

DEDICATION

This book is dedicated to all children who have loved playing with the Creative Pre-School blocks and to the teachers who have made the experience unique, first Ms. Martha Pleas, and later Ms. Susan Brooks and Mr. Chuck Alexander.

Let's Build:

Strong Foundations in Language, Math, and Social Skills

by Pamela C. Phelps

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Preface

The block area in any and every childhood program can be a welcoming space for both boys and girls. Blocks are marvelous play materials that offer many learning opportunities. This book is for teachers who know and understand the learning potential of blocks and for teachers who know that books are valuable classroom materials, but need help understanding why blocks are important and how to use blocks effectively (and playfully) in the classroom.

One person who understood and valued construction play with blocks was Carolyn Pratt, who designed the basic wooden unit blocks used in early childhood classrooms.



As Ms. Martha Pleas at the Creative Pre-School 1973–1998 explored the block-play possibilities with children, she would often say, “Now when you use Ms. Carolyn Pratt’s blocks you can make anything you want. Look at the pictures in your mind and make them out of her blocks.”

Children who play at the Creative Pre-School in Tallahassee, Florida, have used the same set of Ms. Carolyn’s blocks for more than 40 years. Some of children who attend this school today are children of the first children who went to Creative Pre-School. Today’s children play with the same blocks because blocks are an almost-forever toy. The sounds of joy and accomplishment fill the classrooms as children use their imagination to make blocks become whatever they want or need in their play. Many adults, who played with these blocks as young children—both boys and girls—have used the knowledge they gained from their experiences and applied it to their careers, which include architects and engineers.

Pam Phelps, the author of this book, first started Creative Pre-School in 1971. Before children played in the block area, she would tell them about a woman, Carolyn Pratt, who wanted children in her school to have special things to play with. Dr. Phelps told the children about how Carolyn Pratt went to the docks of New York City and collected pieces of wood so children could construct the buildings and



other structures they saw around them. Blocks were a major focus of the Beyond Centers and Circle Time Curriculum (2002), which was perfected at Creative Pre-School, where it remains a focal point today. The block center at Creative Pre-School offers children an array of more than 4,000 pieces of different kinds of blocks to use in their unique, imaginative constructions.

When children play with blocks they have numerous opportunities to learn, develop, and refine mathematical knowledge and social and language skills. Playing with blocks is a golden learning experience.



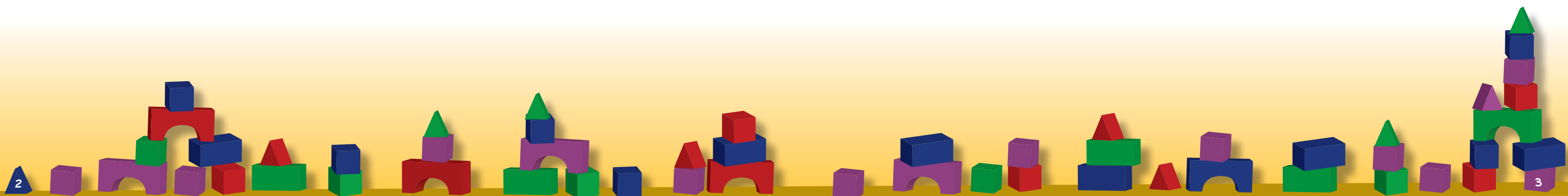
Introduction

In a world in which many play materials are designed for a single purpose with batteries that make them beep and sparkle with lights, nothing is left to the imagination of young children. When toys are designed to imitate the objects they represent, it limits how the toy can be used. Ideally, toys should give children open-ended opportunities to use their imaginations and creativity. Toys like blocks create numerous and varied ways to develop children's minds.

David Elkind, psychologist, well-known advocate for children, and author of *The Power of Play* (2007), stresses the importance of play and the value of experiences that offer children opportunities to experiment with water, sand, and other natural materials. Wooden blocks are the ultimate natural play material for children. Holding a block and feeling its smooth finish, smelling its natural aroma, and seeing its earthy coloring is a very different sensory experience from interacting with a brightly colored plastic toy with an explicit design. In addition, block play gives children the ability to use their imagination to build and construct what they need for their play, to make plans, to carry out their plans, to problem-solve any challenges, to navigate roles and responsibilities with their co-builders, and to learn many other skills as they plan and build their constructions.

Children naturally do many of the things that help them grow and develop. The baby who is learning to adjust to his mother leaving and returning will engage in "peekaboo" games, and the three-year-old who is learning to enjoy the sounds of words will play with rhyming sounds as she soaks in the tub of bubble water at night. When adults guide and support children who are developing a new or difficult-to-learn task or developmental milestone, true learning can take place. Perhaps this is what Jean-Jacques Rousseau, an eighteenth-century philosopher, observed in the behavior of young children that led him to believe in their innate abilities to learn and develop.

Recently, some aspects of brain research along with federal and state legislation have created an educational environment that focuses on the memorization of specific knowledge and diminishing opportunities for play. Research shows, however, that well-planned play opportunities with teacher



guidance and support (also called scaffolding) provide the best of both worlds—a world in which the specific information children need to know, such as number knowledge, phonemic awareness, and print awareness, can be embedded into meaningful play (Hanline, Milton, and Phelps 2009; Berk and Winsler 1995; Christie and Roskos 2006). Young children whose early experiences include reading books, conversations about what is happening, and time to explore and discover the things in their lives that interest them, may not need as much teacher guidance and support as they play.

