# THRIFTY TEACHER'S GUIDE
## to Creative Learning Centers

Shelley Nicholson, PhD, and Jessica Martinez

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# Dedication

We dedicate this book to thrifty teachers everywhere, and to our mothers, Mary Jane Martinez and Penny Atkinson Redmon.

# Acknowledgments

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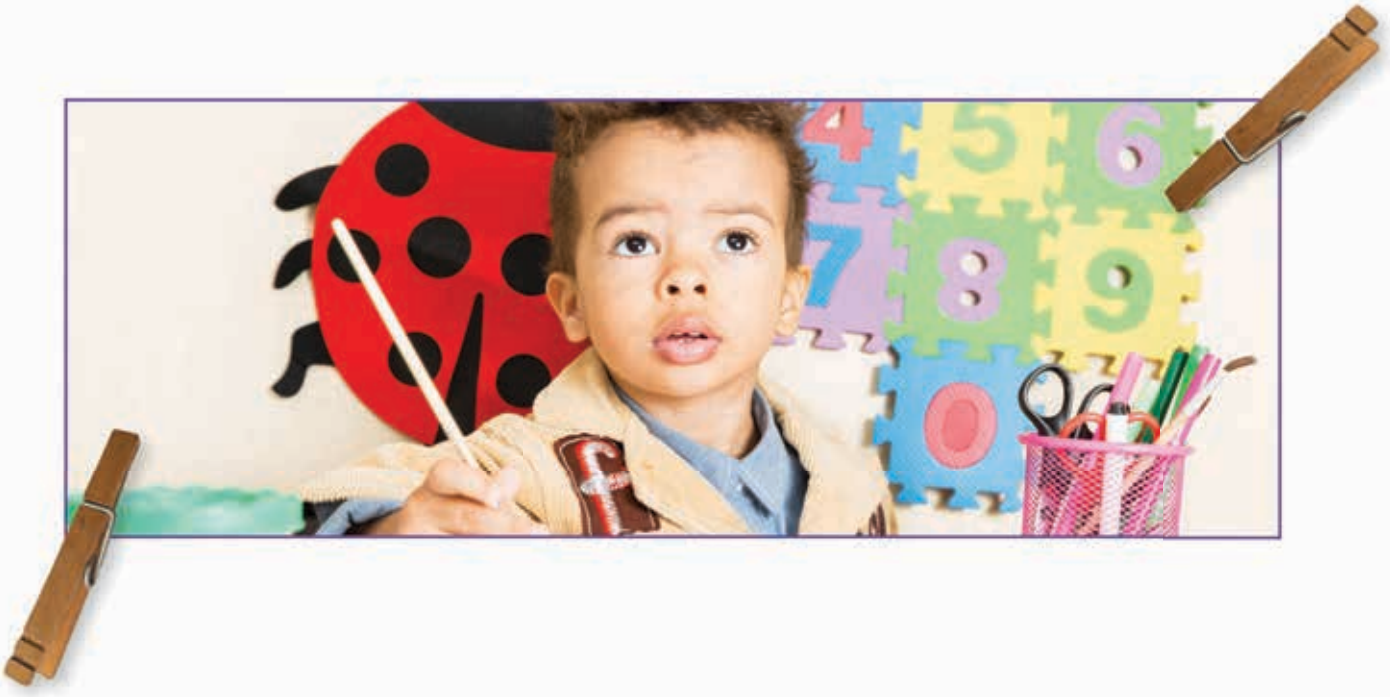


# Table of Contents

# Introduction

In our quest as early childhood educators to provide high-quality and enriching environments for young children, we recognize that the materials we choose play an important role in children's learning and development. The challenge for many teachers is to create and maintain these environments with the limited resources available. Most early childhood programs have modest budgets for purchasing new materials, but even if teachers were allowed to make unrestricted purchases, most would likely become bored and frustrated with the choices offered through mainstream educational suppliers. Children often have more fun—and seem to learn more—when playing with the box a toy came in rather than the toy itself!

