plastic dump trucks, farm vehicles, boats, and trains
- rubber, vinyl, and wooden human and animal forms
- doll house and furniture
- steering wheel
- familiar traffic signs

References