Young children need opportunities to discover knowledge. For this to happen, the adults involved must understand both how children learn and the content and skills that they must learn. State and federal early-learning standards guide the content provided for preschool children in early care and education programs. These standards provide a shared framework for understanding and communicating expectations about young children’s development. The standards written by different groups of people with varying backgrounds have consistently divided child development into the following domains of development.

- ❑ Physical Development
- ❑ Approaches to Learning
- ❑ Social and Emotional Development
- ❑ Language and Communication
- ❑ Cognitive Development and General Knowledge

Although some states have expanded the standards six or even eight domains, the content is virtually the same. Many states, such as Rhode Island, have chosen to emphasize the importance of **play** as the vehicle that should drive all early-learning experiences.



Play appears as the first Learning Goal in each domain. The Early Learning Standards reflect Rhode Island’s strong belief in the important role of play in how children learn. Through play, children enhance the learning of skills, knowledge, and dispositions that guarantees success in later schooling.

—From the Rhode Island Early Learning Standards

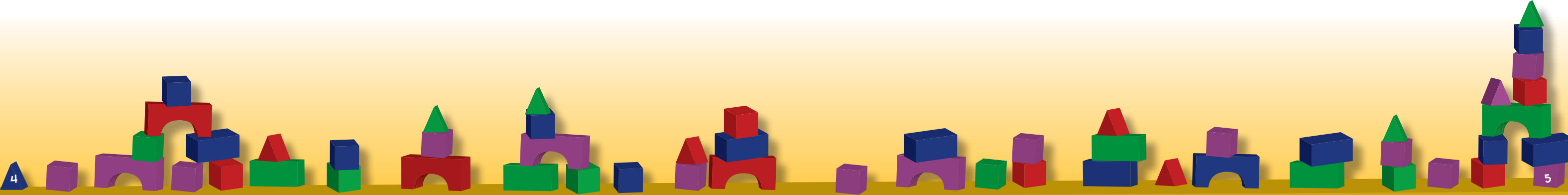
Ellen Galinsky in her book, *Mind in the Making* (2010) examines the results of research that was conducted to discover how children learn best. Her work has resulted in the following list of seven essential skills every child must develop to become successful, not just in school but in life:

- Skill #1: The ability to focus and exercise self-control
- Skill #2: The ability to notice and understand the needs of others
- Skill #3: The ability to communicate
- Skill #4: The ability to make connections (what fits together)
- Skill #5: The ability to think critically
- Skill #6: The ability to take on challenges
- Skill #7: The ability to direct their own learning and seek knowledge

What better place to learn and practice these skills than in a well-developed, teacher-scaffolded block area?

Early childhood educators know and understand that children can discover and create their own knowledge and that this is how young children learn best.

This book is written to offer guidance to early child educators who want to create learning environments that support children’s natural need to play. Through well-planned and teacher-supported experiences, children can discover and use math, science, literacy, and social knowledge. This



knowledge is the foundation that will help children develop a love of learning and a trust in their own abilities (Galinsky 2010). It isn't the specific, memorized knowledge that children need to learn. Instead, they need to develop the ability to think critically, problem solve, and seek knowledge and information. In today's world, specific knowledge is available almost instantaneously, but whether this information is correct or how to use it effectively will depend upon the creative thinkers of tomorrow. Learning to think creatively, to think outside the box begins when children have the opportunity and support to **play** during their early years (Brown and Vaughn 2009).

The History of Blocks

Children have played with sticks for centuries. Children pick up sticks lying on the ground and instantly transform the sticks into any number of objects: a candle for a mud birthday cake, a spoon to stir a pot of soup, a shovel to dig a hole, and, of course, a weapon. How children use sticks is entirely dependent on their imagination. A four-year-old might say, "A stick can be anything I want it to be," Because sticks are so important to children's play, the stick has been entered into the National Toy Hall of Fame.



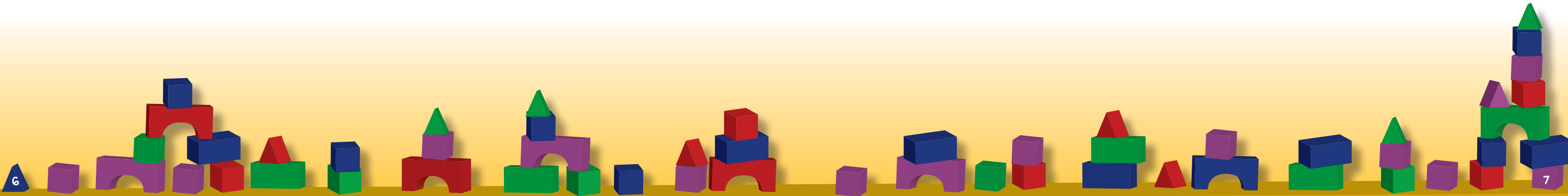
When it comes to good toys, there is nothing better than something simple, something that is open ended and limitless in its possibilities for play. (Bowman 2009)

As long ago as the age in which Plato taught and struggled to create a new form of government, a new way for people to learn and take control over their lives, play was discussed as the vehicle that would develop citizens who could not only live in a society, but also who would be contributing members. The following quote is a conversation between Socrates and Plato's brother Glaucon that can be found in the Republic:

"Well then, the study of calculation and geometry, and all the preparatory education required for dialectic must be put before them as children, and the instruction must not be given the aspect of a compulsion to learn."

"Why not?"

"Because the free man ought not to learn any study slavishly. Forced labors performed by the body don't make the body any worse, but no forced study abides in the soul."



“True,” he said.