Early childhood research (for example, Frost, Wortham, and Reifel, 2012; Van Hoorn et al., 2012) tells us that, when given the opportunity to play with open-ended materials, children are afforded some of their greatest learning opportunities. Open-ended materials provide inspiration for the young child's imagination. A simple box can become a doll's bed or a treasure chest full of booty for pirates. A collection of boxes can become a set of building blocks. When you begin to use your imagination in this way, you will see the potential to turn common and recycled objects into play and learning materials for your classroom.

Our purpose with this book is to demonstrate a multitude of ways that you can easily and inexpensively collect and create a great variety of open-ended learning materials for your preschool learning environment. As early childhood

educators ourselves, we are particularly interested in the use of materials to support learning through play. Research continues to confirm the crucial role of play in children's early education, and providing opportunities for open-ended play is a central tenet in the framework for best practices in our field (Copple and Bredekamp, 2009). You can promote learning by providing time within your daily schedules for play and by creating environments that invite children to engage in play.

In the pages that follow, you will find ideas for both collecting common or recycled materials for your classroom as well as ideas for creating materials with the goal of inspiring specific types of play and learning.

# 1 Creating and Implementing Imaginative Learning Centers

## Learning through Play with Materials

Researchers have shown that play has both direct and indirect influences on children's learning and development (Trawick-Smith, 2009). You can observe some of the direct learning benefits of play when you see children using language to interact socially with others during dramatic play, when they problem-solve how to keep a block tower from tumbling, or when they utilize their fine-motor skills to complete a puzzle. Indirect benefits, such as progress in self-regulatory skills, building attention span, or learning to create symbols in their play, are more difficult to recognize without a broad understanding of the ways that play contributes to learning. Play with materials provides an

avenue for all of these learning possibilities. When you provide time and opportunity for play, you are using it as a powerful medium of instruction.

We enjoy the metaphor that portrays classroom materials as children's textbooks (Cuffaro, 1995). It is clear that children need to interact physically with objects such as blocks to gain their foundational understandings of physics and geometry. They are introduced to the world of literature by exploring books and enacting stories with puppets or props. They learn to sort and manipulate objects, which sets the stage for later arithmetic. Open-ended opportunities with a variety of paper, art materials, and writing utensils are how learning to be an author or an artist begins. In fact, a defining feature of any early childhood program is the materials chosen. Regardless of the philosophy or the curriculum approach utilized, materials matter.

Research suggests that balance in the variety of play materials made available to children will lead them to deeper levels of engagement and provides them with greater opportunities for learning (Prescott, 1987, 1994). One way that you can promote this balance is to include both open-ended and closed materials in the learning environment. Open-ended materials, such as blocks or playdough, are those that children can use in multiple ways; whereas, closed materials, such as a puzzle, typically have just a single function. Both types of materials are valuable but serve different purposes (Guilford, 1957). Open-ended materials allow children to explore, create, and search for multiple solutions to any problems they create or encounter. Closed materials require children to find the best solution to a problem or the one right answer.

In this book, we have chosen to focus primarily on open-ended materials and activities because of the learning possibilities they possess. Children are free to direct their own actions. Even some materials that might be considered closed can be utilized in a variety of ways if children are permitted to direct their own actions while using them. For example, if a child finds an animal bingo game that has been set out on a table, but he is the only one who seems interested at the moment, he might begin lining up the animal cards and have them talk to each other. When children have a portion of time in the day to make their own choices, the possibilities for creative play are endless.

Some open-ended materials can provide opportunities for learning in a specific domain. For example, a teacher hoping to enhance children's fine-motor skills might introduce more manipulative materials in her classroom, such as finger-sliding trays or puzzles. Ultimately, when children are interacting with materials in an open-ended fashion, it is hard to guess how they might end up using them.

## Creating the Environment and Rotating Materials

In many curriculum philosophies, the teacher is first seen as the creator of the environment. He designs the classroom space and chooses the materials. Many teachers arrange their furnishings to create centers or areas with particular materials that are related to one another. Research has found that when classrooms are arranged in this manner, children tend to play longer, which ultimately leads to higher levels of thinking (Moore, 2002). While there is variation in the names used for different centers and how they are arranged and combined, the most common classroom learning centers

include dramatic play, blocks, library, art, writing, science, sensory, math, manipulatives, and music. Teachers typically stock these areas with materials specific to those categories and then add, rotate, and replace materials based on either a changing curriculum theme or, in the case of emergent approaches, the children's interests.

