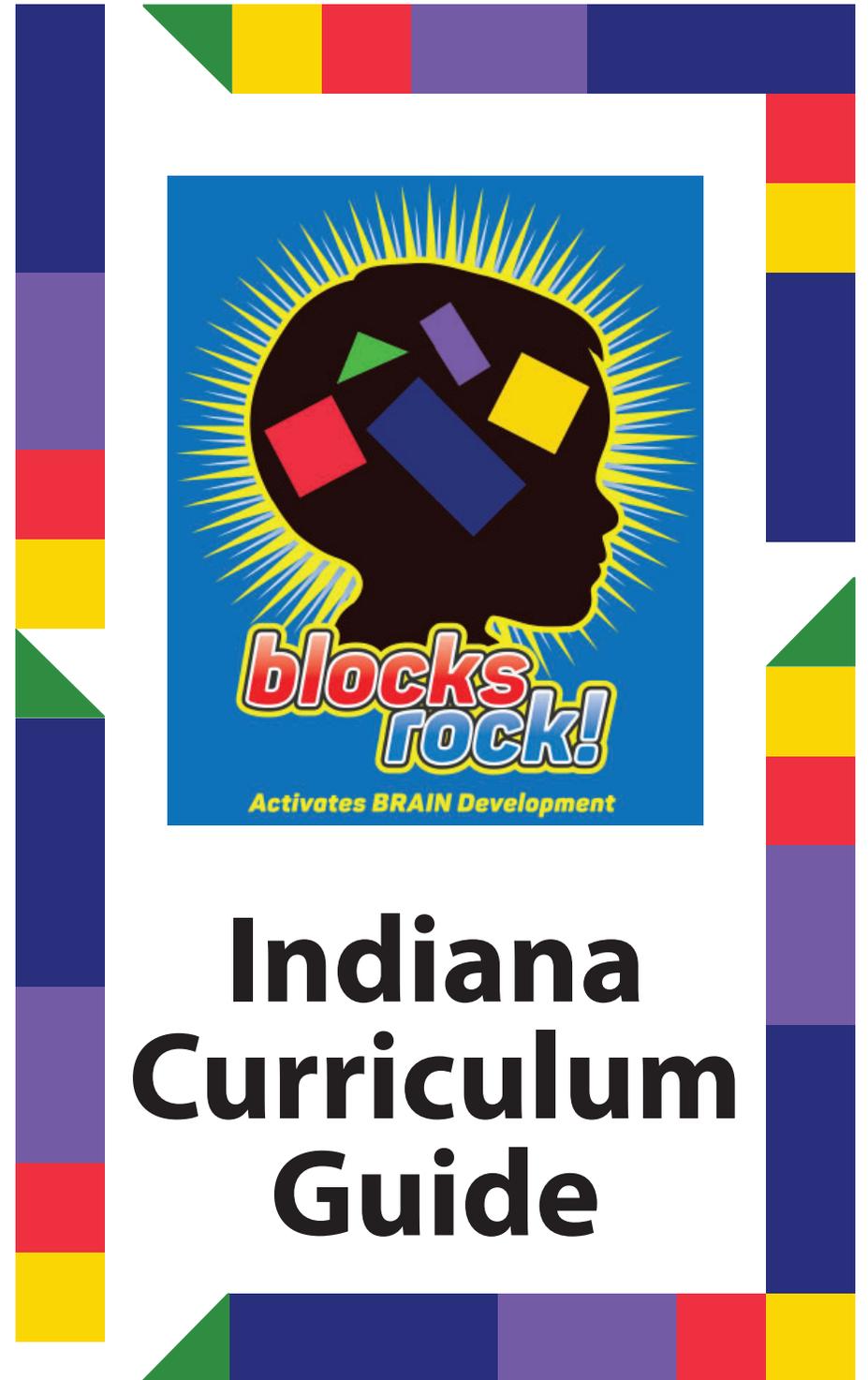


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Purdue University Northwest



Indiana Curriculum Guide

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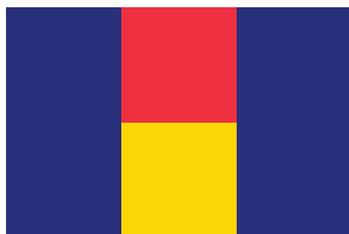
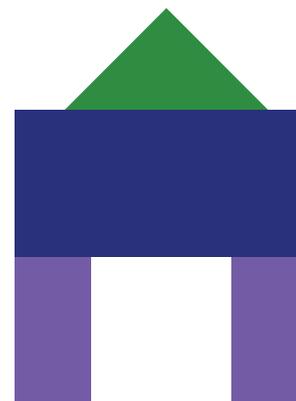


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SAMPLE LETTER TO FAMILIES

Dear Families,

We have been playing a new game in our classroom, Blocks Rock! This competitive block-building activity helps children develop spatial thinking and mental rotation skills. Blocks Rock! encourages creative problem-solving, positive social interactions, and fun!