“Therefore, you best of men,” I said, “don’t use force in training the children in the subjects, **but rather play**. In that way, you can better discern what each is naturally directed toward.”

Plato, a student of Socrates, is credited with writing many of his dialogues that provide insight into the philosopher’s beliefs and teachings.

Pestalozzi was a student of Jean-Jacques Rousseau, who also believed that children were born good and that they needed to be nurtured gently. The Pestalozzi Method of education became a reality in his school at Yverdon (established in 1805). He argued that children should learn through activity and by interacting with objects. He believed that children should be free to pursue their own interests and draw their own conclusions (Darling 1994, 18).

The Beginning of Block Play

Frederick Froebel transformed pieces of wood for children into specific geometric shapes more than 200 years ago. Froebel, who is known as the father of the Kindergarten, created “gifts” for children in his school to manipulate. Six of the ten “gifts” he created were wooden geometric shapes. He believed that as children interacted with the shapes, their experiences would prepare their minds for higher learning and connect children to the world around them. His curriculum focused on a belief that the adults in children’s lives should guide them to develop a sense of themselves as complete individuals and a connection to nature, the spiritual world, other children, and all humanity (Corbett 1988). Froebel’s original geometric shapes consisted of cubes, cylinders, spheres, rectangles, and columns, and their use was scripted. Children were directed to create patterns and designs using symmetry, balance, and proportion. Children were taught counting, fractions, and other mathematical knowledge, such as the names of the geometric shapes and the meaning of such terms as diagonal, vertical, and horizontal by using the shapes. These concepts and terms are found today in many state and federal standards. Open-ended discovery encouraging the use of imagination and creativity through play was not a part of this curriculum, but the use of objects for children to manipulate set a new direction in the education of young children.

At the turn of the twentieth century, a woman named Carolyn Pratt created her entire classroom curriculum around the use of small pieces of wood found in waste bins, and the rest is history. As time

went on, Carolyn Pratt began to have very specific blocks made for the children in her school, City and Country School. These pieces of wood, patterned after the gifts created by Frederick Froebel and described in his book *The Education of Man*, which was published in 1826, are the same kind of blocks still used today by children in programs around the world.

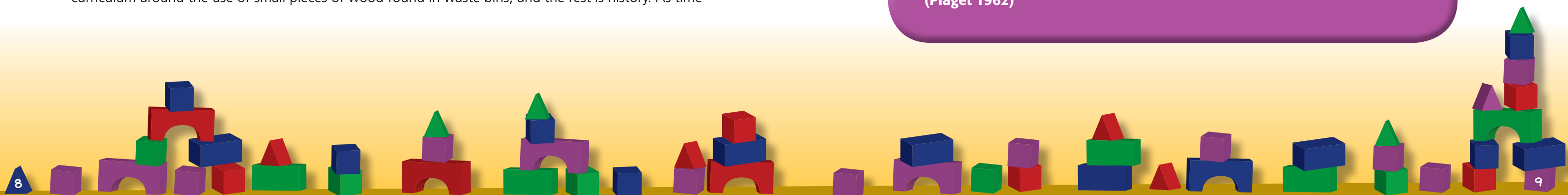
Carolyn Pratt’s focus was for children to create meaningful educational experiences using construction and dramatic play. She believed that combining these two play experiences would help children form a foundation from which all early learning could be built. She believed that through the school curriculum, children could learn the knowledge that would support the creation of a society that would work together for the betterment of all. Carolyn Pratt’s educational insights continue today to impact early-childhood classrooms across the world. Numerous people have tried to change her standards and design blocks all the same shape and size or color them with paint. While these other construction materials add to the play choices of young children, none have taken the place of the original shapes and sizes designed by Carolyn Pratt.

Maria Montessori used wooden blocks and other materials children could manipulate in the “work” experiences she designed to prepare them for success as adults. She was concerned about the lack of education provided for poorer children and children with disabilities she found on the streets and in the asylums of Rome. Like Froebel and Pratt, Montessori believed that the education of the youngest children held the key to the development of a better society. She used materials that allowed children to develop knowledge at their own pace while using as many of their senses as possible. “From the hands to the mind” is an expression often used in Montessori training. “The materials used by the senses are a doorway to the mind” (O’Brien 1998, 5). Today, brain research supports her work. We now know that the more of the five senses of seeing, hearing, touching, smelling, and tasting are involved in an experience, the more children remember and learn.

Regarding the learning environments designed for our youngest children, perhaps Jean Piaget said it best:



Children should be able to do their own experimenting and their own research. Teachers, of course, can guide them by providing appropriate materials, but the essential thing is that in order for a child to understand something, he must construct it himself, he must re-invent. (Piaget 1962)



LET’S BUILD: Strong Foundations in Language, Math, and Social Skills

What is Play?

One reason parents and early-childhood educators have moved away from play and toward worksheets and memorized facts is because they do not understand play. In our work-oriented society, play is often viewed as a waste of time, and many parents do not want their children to play with paint or make mudpies. They send their children to preschool neatly dressed and expect them to return home looking much the same. As adults, it is hard to remember what we did as three- and four-year-olds; elementary and high school experiences are easier to remember and often blur the memories of our younger years. Memories of desks, tests, worksheets, drill, and recess fill our memories and confuse the delights we felt during play as young children and can influence the schedules we plan for young children. Because so many children between the ages of birth and five spend most of each day in child care, it is essential that the adults in these settings understand how children grow and learn and not fill children's days with worksheets, short recess times, and circle time activities filled with drill and memorization.