Observe children's play to gain the best information about when to make changes to the environment. As you observe, ask yourself questions such as the following:

- What materials are holding the children's interests?
- What new interests do the children have that are not yet supported by materials?
- What themes do I see in the children's play?
- What materials or props might I add to support their play themes?
- What materials have not been played with recently?
- Are there too many choices in the environment?
- Are there too few choices?

Open-ended materials are fluid. Children will often use materials in novel ways or move them from one area in the classroom to another to serve their purposes. Wooden blocks may be taken to the dramatic play area to become cans of food for a grocery store. A picnic basket of play food may be carried to the block area that has imaginatively become a field of flowers. When you allow children to use materials in the manner they choose, the materials can support a multitude of learning opportunities.

You might purposefully place materials in unexpected areas to promote different experiences. For example, Ping-Pong balls placed in the block center might promote rolling on ramps, while Ping-Pong balls placed in the dramatic play area might promote scooping of pretend ice cream. Open-ended materials in particular provide for greater fluidity and creativity in how children use them.

In addition to providing and rotating materials, it is important to ensure that children have access to materials that they can use to create their own materials and props for play. Younger preschoolers may not yet be able to create their own props, but older preschoolers will be inspired by your creativity to make their own creations. A bin of recycled boxes and tubes placed near general art supplies will most likely lead to amazing creations!

## Inviting Children to Play

In most early childhood classrooms, materials are available on low shelving so that children can access them without assistance from adults. Teachers often prepare their classroom environments by selecting materials to set on tabletops or by creating displays on the tops of shelves or even on the floors. Within some curriculum philosophies, specific terms such as *invitations* or *provocations* are used to describe the way that teachers purposefully set up the environment to entice children to play with and explore materials. For example, a teacher might set a table in the dramatic-play area to inspire sociodramatic play. Or she might set baskets of objects on a table along with a balance scale to invite exploration of weight. The arrangement and presentation of materials can play a role in helping children become engaged in classroom activity.

Teachers often work to make their classroom aesthetically pleasing to children, and this includes the arrangement of materials. Items can be stored and displayed in a variety of baskets, boxes, tubs, or trays. You can set up areas in ways that encourage social interactions or that allow for solitary activity. In addition to how the materials are presented, you may also want to ensure that children can make their choices independently. This might include providing tools for self-help such as small brooms and dustpans so that children can clean up after themselves, or paint smocks hanging where children can reach.

## Engaging with Children during Play

Depending on your program's philosophy, your role in relation to the children interacting with materials will vary. You might just observe the children to develop greater understandings about their development. You might join in when you see a teachable moment. You might lead the children in a specific task to promote a specific curriculum goal.

Reflective teaching practices will assist you in making decisions about when to step in to children's play and when it is best to let the moment unfold at the children's direction. With the best of intentions, sometimes teachers interrupt children at play when the concepts or skills they are learning in that moment might be more beneficial for them than what the teacher had intended to teach. Before jumping in, just observe for a moment or two to see what is happening. You might see the perfect opportunity to add to what is happening and introduce new vocabulary or to pose an open-ended question, but make these decisions purposefully and individualize them to the children's specific needs and development.

## Enhancing the Learning Environment with Materials

Other than purchasing new materials, we see three primary ways that teachers can enhance their learning environments:

- **Teachers might rotate materials within their school.** Many schools have a supply closet or central location for storing extra materials, and teachers are able to use those in their classrooms. Teachers might also ask other teachers about borrowing or trading materials such as puzzles or books.
- **Teachers might collect materials.** For example, parents might donate discarded clothing to be used for dress-up and dramatic play. A teacher might bring in rocks or leaves from her own backyard or might save items meant for the recycling bin, such as cardboard boxes or bottle caps. These materials can be used in the classroom as they are, or to create other materials.
- **Teachers might create materials.** Using those recycled materials or simple craft supplies, teachers can create all sorts of engaging classroom materials and props for play.