As your child's first teacher, you play an important role in modeling curiosity and persistence to support learning. At home you can create an environment where your child feels safe in taking risks, asking questions and making leaps in their thinking. Extend your child's experience with this game by asking about playing Blocks Rock!:

- o Tell me about the block game you played today.
- o Which friends played Blocks Rock! with you?
- o Tell me about what you built with the blocks.
- o Describe how you played the game? What did you use?

Blocks Rock! has been proven to help children develop important knowledge and skills in science, technology, engineering and mathematics (STEM). Playing this game with an adult or a classmate is another way that your child is learning essential concepts. If you are interested, you can purchase Blocks Rock! to play at home or you can download the app. Check out the Blocks Rock! website to learn more about this class favorite - <https://blocksrock.com/app>.

As always, thank you for sharing your child with us. Please don't hesitate to call or email with any questions.

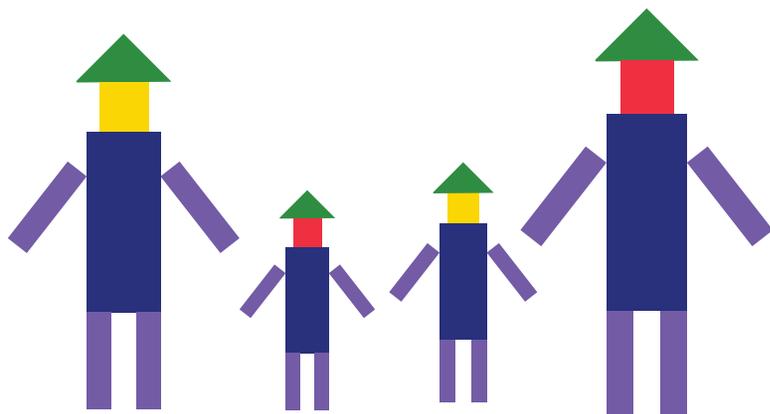
Sincerely,
Your Name

Sharing Information with Families

Communicating with families is an important way to connect home and school. Parents are the child's first teacher and when families feel as if they have meaningful interactions with school, they are more likely to stay involved. Helping families to understand their child's experience in your setting is an important step in developing a strong partnership with families.

Suggestions:

- Send a letter home explaining to families that you have been playing a new game and provide them with prompts to engage their child and to learn more about the game. See the sample letter.
- Host a family game night. Young children can learn about taking turns, following directions and sportsmanship when playing games with peers and adults.
- Share information about how to order the Blocks Rock! game for home. Or, provide instructions for downloading the app. To learn more, visit blocksrock.com.



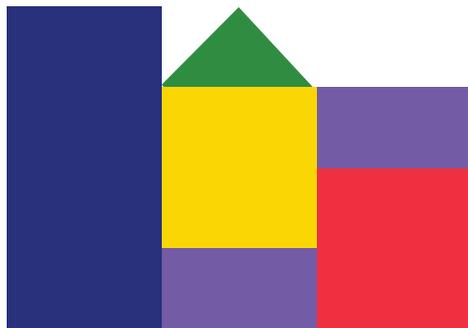
Welcome to Blocks Rock!

Early childhood educators know that block play is a fundamental experience for young children. The “Block Corner” is a time-honored tradition in early learning environments as block play promotes young children’s growth and learning in many ways – language development, mathematical understanding, curiosity, and friendships. Numerous research studies have shown the benefits of structured block play as part of a young child’s classroom experience. Structured block play requires the ability to analyze a spatial representation and develops skills in estimation, measurement, patterning, part-whole relations, visualization, symmetry, transformation, and balance (Newman, et al., 2016).

Blocks Rock! is a competitive block-building activity that helps children develop spatial thinking and mental rotation skills. This brain development tool was created in 2005 as an educational resource to help children learn through play. This guide provides the rationale for using Blocks Rock! in your classroom and offers suggestions for implementing the game as well as enhancing the experience.