Time for Play

It is important to make sure that children have ample time to play. Research and theory show that well-planned play experiences that are supported by adults who understand how young children grow and develop will provide opportunities for children to discover knowledge and develop the skills needed for later school success.

The Characteristics of Play

Many books have been written about play and its importance in the developing lives of children. Stuart Brown and his colleague Christopher Vaughn in their book, *Play: How It Shapes The Brain, Opens the Imagination, and Invigorates the Soul* (2009), describe not only how play contributes to the positive development of children, but also how playing in childhood impacts the success, physical health, and joy in the lives of these children when they are adults. Brown and Vaughn's work shows that adults

who engaged in dramatic and construction play as children are better problem solvers and creative thinkers as adults. Brown lists the following properties of play:

- ☐ Apparently purposeless (done for its own sake)
- ☐ Voluntary (do it because you want to)
- ☐ Inherently attractive (just fun)
- ☐ Free from time (lose the sense of time)
- ☐ Diminished consciousness of self (don't worry about how we are doing)
- ☐ Improvisational potential (open to new ways of doing)
- ☐ Continuation desire (pleasure keeps us playing)

When you watch children at play, all of these characteristics are evident. Children who have developmentally appropriate opportunities to play are engaged (their minds are busily at work) and they are happy. Whether playing alone or with others, their play reflects their ability to focus and create, to problem solve, and to think critically.



Children love to play, but it isn't always easy to see the learning opportunities when we see children engaged in play. The challenge for us is to understand **what** children are doing when they are playing and **how** play behaviors lead to learning.

The Value of Play

Children love to play, but it isn't always easy to see the learning opportunities when we see children engaged in play. The challenge for us is to understand **what** children are doing when they are playing and **how** play behaviors lead to learning. Although play is almost always a valuable learning

experience for children, play can also meet learning standards and learning objectives. Standards are here to stay; they are shaping curriculums in programs serving our youngest children. If play is what we, as early educators, want to protect and provide in early-education and care programs, we must be able to communicate a clear understanding of how to support children’s play experiences and what these experiences contribute to the development of young children in a way that can be easily understood by parents and early educators.

The Categories of Play

Research and theory focus on the kinds of play, the value of play, and the stages of children’s development that can be assessed by observing children’s behavior during play and by what they create. Once you better understand the facets of play, you will be able to value it, provide materials to support it, and comfortably afford ample time for children to pursue it to its full extent.

The play of children can be divided into the following four categories (Piaget 1962; Erikson 1977; Smilansky 1968; Wolfgang 1992):

1. SENSORIMOTOR PLAY:



2. DRAMATIC PLAY:

☐ Micro-dramatic



Macro-dramatic



3. CONSTRUCTION PLAY:

☐ Fluid



Structured



4. GAMES WITH RULES

Sensorimotor Play

We all engage in sensorimotor play. Piaget (1962) used the term to describe the behaviors he observed in babies. They use their senses of seeing, hearing, touching, tasting, and smelling to learn about objects in their world. As children grow and develop, they continue to engage in sensorimotor play as they strive to understand and control the materials they encounter. The following definitions of sensorimotor play have been used first in research and then in helping parents and early educators understand the behaviors of young children (Hanline, Milton, and Phelps 2008):

SENSORIMOTOR 1 The child is engaged in what Piaget called primary circular reactions. Only the child’s body is involved. Toys and objects are not used. The child splashes her hands in the water in the water table or runs her hands through the sand in the sandbox.



SENSORIMOTOR 2 The child is engaged in repetition of an action using an object. The same action is repeated again and again to recreate a visual, auditory, or tactile event. Piaget called this a secondary circular reaction. The child bangs two blocks together again and again, enjoying the sound, or dips a colander into the water table and watches the water cascade back into the table.



SENSORIMOTOR 3 The child is engaged in the repetition of a simple cause-and-effect sequence in which a goal is chosen. The child stacks a few blocks and knocks the structure down or pours water into a pitcher with a goal of filling it up.



SENSORIMOTOR 4 In this level of sensorimotor behavior, the child engages in trial-and-error experimentation. The child stacks two blocks that are the same size and shape, then tries to fit a larger, different shape on the top. Because the last block continues to fall off, the child uses blocks that are other sizes and shapes until the tower stands.



Dramatic Play

The second kind of play discussed in the literature is dramatic play, which is often called fantasy, make-believe, imaginative, or symbolic play. In this kind of play, the child can take on a role and enter a world he creates. During dramatic-play experiences, the child can change reality to fit his image of what should or did happen. For example, the child who wants a new puppy will pretend he is a puppy and run around the playground barking (macro-dramatic play), or he will play with the small dog figures in a basket in the block area (micro-dramatic play). Through his play, he can fulfill his desires to own a puppy.

Construction Play

Dr. Charles Wolfgang (1992) studied the play of children throughout his career. His work provides a method of thinking about the kinds of materials children use in construction play experiences. He placed the materials that children can use in construction/constructive play along a continuum from the most fluid (water) to the most structured (puzzles). This third kind of play allows children’s play to have an intentional result (product). Construction play occurs after children move beyond engaging in sensorimotor play. The following list includes some of the possible materials that can be offered for construction-play experiences:

Fluid materials do not have a predetermined shape. The fluid nature of these materials supports the sensorimotor needs of children. As children learn to control the materials, they begin a journey that takes them from smearing and scribbling to realistic representations that can be explained by descriptions offered by the child. Fluid materials are vital play materials for older infants, toddlers, and preschoolers. Water, sand, and paint will keep young children focused for long periods of time as they strive to understand and control them.