## FROM TRASH TO TREASURE

The hunt for free or inexpensive materials is part of the fun for many teachers. The following list provides inspiration for where you might begin:

- Clean out your closet to find gently used dress-up clothes, shoes, and bags.
- Ask classroom parents and your own family members to remember you when they clean out their closets.
- Borrow pots, pans, measuring cups, and other utensils from your own kitchen.
- What businesses are your friends and family in? Could they provide cast-off materials or loose parts?
- Save objects that some people think are trash.
- Repurpose objects from recycling bins.
- Be on the lookout for packaging materials such as sturdy cardboard mailing tubes or Styrofoam or molded-pulp braces from items shipped in boxes.
- Search the web for images and photos to enhance your materials. (Of course, you will want to obey copyright laws!)
- Talk to the managers of your favorite restaurants about donating menus, paper products, hats, or other materials.
- Some businesses will donate outdated computer paper or envelopes.
- Watch for manufacturing surplus events, as these often offer free materials such as carpet squares, tiles, or fabric.
- Visit a dollar store or the clearance aisles in discount stores.
- Stop at garage sales.
- Shop at Goodwill, Salvation Army, or thrift stores.

## Safety First

It is extremely important that you make safe choices when choosing materials. A good rule of thumb is to verify with your administrators that the materials you choose are acceptable, particularly when you bring in materials that have not been used in your environment previously. The materials suggested in this book are intended for use in preschool classrooms and are not intended for children under three years of age.

## Creating Materials

There are all sorts of ways to create durable materials and props to support open-ended play. In this book, we have included photos of teacher-made materials, nearly all of which were created using a wide variety of recycled materials. For some teachers, making materials is a creative outlet, and a cardboard box becomes a barn complete with red paint and white tape. But an unpainted box with a door cut into it can also be a barn. You do not need specialized training or skills in the arts or hours of time to create props. Simple, quickly made materials are wonderful, too, and children will reap the benefits.

In the interest of time, you can make good use of technology. If, for example, you want to make a matching game but only have one set of images

### ANTI-BIAS MATERIALS

Enrich your learning environment with real objects, such as household items, and make materials that include diverse images of real people, food, textiles, and architecture. While it is not possible to portray the vast diversity of human life in any one classroom, consider the following categories as suggested by Derman-Sparks and Edwards (2010) when working, to ensure that many people and cultures are represented:

- The children, families, and staff in the program
- Children and families from various racial or ethnic groups
- Diversity in family structures
- Elderly people of various backgrounds performing different types of activities
- Both women and men doing jobs in the home and outside the home
- People doing all different kinds of work
- People of various backgrounds with different abilities and challenges
- Creative artwork of artists of diverse backgrounds and cultures
- Economic-class diversity
- Architecture from near and far
- Portrayals that accurately reflect people's current daily lives
- Important people, both past and present, including people who participated in important struggles for social justice
- Samples from a variety of languages including American Sign Language and Braille

available, use a color copier to make the set. A bingo grid is easy to create using the table function in a word-processing program. Save your work in an electronic folder so that you can easily reproduce a well-loved item. You can also save time by searching for free photos or images. Just search for "free photos for teachers" to find royalty-free images. **Tip:** If you need an image of an object by itself, such as an apple not attached to a tree, try searching "apple with white background."

While most teacher-made materials do not last forever, you can make the most of your work by laminating it or covering it with clear contact paper or clear, wide tape. This also works well for materials made from cardboard boxes. And, you can use page protectors when making books.

Children respond differently to realistic images versus cartoon-like drawings, and they play differently with real objects (Trawick-Smith, 1993; McLoyd, 1983). You can find photos in a variety of places such as magazines, post cards, calendars, store advertisements, recycled books, or encyclopedias, or you can take your own photographs.

By incorporating the alphabet and numerals into your teacher-made materials where appropriate, you can further enhance the children's literacy-rich environment. Many teacher-made materials inherently include literacy and math elements, but you can make further contributions by thinking specifically about these components when constructing materials. Teacher-made materials also provide the perfect opportunity to introduce examples of your own handwriting into the classroom environment.

Many teachers desire to have children's art and writing samples visible in their classrooms but have limited wall space or bulletin boards. Teacher-made materials offer countless possibilities for incorporating children's work: making books of children's artwork for the bookshelf, laminating children's work for dramatic play placemats or playdough mats, or decorating teacher-made blocks with children's work.