As an early childhood educator, you play a critical role in modeling curiosity and persistence to support young children’s learning. Creating an environment where children feel safe in taking risks, asking questions and making leaps in their thinking is critical to their success. The competitive nature of this game motivates many children to continue playing the game. Use the Blocks Rock! game to encourage creativity in problem-solving, to promote positive social interactions, and to stretch children’s thinking.

A word about competition and cooperation: In the early learning environment, educators may observe children engaged in “constructive competition” which is grounded in mutual respect and an understanding that other children possess desirable skills and competencies. Some children are motivated by the competitive aspects of playing the game. Others enjoy the cooperative nature of playing together. Often, the child with specific skills will teach the other children how to play the game and how to use strategies to win. While winning is very important to preschoolers, being friends and spending time with peers is even more important (Sheridan & Williams, 2006). Early childhood educators can support children’s cognitive and social-emotional development by focusing on both competition and cooperation.



	Social-Emotional Skills	Approaches to Play and Learning	Science	Creative Arts	Mathematics	English/ Language Arts	Social Studies	Physical Health and Growth
Conversations	SE1.2 SE4.1	APL1.1 APL1.2 APL2.1 APL4.1	SC1.1 SC1.2 SC5.1		M1.1	ELA1.1 ELA1.2 ELA1.3 ELA3.2	SS2.1	
Let's Play	SE1.1 SE1.2 SE3.1 SE4.1	APL1.1 APL1.2 APL2.1 APL3.1 APL4.1	SC1.1 SC1.2 SC5.1	CA2.1 CA4.1	M1.1 M4.1	ELA1.1 ELA1.2 ELA1.3	SS1.1 SS2.1	PHG2.1 PHG2.2 PHG3.1
Freeze Dance	SE1.1 SE1.2 SE2.1			CA2.1	M4.1	ELA1.1	SS1.1	PHG2.2 PHG3.1
Monkey See Monkey Do	SE2.1	APL1.1 APL1.2 APL2.1 APL3.1	SC1.1 SC1.2 SC4.1 SC5.1	CA3.3	M1.3 M2.1 M2.2 M3.1 M4.1 M4.2	ELA1.1 ELA2.3	SS3.1	SS3.1
Copy Cat	SE1.1 SE2.1	APL1.1 APL1.2 APL2.1 APL3.1	SC1.1 SC1.2 SC4.1 SC5.1	CA3.2	M2.1 M2.2 M3.1 M4.1 M4.2 M5.2	ELA1.1 ELA2.3	SS3.1	
Sign Up	SE1.1 SE2.1 SE3.1 SE4.1	APL1.1 APL2.1 APL3.1 APL4.1			M1.1 M1.2 M5.1	ELA1.1 ELA1.2 ELA1.3 ELA3.1	SS1.1 SS2.1 SS5.1	PHG3.1

Early Learning Standards

Foundations to the Indiana Academic Standards

Activity	Social-Emotional Skills	Approaches to Play and Learning	Science	Creative Arts	Mathematics	English/Language Arts	Social Studies	Physical Health and Growth
Blocks Rock! Structured block play with an adult.	SE2.1 SE3.1 SE4.1	APL1.1 APL2.1 APL3.1 APL4.1	SC1.1 SC1.2 SC4.1		M1.1 M1.2 M1.3 M2.1 M2.2 M3.1 M4.1 M4.2	ELA1.1	SS1.1 SS3.1	PHG3.1
Blocks Rock! Structured block play with a peer.	SE2.1 SE3.1 SE3.2 SE4.1	APL1.1 APL2.1 APL3.1 APL4.1	SC1.1 SC1.2 SC4.1		M1.1 M1.2 M1.3 M2.1 M2.2 M3.1 M4.1 M4.2	ELA1.1 ELA1.2 ELA1.3	SS1.1 SS3.1	PHG3.1
Free Exploration	SE1.1 SE2.1	APL1.1 APL1.2 APL2.1 APL3.1		CA3.1 CA3.2 CA4.1	M1.1 M1.2 M1.3 M2.1	ELA1.2	SS1.1 SS3.1	PHG2.1 PHG3.1
Read Aloud		APL3.1	SC5.1	CA3.3		ELA1.1 ELA2.4		
Sort it Out	SE2.1	APL1.1 APL1.2 APL2.1 APL3.1	SC1.1 SC1.2 SC4.1 SC5.1		M3.1 M4.1 M4.2 M5.2		SS3.1	PHG3.1
Counting Rocks!	SE2.1	APL1.1 APL1.2 APL2.1 APL3.1	SC1.1 SC1.2 SC5.1		M1.1	ELA1.1 ELA1.2 ELA1.3 ELA3.2	SS1.1 SS2.1	PHG2.1 PHG2.2 PHG3.1