As children learn to control materials, they are learning to control themselves. The ability to focus and control one’s behavior is one of the foundational tools needed for success (Galinsky 2010). As children play at a water table with funnels, turkey basters, plastic tubing of different sizes, and other tools, they are engaging in scientific discovery. All domains of development can be supported through such experiences (Drew, et al 2008).With appropriate teacher support (scaffolding) children can discover and begin to understand many concepts that will support later schoolwork.

Structured materials have a predetermined shape that controls how children can use the materials and what they can create. For example, children can only make enclosures with Lincoln Logs; children must place puzzle pieces into the positions that they were made to fit. Construction play is also described as organized play that is goal-oriented. In construction/constructive play, children use materials to build something (Johnson, Christie, and Wardle 2005).

FLUID/MESSY PLAY MATERIALS

Clay
Crayon
Fingerpaint
Markers
Mud
Oobleck (cornstarch & water)
Paint with brushes
Pencils
Pens
Playdough
Sand
Water



STRUCTURED/ CONSTRUCTION PLAY MATERIALS

Bristle Blocks
Cardboard and vinyl blocks
Colored blocks
Hollow blocks
Junk materials
(Drew and Rankin 2004)
Legos
Lincoln Logs
Puzzles
Unit blocks



Games with Rules

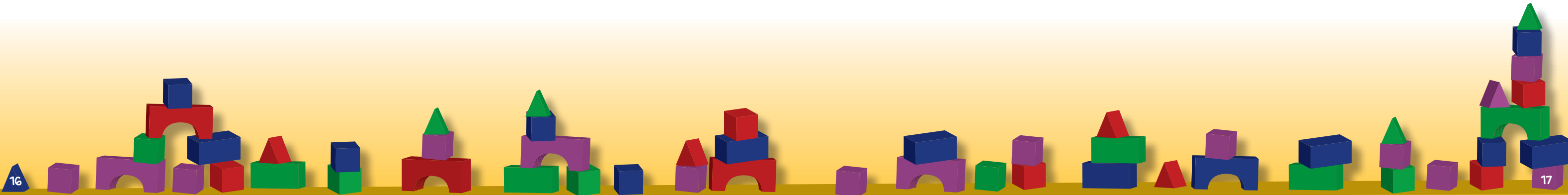
The fourth kind of play, games with rules, requires that children understand the “point of view of another,” in Piaget’s words, “To take the perspective of another (1962).” Children must also be able to follow a set of standard rules and understand the concept of win or lose. These cognitive abilities are not usually developed until children reach the age of six, seven, or beyond. Games with rules include baseball, football, and board games. Anyone who has played these games with a young child knows they have difficulty following the rules, waiting a turn, and losing (Wolfgang and Wolfgang 1992).

Learning Reading & Writing Through Play

Through sensorimotor, dramatic, and construction play experiences, children learn to understand their world and to reproduce their ideas and experiences in their play behaviors and in the intentional results (products) of their play.



Children from different cultures and different countries around the world demonstrate the same stages of play as they journey toward using their abstract symbol system for reading and writing. Children begin with smears and scribbles and then they create more and more realistic drawings and paintings. They imitate behaviors done to them and around them, developing the ability to play with other children and the capacity to retell whole stories about events they have experienced and things they have imagined.





Children build with construction materials such as blocks, carrying them around at first and developing into builders of elaborate structures that have symmetry and reflect an intricate balance as children become four- and five-year-olds. As children become more mature in their play, they will build a structure or structures alone or with other children and move freely between dramatic and construction play. Piaget suggested that during construction play, children move between play and work. Creating structures requires many of the skills needed in work: having a predetermined idea of what is to be built, staying focused and following the task from beginning to end, and discussing the structure and its use with peers and adults (Piaget 1962).

As children develop the ability to create realistic representations in their play (at the easel, drawing, and with blocks), they begin to play

with the letters, numbers, and then words of their language. Through play, each child recapitulates the journey cultures have taken as they have progressed to the creation of a written language. This is called the journey from “symbol to sign.” **Sign** is the written symbol system of a culture and is abstract. The word cat doesn’t look like a cat. Before the interest in and the ability to use such an abstract system, children begin to symbolically represent their world in realistic drawings, paintings, and structures. In a block structure, a house looks like a house; and in a drawing, a cat looks like a cat. Pictures are representations. Signs are representations also, but they are abstract (Wolfgang and Wolfgang 2005).

Weikart’s (1970) The Cognitively Oriented Curriculum is designed around this journey that each child makes from manipulating and experimenting with materials (sensorimotor) to reproducing an experience through play by drawing pictures, building structures with blocks, reenacting the experience in micro- and macro-dramatic play, using language to describe and explain, and finally, to using written words (sign). Weikart’s curriculum takes the child from an experience with the actual object to the picture of the object and then to the written word for the object.

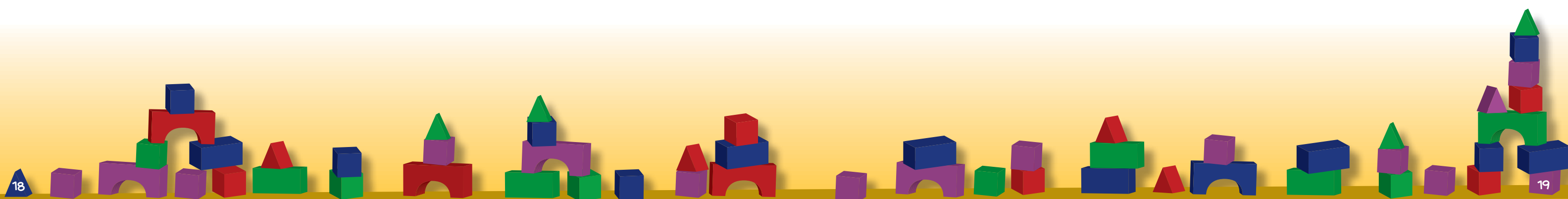
As children progress from sensorimotor play alone as infants and toddlers to symbolic players with other children at ages three, four, five, and six, their play becomes more mature and purposeful. According to research conducted by Bodrova and Leong (2004) this level of play can be observed when the following are present:

1. There is an imaginary situation.
2. Explicit roles are assigned.
3. There are implicit rules that govern the interactions.