## Nothing New Under the Sun?

We find inspiration from history, other teachers, the Internet, conferences, curriculum resources, educational-resource catalogs, and life! In the pages that follow, you may see many familiar teacher-made objects. During our careers, we have seen many wonderful examples. Often we will see something that reminds us of things we made in the past, and we are then inspired to make the items again. Sometimes we will see something and think about how we might add our own twist to it. Regardless, this book is just the tip of the iceberg. We look forward to seeing how you might use it to spark your own creations and the children's imaginations!

# 2 Blocks and Props

*A preschool teacher places red cups on the shelf in the block area and watches how the children incorporate them into their play throughout the week. The first day, she notices how two girls use the cups as podiums as they pretend that toy animals are performing tricks by jumping or diving into pools that the girls created with wooden blocks. Another day, she observes a group of children building a castle with wooden blocks and using the cups as turrets on the corners of their structure. On a different occasion, she watches a child alternating cups and blocks when creating a tower. The teacher is fascinated by how a simple prop can enhance the children's block play.*

Blocks have become a staple in early childhood classrooms because building is a treasured activity among young children. Beyond the pleasure of creating, blocks provide countless opportunities for learning. Not only do children explore physical properties such as size, shape, weight, and symmetry, but they also work with friends to plan, negotiate, and problem-solve. In block play, you can observe progression and increasing complexity in children's actions. The youngest children can be seen toting and carrying blocks, and they often delight in dumping and refilling buckets. In the early preschool years, you begin to see children stacking blocks and placing them in rows. They delight in stacking them and knocking them down. Later comes bridging, in which children place blocks across the tops of others. Before long, preschoolers are making enclosures and naming their structures. Older preschoolers can be seen building structures with greater attention to detail and incorporating dramatic play as they work together. These stages correlate to children's increasing cognitive ability to think abstractly. The blocks become symbols for other objects, such as a building or a tree. When children begin to pretend that one thing is something else, they are using the same cognitive processes they will use to understand that letters on a page are symbols for a word. Block play helps pave the way!

Developed by Caroline Pratt more than a century ago, wooden unit blocks work on a 1:2:4 ratio. When children place two of the smallest unit blocks together, they see that they equal the next size. This discovery helps children in understanding mathematical relationships. These hands-on experiences build the foundations of understanding part-to-whole and ultimately fractions.

## Inviting Children to Engage in Block Play

Promote block play by providing a variety of blocks and by incorporating props such toy vehicles, animals, and people figurines. Through observation of children's play with blocks, you can determine which building materials children find engaging and when it is time to try something new. Store the blocks on low shelving so the children can choose which blocks they wish to use. Rotate props such as people and animal figurines to keep the children coming back to the block area. You can also set blocks out on mats or arrange them in simple vignettes to entice the children to explore.

## Block Play Supports Learning across the Domains

Block play can enhance the children's engagement in many ways. Through their explorations, children can develop language and literacy skills, fine and gross motor skills, social-emotional skills, science and math learning, and cognitive skills.

As they work, children have opportunities to name objects and have conversations. They develop vocabulary to describe what they are doing or want to do. By using signs and environmental print, they learn to recognize letters. As they label constructions or blueprints, they start with scribbling and can progress toward writing.

Block play supports both fine and gross motor development. Building helps develop eye-hand

coordination when children place and fit blocks together. Children's spatial awareness of their bodies in relation to what they are building is heightened as they stretch and reach to build tall towers and large block arrangements.

Social-emotional development is supported through sharing and taking turns with preferred materials and through cooperating and negotiating while building constructions. Children develop self-regulatory skills when they experience emotions such as frustration when they cannot figure out how to make their constructions work.

Problem-solving when figuring out how to build what they are imagining helps with children's cognitive development. They discover mathematical relationships between blocks and develop scientific concepts such gravity, angles, and speed when building ramps. The following is a list of blocks and props typically found in preschool classrooms.