Overview of STEM Curriculum for Early Learning Environments

Early care and education programs are constructed around the concepts of STEM = Science, Technology, Engineering and Mathematics. Through the exploration of STEM concepts, young children increase conceptual knowledge and strengthen social and emotional skills, including executive function, all of which are critical for later school success. The learning environment, experiences and interactions with adults and peers are intentionally designed to promote growth and learning for children.

In a high-quality early learning environment, the key goals and outcomes include:

- Improving the child's social development skills - conversing with peers and adults, being independent, keeping hands to self, sharing and listening.
- Improving the child's cognitive skills. Ex: recognition of letters, pre-reading skills, concepts such as numbers and colors, book knowledge and vocabulary.
- Improving the child's executive function (promoting positive school behavior skills). Ex: turn-taking, manipulating materials, listening to a story, self-help skills.
- Improving parenting and family engagement practices – helping families learn how to observe their child in an educational environment, implementing at-home assignments and leading within the child's learning environment through classroom involvement.

These child outcomes align with the Indiana Department of Education's Academic Standards. The Indiana Early Learning Standards (Foundations to the Indiana Academic Standards) establish guidelines for early learners' development of foundational skills in the content areas as well as critical social-emotional competencies. Specifically, the Foundations which focus on STEM-specific learning and functions include:

- ▲ Early Reading: alphabet awareness, phonological awareness, concepts of print and comprehension.
- ▲ Numeracy: counting, cardinality, written numerals, quantity and comparison.
- ▲ Computation and Algebraic Thinking: mathematical structure and patterning.
- ▲ Data Analysis: classification, data collection, organization and description.
- ▲ Geometry: spatial relationships and space analysis.
- ▲ Sense of Self: self-awareness, confidence, identification and expression of emotions.
- ▲ Science: properties of objects, characteristics of living creatures and plants.
- ▲ Engineering: solving problems using the engineering design process.
- ▲ Self-Regulation: executive functions such as impulse control, planning and emotional regulation.
- ▲ Building Relationships: social development and engagement with others.
- ▲ Initiative and Exploration: initiative, self-direction, interest and curiosity as a learner.
- ▲ Attentiveness and Persistence: focus on a specific activity; persistence to complete tasks

Physical Health & Growth		
PHG3: Motor Skills	PHG3.1 Demonstrate development of fine and gross motor coordination	Playing BR! with a peer Free Exploration Sort it Out Counting Rocks Dramatic play Freeze dance Monkey See Copy Cat
	PHG3.2 Demonstrate development of oral motor skills	
PHG4: Personal Care	PHG4.1 Demonstrate increase in personal care routines	

Notes:

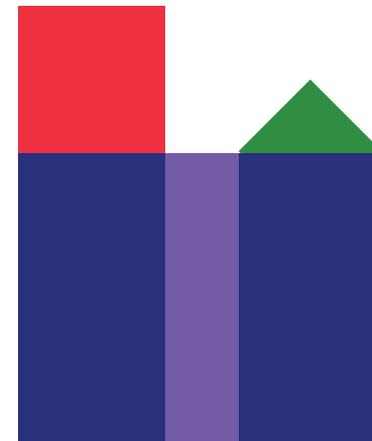
Social Studies		
SS3: Geography	SS3.1 Demonstrate awareness of the world in spatial terms	Playing BR! with a peer Free Exploration Sort it Out Monkey See Copy Cat
	SS3.2 Demonstrate awareness of places and regions	
	SS3.3 Demonstrate awareness of environment and society	
SS4: Economics	SS4.1 Demonstrates awareness of economics	
SS5: Citizenship	SS5.1 Demonstrates awareness of citizenship	Sign Up
Physical Health & Growth		
PHG1: Health and Well-Being	PHG1.1 Demonstrate development of healthy practices	
	PHG1.2 Demonstrate development of safety practices	
	PHG1.3 Demonstrate development of nutrition awareness	
PHG2: Senses	PHG2.1 Demonstrate how the five senses support processing information	Free Exploration Dramatic play Freeze dance
	PHG2.2 Demonstrate development of body awareness	Dramatic play Freeze dance