Construction play experiences are important ingredients in a quality early-childhood environment. Fluid construction play can be messy, but its open-ended qualities allow children great opportunities to make their own creations and discover the qualities of different materials as children develop self-control. Structured construction play can be noisy, and the challenge to offer enough pieces to encourage and sustain children’s in-depth play is sometimes daunting, but its significance to the development of math, science, and social knowledge is invaluable

Supporting Children’s Play Experiences

If young children are to be supported in their development of the skills and knowledge they will need for lifelong learning, they must have early childhood experiences that are planned and intentionally implemented. The environments in which children play should support an appropriate intensity and density of play opportunities.



Intensity and Density of Play Experiences

The concept of **intensity** refers to the amount of time that children are allowed to experience materials and engage in the three kinds of play. If children are supported in their journey from the creation of symbols in their play to the use of letters and words, they must have opportunities to practice and explore everyday. The amount of time during each day and throughout the year equals the intensity of experience (CCCRT 2002; Hanline, Milton, and Phelps 2001).



Intensity—The amount of time the child is allowed to experience the three kinds of play during each day and throughout the year

Children love novelty. Because their brains are wired to observe what is typical and look for the different or novel, it is important to provide interesting new ways for children to practice skills and discover knowledge. Structured construction opportunities using recycled materials, hammers, nails, and pieces of wood as well as different kinds of blocks provide **density**. The addition of new props in the block area supports the play of new dramatic scenarios. Children need to build, to create their own symbolic representations, so offer the media children need that provide new opportunities to explore, discover, and create.



Density—The variety of ways each kind of play is presented for children to experience.

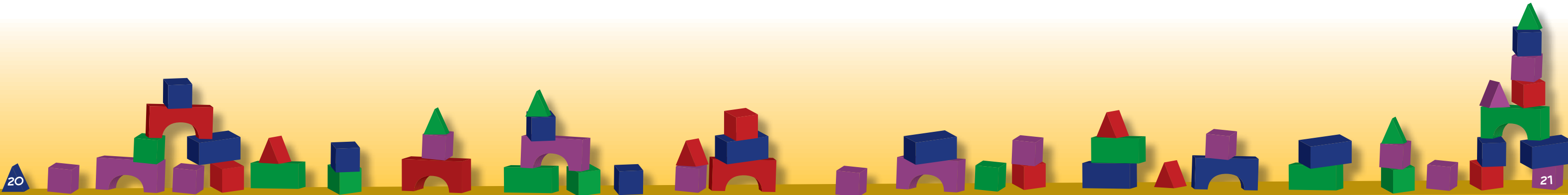
Structured Construction Play

Structured construction play materials have a predetermined shape that controls how the material can be used. There are many different types of structured construction materials available. When you purchase structured construction materials, pay close attention to the open-endedness of the material and how much of children’s imagination can be supported through play with the material. Many construction materials look cute with faces, letters, and numbers painted on them; however, the very best materials are unpainted pieces of hardwood blocks in numerous shape choices.