- Wooden unit blocks
- Interlocking blocks
- Building blocks such as Lincoln Logs
- Animals, such as dinosaurs and those found on farms, in the sea, in the wild
- People
- Vehicles for land, water, and air travel
- Loose parts, such as cardboard and nature items
- Writing materials
- Masking tape
- Photos of structures

## Create Your Own Blocks

In addition to a sturdy set of unit blocks, you may want to create your own blocks to incorporate into the block area. You can make all sorts of blocks with images that are of interest to the children or that highlight curriculum concepts. You can create blocks that represent stone, brick, or wood. You can use the children's artwork to cover the block. (Just ask the child's permission first!) You can cover cardboard tubes with colored paper to inspire creative structures and emphasize specific colors. Cover them with contact paper or clear tape to make them more durable. You can create gradient color blocks by covering them with paint-sample cards. Create people blocks by using photos of the children in the classroom. Cover blocks with images from nature to emphasize and support science investigations.

## Basic Blocks

### Materials

Box: cardboard, tissue box, or other sturdy box
Newspaper
Colorful paper or fabric
Images (optional)
Maps or calendars (optional)
Clear packing tape or contact paper

1. Find a sturdy box.
2. Stuff it with wadded newspaper.
3. Wrap it in decorative paper or fabric, or decorate it with photos, images of architecture, maps, old calendars, wrapping paper, or children's artwork.
4. Cover with wide, clear tape or clear contact paper for durability.

## Tubes

### Materials

Cardboard tubes, such as paper-towel tubes or butcher-paper tubes
Colorful paper
Utility knife (adult use only)
Clear packing tape or clear contact paper

1. Cut the tubes into a variety of lengths. Shorter tubes will hold more weight, but longer tubes make great tunnels for toy vehicles. The children will love discovering this!
2. Cover each tube with colorful paper.
3. Cover the tubes with clear packing tape or contact paper for durability.
4. Encourage the children to explore ways to use the tubes in the block center.

### BLOCKS ARE SUPER TOYS

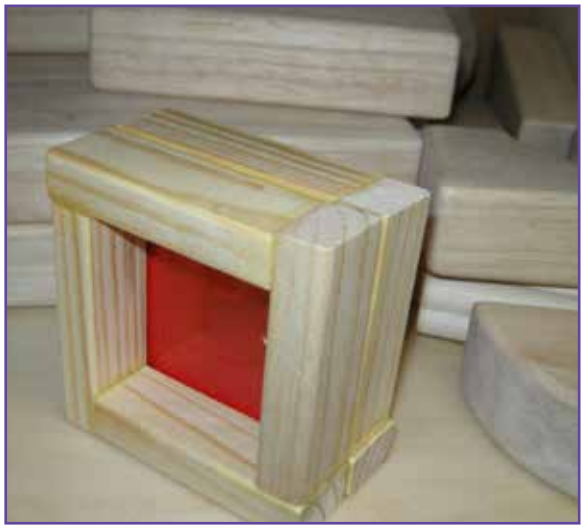
For many years, educators and researchers have been interested in the ways in which children engage with blocks. They have discovered that blocks have the power to greatly enhance children's development. In a study that explored children's free play with sixty-four different classroom materials, blocks were found to score the highest on all of the measures, including creative expression, problem solving, social interactions, and language use. These findings led the researchers to call blocks *super toys* (Trawick-Smith, Russell, and Swaminathan, 2011).

# Translucent Blocks

## Materials

Wooden stacking-game pieces
Hot-glue gun (adult use only)
Colorful plastic dividers or folders
Scissors

1. Use hot glue to make frames using wooden stacking game pieces.
2. Cut squares from plastic dividers or folders to fit the wooden frames.
3. Glue a divider to one side of a frame, then sandwich another frame on top.
4. For added durability, squeeze wood glue into all seams.



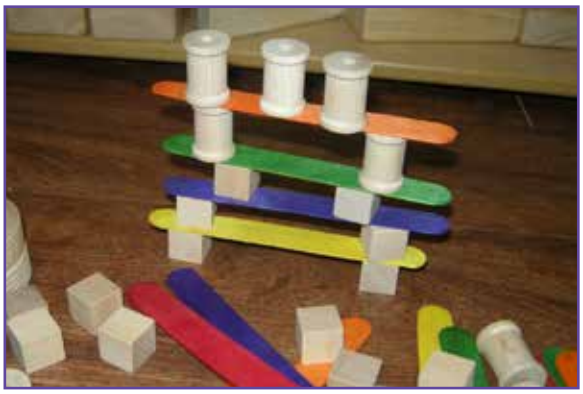
## Create Alternative Blocks

Many common materials can be turned into blocks that will promote creativity in children's play. For example, coffee cans or egg cartons can become a set of large blocks. Children will delight in using these nontraditional building materials. Try incorporating some of the following materials into your block area.