Using Blocks in the Early Learning Environment

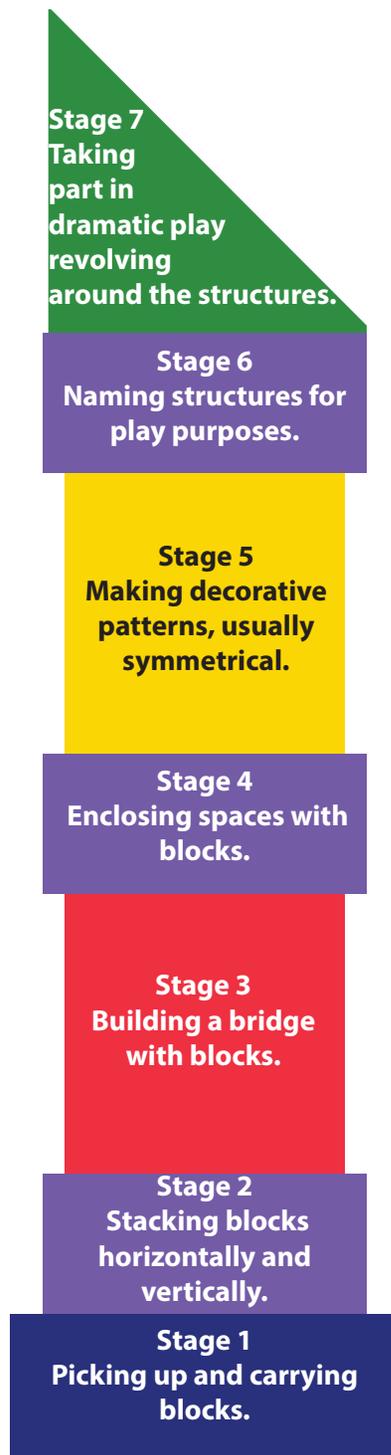
Ten Things Young Children Learn from Block Play

Problem Solving
 Imagination
 Self-expression
 Mathematics
 Continuity and Permanence
 Creativity
 Science
 Self-esteem
 Social and Emotional Growth
 Development in all areas

Source: National Association for the Education of Young Children



Stages of Block Building



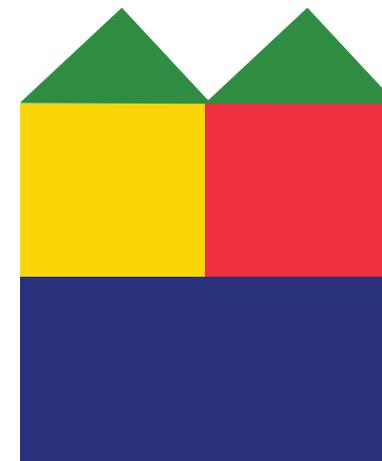
English/Language Arts		
ELA2: Early Reading	ELA2.1: Demonstrate awareness of the alphabet	
	ELA2.2: Demonstrate phonological awareness	
	ELA2.3: Demonstrate awareness and understanding of concepts of print	Monkey See Copy Cat
	ELA2.4: Demonstrate comprehension	Read Aloud Dramatic play
ELA3: Early Writing	ELA3.1: Demonstrate mechanics of writing	Sign Up
	ELA3.2: Demonstrate ability to communicate a story	Conversations
Social Studies		
SS1: Self	SS1.1 Demonstrate development of self	Playing BR! with a peer Free Exploration Dramatic play Freeze dance Sign Up
SS2: History and Events	SS2.1 Demonstrate awareness of chronological thinking	Conversations Dramatic play Sign Up
	SS2.2 Demonstrate awareness of historical knowledge	
	SS2.3 Demonstrate awareness of the foundations of government	

Mathematics		
M4: Geometry	M4.1: Understanding of spatial relationships	Playing BR! with a peer Sort it Out Dramatic play Freeze dance Monkey See Copy Cat
	M4.2: Exhibit ability to identify, describe, analyze, compare, and create shapes	Playing BR! with a peer Sort it Out Monkey See Copy Cat
M5: Measurement	M5.2: Understand measurement through description and comparison	Sort it Out Counting Rocks Copy Cat
English/Language Arts		
ELA1: Communication Process	ELA1.1: Demonstrate receptive communication	Playing BR! with a peer Free Exploration Read Aloud Conversations Dramatic play Freeze dance Monkey See Copy Cat Sign Up
	ELA1.2: Demonstrate expressive communication	Playing BR! with a peer Free Exploration Conversations Dramatic play Sign Up
	ELA1.3: Demonstrate ability to engage in conversations	Playing BR! with a peer Free Exploration Conversations Dramatic play Sign Up

Researchers have long studied the positive contribution of block play to development and have empirically identified the increasingly complex stages of block play in children.