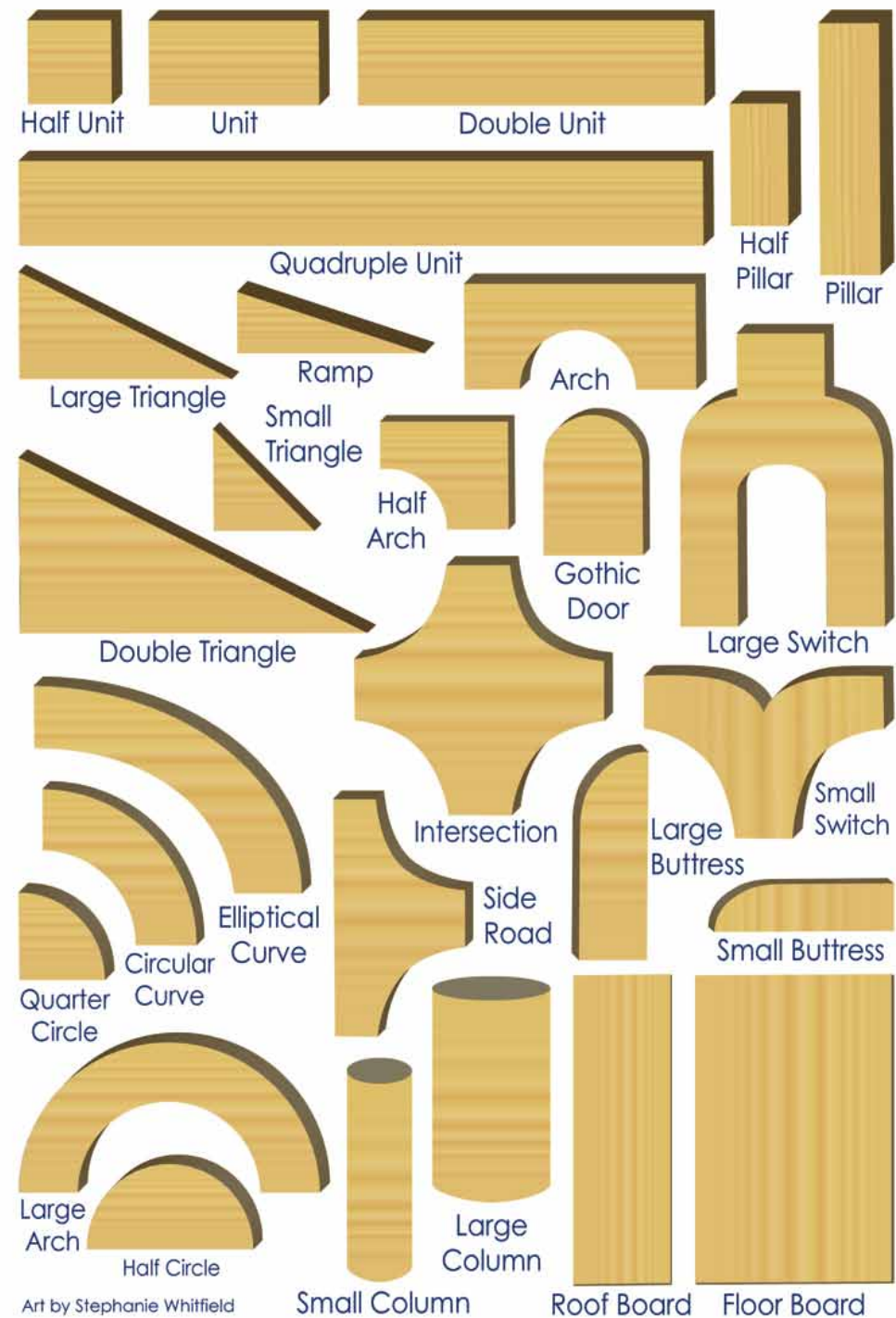
Natural hardwood blocks are called unit blocks and follow the original designs created by Carolyn Pratt. Recognizing and knowing the names of these geometric shapes will contribute to children’s later school success in math and science. The chart on page XXX shows the shapes and names. When you interact and talk with children about their constructions, it is important to use these names to discuss and describe children’s creations.

Unit blocks were designed to be equivalent. A double unit is the same as two units and a quad is the same as four units. The dimensions and shapes of these blocks provide children with opportunities to develop logical-mathematical knowledge (DeVries and Kohlberg 1987).

Sets of unit blocks can be purchased through many companies that provide materials for early-childhood classrooms. A basic set often consists of approximately 100 pieces of 28 shapes. Research and observations of young children using unit blocks (CCCRT 2002) shows that a child who is beginning to build symbolically with blocks will use between 50 and 100 pieces in a structure. **When children are limited in the number and variety of block pieces available for their play, the possibilities for children’s development is limited. Ideally, the number of pieces of blocks provided should determine the number of children using an area for block play.** A block area providing construction opportunities for four preschool children should have



UNIT BLOCK SHAPES



a minimum of 400 pieces of blocks in 28 shapes. Children in kindergarten and elementary school should have access to approximately 200 pieces of blocks per child. These amounts greatly exceed previous recommendations (Wellhousen and Kieff 2001; Stanton and Weisberg 1996). However, the following pictures taken of structures of three-, four-, and five-year-old children support these new recommendations. Children who created the pictured structures have had daily opportunities to use unit blocks in a block area that has more than 300 blocks per child. While many might consider this excessive, the structures created by these children are very elaborate, involve a time commitment from children, and demonstrate children's symbolic ability at the time the structure was completed.



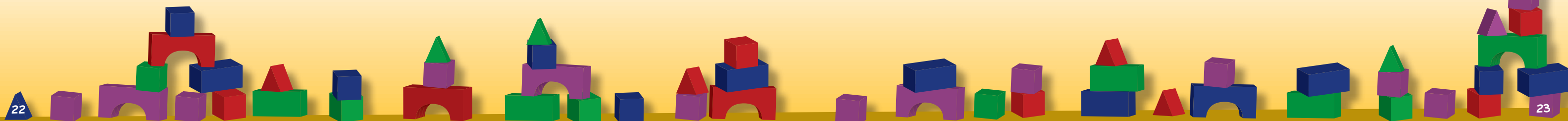
69 BLOCKS USED



72 BLOCKS USED



98 BLOCKS USED



use these blocks safely and well with appropriate adult guidance and support (scaffolding).

Hollow blocks are a larger version of the unit block. They are usually made from hardwood and in a few shapes such as squares, rectangles, and triangles. Several companies now offer a mini version of these blocks to support the play of toddlers and young three's. These larger blocks allow children to create structures that they can fit inside of (macrospheric), which provide broader opportunities to engage socially with other children. Mildred Parten (1932) calls this kind of social interaction cooperative play. Cooperative play occurs when children come together and plan to build something, and once it is built, they take on roles and engage in dramatic play. Many times children will use the large hollow blocks to build the framework and the unit blocks for the decorations or small additions.