- Large sponges
- Dominos
- Coffee cans (make sure any sharp edges are covered with duct tape)
- Plastic butter or yogurt tubs
- Cereal boxes
- Food boxes and containers
- Egg cartons
- Pool noodles

### MATERIALS IN ACTION—BALANCING

Josie and Malik discover a bucket of pool-noodle blocks on the shelf in the block area. They dump the bucket on the floor and begin making stacks. As their towers get taller, they adjust their actions and become more deliberate in their placements. In their conversation, they discuss how tall their towers are, how hard it is to make them tall, and whose is tallest. Josie observes that you have to be really careful when the stack is tall or it will fall. She urges Malik to be careful so that his tower can get taller.



## Collect Materials to Use with Blocks

To inspire creative play with blocks, teachers can collect a variety of materials that children can transport, line up, take apart, put together, and reuse in a multitude of open-ended ways. Simon Nicholson is credited with coining the term *loose parts* to describe such a collection of materials. It was his belief that children's interactions with open-ended materials would lead to greater creativity and problem-solving.

The following is just a partial list of the loose parts that could be added to the block center to enhance open-ended play:

- Cardboard boxes
- Cardboard tubes
- Pieces of cardboard
- Ice-pop or craft sticks
- Plastic cups
- Balls in a variety of sizes
- Fabric scraps
- Styrofoam
- Carpet scraps
- Linoleum scraps
- PVC pipe
- Dryer hoses
- Sponges
- Pool noodles

## MATERIALS IN ACTION—*MORE* AND *LESS*

Mani and Reuben are having an intense discussion about who has more mini tree cookies. Both boys have a pile in front of them that they are guarding with their hands while they try to grab more. Mani insists that he has more. Reuben emphatically says, "No, I have more." Dara, who has been watching the struggle for a few moments, interjects, "You both have a lot, but maybe Mani has more. Yeah, Mani has more." Reuben again insists that he has more. Dara suggests that Mani should give Reuben some of his tree cookies so that they will have the same amount. Mani agrees, and the play continues.

- Flower pots
- Wooden planks
- Foam hair curlers
- Packing material
- Corks
- Pompoms
- Marbles
- Tin cans
- Thread spools
- Tree cookies
- Twigs, sticks, and branches
- Bark
- Leaves
- Driftwood
- Seed pods
- Acorns
- Logs
- Pebbles
- Rocks
- Pinecones

## Create Houses and Structures

To promote dramatic play and provide opportunities for problem solving, teachers can add houses, buildings, and other structures to the block area. You can construct simple structures out of cardboard, shoe boxes, coffee cans, or cardboard tubes. You and the children can paint or decorate them in any way you wish.

## Shoe-Box Barn

### Materials

Scissors
Glue
Paint
Construction paper
Shoe box with lid
Toy animals, people, and vehicles

1. Cut windows into the sides of the shoe box.
2. Cut a barn door into one end of the shoe box.
3. Decorate the box and lid any way you wish to represent a barn.
4. Add toy animals, people, and vehicles.

## Horse Corral

### Materials

Cardboard box
Utility knife (adult use only)
Paint or construction paper and glue

1. Cut the sides of a cardboard box to resemble a fence.
2. Paint or decorate it, and add it to the shoe-box barn if you wish.

## MATERIALS IN ACTION—MAKING PATTERNS

Taylor was delighted to find the bucket of loose parts her teacher had recently added to the block center of their classroom. She spent a large portion of the morning free-choice time exploring the various ceramic tiles, glass beads, and small tree cookies. Most of this time was devoted to sorting, but gradually she began to place the pieces in interesting patterns. At one point, she made a long line of alternating pieces. Her teacher noticed that she had created an AB pattern.