When young children play the **Blocks Rock!** game, they often demonstrate many of these stages. In a study completed at The Indianapolis Children’s Museum, children ages 3 – 5 years old who played **Blocks Rock!** were observed picking up and carrying blocks (Stage 1), stacking blocks (Stage 2), building bridges (Stage 3), and making symmetrical, decorative patterns with the blocks (Stage 5). Young children were more likely to continue playing the game if an adult engaged with them as they played.

Source: Wolf, 2011



Playing the Game

The **Blocks Rock!** game has a set of cards; two identical sets of blocks of varying shape, size, colors; and a bell. Each player has a set of blocks, and one player turns over a card during play that has a particular structure, point value, and how to build the structure (e.g., up or flat on the table). The complexity of the structure increases during play. Each player attempts to build the structure as fast as possible with the player who does so correctly first and rings the bell being awarded the points displayed on the card. The score is kept and once all cards have been played the winner is the player with more points or cards.

Helping young children to be ready for **Blocks Rock!** includes several opportunities for the exploration of the game. To do this, select a low-traffic area for guided explorations of the game materials. In this space, sit down with a child and place the same number, color, and shape of blocks in front of both of you. Be sure to have the bell handy, so that this can be practiced as well. Begin by stacking your blocks on top of each other, and ask the child to do the same. Even though in **Blocks Rock!** children will be asked to organize the blocks horizontally, begin with vertical stacking to capitalize upon children’s natural inclination to build vertically. Once the child has built the tower, let them ring the bell.

After you have practiced building towers and ringing the bell, you will want to move to demonstrating how towers can be built on their sides (horizontally). As you place blocks in a predictable sequence (e.g., red-red-blue, blue-red-blue, etc.) horizontally in front of you, be sure to talk about what you are doing. Ask the child to create the sequence with their blocks as you are building yours. When they have completed the pattern, let them ring the bell. Once they are able to match your pattern, ask them to create a pattern for you to make and ring the bell.

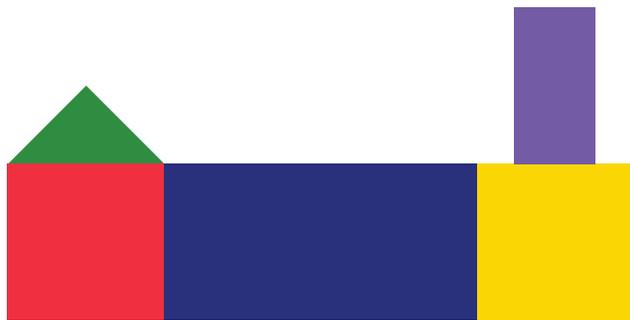
Mathematics		
M1: Numeracy	M1.1: Demonstrate strong sense of counting	Playing BR! with a peer Free Exploration Counting Rocks Conversations Dramatic play Sign Up
	M1.2: Demonstrate understanding of written numerals	Playing BR! with a peer Free Exploration Counting Rocks Sign Up
	M1.3: Recognition of number relations	Playing BR! with a peer Free Exploration Counting Rocks Monkey See
M2: Computation and Algebraic Thinking	M2.1: Exhibit understanding of mathematic structure	Playing BR! with a peer Free Exploration Counting Rocks Monkey See Copy Cat
	M2.2: Demonstrate awareness of patterning	Playing BR! with a peer Monkey See Copy Cat
M3: Data Analysis	M3.1: Demonstrate understanding of classifying	Playing BR! with a peer Sort it Out Counting Rocks Monkey See Copy Cat

Creative Arts		
CA1: Music	CA1.1: Demonstrate creative music expression	
CA2: Dance	CA2.1: Demonstrate creative movement expression	Dramatic play Freeze dance
CA3: Visual Arts	CA3.1: Demonstrate creative expression through the visual art process	Free Exploration
	CA3.2: Demonstrate creative expression through visual art production	Free Exploration Copy Cat
	CA3.3: Demonstrate creative expression through art appreciation	Read Aloud Monkey See
A4: Dramatic Play	CA4.1: Demonstrate creative expression through dramatic play	Free Exploration Dramatic play