Blocks should be organized on shelving that is easily reached by young children. How blocks are placed onto the shelving is very important. The ability to group the same objects together and see connections between objects is vital to higher-level thinking skills, creativity, and problem solving (Galinsky 2010). Each kind of block should be classified, and seriation of the shapes should be a prominent feature when planning the organization of the blocks on shelving. For example, all the cylinders should be placed together and organized from the largest to the smallest or the tallest to the shortest. This organization clearly demonstrates to children the concept of seriation, which they experience as they move the blocks to and from

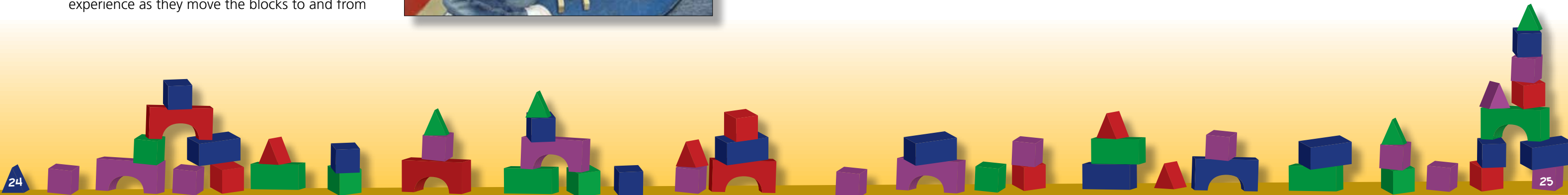


the shelving. Children may not be able to explain seriation, but they are using it, and when you use the correct language to describe the children's behavior, you are expanding their receptive language. Research has shown that this knowledge is retrieved as children age and move into educational experiences that require higher-level thinking skills and mathematical knowledge (Wolfgang, Stannard, and Jones 2001).

Place labels onto the back of the shelves or onto the front edge so children can use the labels to match the blocks to the shapes pictured. You can make block labels by taking close pictures of the block shapes placed onto a piece of dark colored paper. Laminating the pictures after printing will result in sturdy labels that will last.



As children return blocks to the shelves, help them find the correct space by suggesting that they "read" the labels on the shelving. Of course they will be reading pictures of the blocks not the words for the blocks, but this is a symbolic matching exercise and helps children begin to understand the meaning of reading. Clearly print the name for each block below the picture, and over time, children will begin to match the picture and the word. Children in the Creative Pre-School have said, "I read the shelf all by myself and found out where the block lived." Remember that Vygotsky (1967) believed that during play children could place themselves above their actual developmental level. Children must believe they can read long before they actually read. When block shelves are labeled with pictures and the words for the shapes, children can see the actual block shape, match it to the picture, and later use the words to lead them to the correct area of organization. The labeling of the shelving provides children with a daily opportunity to practice the "journey from symbol to sign." Children must have direct experiences with objects and people in their world in order to develop clear understandings (Piaget 1962; Weikart et al 1970; Biber et al 1971; Wolfgang and Wolfgang 1992, 1995; Galinsky 2010). Direct experiences with objects that allow children opportunities to classify and organize materials can lead to children making unusual connections between these objects. Teachers must be alert to the creative attempts children make to change the use and purpose of objects.



Place a poster with the block shapes and names near the block area so the adults and children in the classroom can see the proper names. Understanding the names for the block shapes and hearing these names used to describe children’s constructions helps them develop mathematical knowledge (Hanline, Milton, and Phelps 2009; Geist 2001; Gregory, Kim, and Whiren 2003).

The Structured Construction Play Area

When areas for building are clearly defined, children can see where the construction area begins and ends. This helps them move with confidence around the structures of others as they move to and from the shelves of blocks. To create individual building sites cut a 4’ x 8’ x 1” piece of marine-grade plywood into geometric shapes. This plywood costs a little more, but it is less likely to splinter and lends itself to sanding and repainting and years of use. Two pieces of 4’ x 8’ plywood can be cut into squares, triangles, and rectangles without any waste of material. [Design, insert the illustrations in the photo folder called “plywood shape template A” and “plywood shape template B” here.]

These shapes can be stacked when not in use to provide open floor space and stacked on top of several large hollow blocks to create instant tables for children to work at as they sit on the floor. Carpet in the block area helps contain the noise created by enthusiastic building, and these shapes provide a firm surface on which to build. Tape on a carpet is not recommended as it leaves a glue residue that will eventually result in dark marks on the carpet.

The construction area should be large enough to provide each child building in the area approximately 20 to 25 square feet. This construction area can easily double as a space for circle or group time when not used as a construction area. Although this double use prevents structures from being saved for future building, most classrooms do not have the footage to allow structures to be saved.

Children’s constructions should not be built within 18” of the shelves. This allotment of floor space in front of the shelves allows children to freely move to and from the shelves as they choose the blocks for their structure.

Standards

Many state standards list as learning goals the names of geometric two- and three-dimensional shapes, positional terms, as well as mathematical knowledge, such as one-to-one correspondence, creating patterns, putting sets together and taking them apart. The National Association for the Education of Young Children (NAEYC) and The National Council of Teachers of Mathematics (NCTM) adopted a joint position statement in 2002 that was revised in 2010. This position statement is an excellent guide for determining what to do to promote the development of quality experiences in early childhood environments. The educational expectations described in state standards and the NAEYC/NCTM position statement can all be used to create quality experiences using blocks.

The following taken from the position statement (2002, 2010) suggests five content areas that should be embedded in daily natural experiences that present themselves during the routines and play opportunities in an early childhood environment:

- 1. NUMBER AND OPERATIONS
- 2. GEOMETRY AND SPATIAL SENSE
- 3. MEASUREMENT
- 4. PATTERN/ALGEBRAIC THINKING
- 5. DISPLAYING AND ANALYZING DATA

While these terms may cause some early childhood educators to be anxious about their own math ability and, therefore, their ability to support the development of this content knowledge in their environments, the actual implementation is easy and simply means being aware of opportunities when working with young children.