Now that you have practiced building, it's time to introduce the cards included in the [Blocks Rock!](#) game. You will want to be strategic here in which cards you begin with (i.e., structures made of four – five blocks are where to begin), and you will want to ensure that both you and the child have the number, shape and size of blocks necessary to build the structure represented on the card. Demonstrate how to construct the structure. As you build, ask the child to make the structure as well. Be sure to use the names of shapes, the color of those shapes, as well as how they relate to the other shapes being used in the structure (e.g., You might say, "Next to my green triangle, I'll put my red square. Can you place your red square next to your green triangle?"). Once the structure is built, ask the child to ring the bell. It is important to remember in this step of the exploratory phase that many attempts and practices will be needed before being able to move forward. To be successful here requires the child to integrate many concepts (i.e., shape rotation, motor skills, hand-eye coordination, and spatial reasoning), to create a plan, and to take turns with another player (you), all things that may be difficult at times.

As children become more competent in building from the templates (i.e., the cards) found in the [Blocks Rock!](#) game, you will want to introduce the final component to the game...speed. When selecting the cards from which the next structure is to be built, add the idea of being fast at building. To do this, start by looking at the card together and selecting the appropriate blocks to use. Once you both have your blocks picked out, verbalize the steps you will take in putting your structure together (e.g., You might say while pointing to the shapes on the card, "First, I'll put my green triangle here. Then, I'll place my red square below it. Finally, I'll put by blue rectangle under the red square."). Don't expect the child to verbalize their thinking, but model it for them. After you've verbalized your process, ask the child to create the structure. When the structure is made, let them ring the bell.

For young children, three- and four-year-olds, **Blocks Rock!** is a game that they will play with an adult. Typically, these will be one-on-one interactions within a quiet, low-traffic space in the classroom that allows for concentrated efforts to occur. However, this game, once introduced in your classroom, is something that children and parents can play together. Using the **Blocks Rock!** game as a means of guided construction play will help children develop the capacity to rotate and analyze shapes (spatial visualization); the ability to shift focus from one stimulus to another (cognitive flexibility); the aptitude to solve problems in a variety of ways; and the competence to increase language use as they engage in conversations about their building.



Science		
SC1: Physical Science	SC1.1: Demonstrate ability to explore objects in the physical world	Playing BR! with a peer Sort it Out Counting Rocks Conversations Dramatic play Monkey See Copy Cat
	SC1.2: Demonstrate awareness of the physical properties of objects	Playing BR! with a peer Sort it Out Counting Rocks Conversations Dramatic play Monkey See Copy Cat
SC2: Earth and Space Science	SC2.1: Recognize the characteristics of Earth and sky	
	SC2.2: Recognize seasonal and weather-related changes	
SC3: Life Science	SC3.1: Demonstrates awareness of life	
SC4: Engineering	SC4.1: Demonstrate engineering design skills	Playing BR! with a peer Sort it Out Counting Rocks Monkey See Copy Cat
SC5: Scientific Inquiry and Method	SC5.1: Demonstrate scientific curiosity	Read Aloud Sort it Out Counting Rocks Conversations Dramatic play Monkey See Copy Cat

Approaches to Play and Learning		
APL1: Initiative and Exploration	APL1.1: Demonstrate initiative and self-direction	Playing BR! with a peer Free Exploration Sort it Out Counting Rocks Conversations Dramatic play Monkey See Copy Cat Sign Up
	APL1.2: Demonstrate interest and curiosity as a learner	Free Exploration Sort it Out Counting Rocks Conversations Dramatic play Monkey See Copy Cat
APL2: Flexible Thinking	APL2.1: Demonstrate development of flexible thinking during play	Playing BR! with a peer Free Exploration Sort it Out Counting Rocks Conversations Dramatic play Monkey See Copy Cat Sign Up
APL3: Attentiveness and Persistence	APL3.1: Demonstrate development of sustained attention and persistence	Playing BR! with a peer Free Exploration Read Aloud Sort it Out Counting Rocks Dramatic play Monkey See Copy Cat Sign Up
APL4: Social Interactions	APL4.1: Demonstrate development of social interactions during play	Playing BR! with a peer Conversations Dramatic play Sign Up

Materials and Props to Enhance Block Play

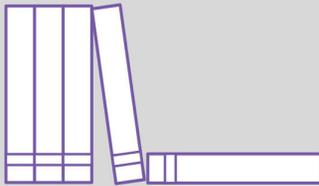
The block corner is a powerful arena for children's learning. Consider incorporating a variety of materials into the block corner to encourage children's creativity, spatial reasoning and imagination. The **Blocks Rock!** materials can be housed in the block corner for easy access.

environmental signs
 dress up clothes
 blueprint paper
 tape measures
 wood cookies figurines
 flat boulders mirrors containers
 cars mats rulers
 vehicles pallets tree stumps
 tires pencils slow tables
 trucks photos loose parts
 items from nature
 labels shoe boxes
 wooden spools
 clipboards
 cardboard tubes
 fabric pieces
Blocks Rock! game

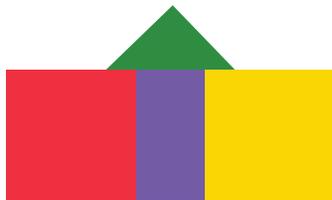
Activities to Extend Blocks Rock!

In addition to the structured competitive game, **Blocks Rock!** offers endless possibilities for learning. Early childhood educators can use the materials from **Blocks Rock!** to introduce new concepts, reinforce learning, and encourage innovation and creativity in thinking. Educators can structure activities during free play, as center activities or in small groups with guided instruction.

Read Aloud



Introduce STEM concepts by reading aloud picture books (see list). Use vocabulary related to building and problem-solving to give children a foundation in the language of STEM. Prompt discussion with questions to foster comprehension and predictions.



Alignment with Early Learning Standards

Foundations to the Indiana Academic Standards

	Indicator Key indicators addressed by the structured play with Blocks Rock! are red.	Suggested Activities
Social Emotional Skills		
SE1: Sense of Self	SE1.1: Demonstrate self-awareness and confidence	Free Exploration Dramatic play Freeze dance Copy Cat Sign Up
	SE1.2: Demonstrate identification and expression of emotions	Conversations Dramatic play Freeze dance
SE2: Self-Regulation	SE2.1: Demonstrate self-control	Playing BR! with a peer Free Exploration Sort it Out Counting Rocks Dramatic play Freeze dance Monkey See Copy Cat Sign Up
SE3: Conflict Resolution	SE3.1: Demonstrate conflict resolution	Playing BR! with a peer Dramatic play Sign Up
SE4: Building Relationships	SE4.1: Demonstrate relationship skills	Playing BR! with a peer Conversations Dramatic play Sign Up

Children's Literature Related to **Blocks Rock!**

Thinking Like a **S**cientist

Beaty, A. and Roberts, D. (2016). *Ada Twist, Scientist*. Abrams Books for Young Readers.

Murray, D. (2016). *City Shapes*. Little, Brown.

Yamada, K. (2014). *What Do You Do with an Idea?* Compendium, Inc.

Using **T**echnology

Eggers, D. (2015). *This Bridge Will Not Be Gray*. McSweeney's.

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Free Exploration

Allow children to use the materials independently. This provides the child opportunity to explore all facets of the materials, to construct an understanding of the physical properties of the blocks, to practice using the bell, and to develop confidence using the materials.



Counting Rocks!



Model 1:1 correspondence, counting, grouping, count sets of items, compare sets – use words such as more, fewer.

Conversations:

Use the playing cards to start conversations, talk about the designs, use concept words – on top of, below, next to, more than, etc.



Let's Play



Observe how children use the blocks as symbolic representations of items in their dramatic play. For example, using the rectangular blue block and pretending to make a phone call on a mobile phone

Sign Up

Demonstrate how to make a sign-up sheet for children to take turns using the Blocks Rock! Game. Encourage children to create their own lists to track who has the next turn.



Freeze Dance

Use the bell as a signal for children to "Freeze" when dancing to music.



Copy Cat

Show children how to use the larger play mat with the block designs to replicate, either by placing blocks directly onto the mat, or next to the mat.



Monkey See, Monkey Do



Invite children to copy or extend a pattern (ABAB or ABCABC) that you have created with movements (ex: clap, stomp, clap, stomp) and then use the blocks to create patterns for children to extend or copy.

Sort it Out

Encourage children to classify the blocks into different categories, focusing on the physical properties such as color, shape, size.

