

LEGO Early Math: Shape and Space Lesson Plan

Context (InTASC 1,2,3)

Lesson Plan Created By: Rachel Strand

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Lesson Topic: Building and Model-Making

Grade Level: Preschool

Duration: Five days including a 15-20 minute whole group and 15-20 minute small group lesson

Kit Contents: http://odin-primo.hosted.exlibrisgroup.com/nmy:NMY_ALEPH:ODIN_ALEPH007736444

Desired Results (InTASC 4)

Purpose: The purpose of this lesson is to learn about shapes and how to use them in patterns and designs. Students will review shape names and colors and explore how to combine shape tiles into designs that have symmetry or have a repeating pattern.

North Dakota English Language Arts & Literacy Content Standards:

- Speaking and Listening Standards: Comprehension and Collaboration
 - SL.1 (Kindergarten) Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups.
 - a) Follow agreed-upon rules for discussion (e.g., listening to others and taking turns speaking about the topics and texts under discussion)

North Dakota Health Content Standards

- Growth and Development: Students understand the fundamental concepts of growth and development
 - K.1.2 Body Systems: Locate basic parts of the human body (e.g., heart, lungs, muscles, eyes, ears)

North Dakota Library and Technology Content Standards

- Personal Learning and Growth: Reading, Listening, and Viewing for Life-Long Learning
 - K-5.PLG.7 Make connections between current knowledge and new learning
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Objectives:

1. Students will recognize, name, and sort two-dimensional shapes.
2. Students will create a flag with a repeating pattern of colors and shapes.
3. Students will work with a partner to create a symmetrical object.

Assessment Evidence (InTASC 6)

Evidence of meeting desired results: Students will create a flag with a repeating pattern of colors and shapes and draw this on a white piece of paper. Collect these for a summative assessment examining positional knowledge of a pattern and ask students to describe the shapes and colors they used in their flag to determine if they have that knowledge. Use small group activities to formatively assess how students are doing with introduction concepts such as symmetry and 3-D shapes. Use the assessment for basic skills and problem solving skills on pages 6-7 of the teacher guide to further assess specific curriculum goals.

Learning Plan (InTASC 4,5,7,8)**Instructional Strategy: (Check all that apply)** Direct Indirect Independent Experiential Interactive**Technology Use(s): (Check all that apply)** Student Interaction Align Goals Differentiate Instruction Enhance Lesson Collect Data N/A**Hook and Hold:**

1. Use Shaping Up (Activity 1) from the Teacher's Guide to review shape names and objects that are different shapes.
2. In partners have students answer these questions. "How many shapes can you name? How many colors? Can you name something that is square, diamond, triangular, or round? How many sides does a square have? Does a circle have corners?"
3. Put the mat with four kids where students can all see it and explain that each child has a favorite color and a favorite shape. Have them look through the shape tiles and each find one that matches a child's shape on the mat. Allow for some free play time to get accustomed to the blocks.

Materials:

- Early Math Shape and Space Teacher Guide
- Shape and Space Duplo set including blocks and mats
- Additional math stations
- Mirror
- White Paper
- Crayons
- Document Camera

Procedures:

Use the blocks as one math station each day to allow all students sufficient time to play and explore. The other students can be involved in other math related games and rotate to the blocks station, with 4-5 students in a group. The blocks stations listed below will not be able to be used in one day as there is only one set of blocks. The recommended stations should be used on different days with other center activities included as well. If possible, have the other activities be more independent so the teacher can be involved with discussion and exploration with the blocks.

Day 1

- Whole Group: Designs (Activity 5)
 - Ask students to think about and share with a partner where they have seen a design (stores, nature, walls, etc.). Next share with partners what kind of design they would choose if they got to paint a design on their favorite store.
 - Decide as a group what kind of pattern will be used and begin the pattern with tiles. Show the pattern using a document camera so all students can be involved in the process. Repeat the pattern and talk about missing tiles and how to figure out where to put pieces. Have students come up and put tiles in to help.
- Small Group: Floor Design (Activity 4)

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- Show pictures of tiled floors or remind students of a tiled floor in the school. Talk about the colors and patterns using shape words. Have students work together to complete the floor designs and find the missing tile from each design. Use spatial language to talk about where tiles are placed in relation to each other.
- Have students work in partners to play “Secret Jewels” where one partner builds a floor design and describes it to another who tries to copy the design.

Day 2

- Whole Group: Cookies (Activity 6)
 - Tell the Connect story about Timmy and his cookies. Have students come up and create six different cookie shapes for Timmy to eat. As cookies are built, have students describe to partners what shape the cookie is and how it was built. Choose one favorite cookie and create a bigger cookie.
 - Have students take turns playing “Hide the Cookie” where one partner builds a cookie out of four tiles and hides it. They show it to the other partner for five seconds and the other student tries to build it from memory.
- Small Group: Pirates (Activity 11)
 - Use pirates as an example to talk about crooked paths of different shapes and sizes. Have students in the small group take turn making the pirate paths and making them longer. Use shape and position vocabulary to talk about how the paths are similar and different.

Day 3

- Whole Group: Mirrors (Activity 9)
 - Show the designs on the card and talk about how designs can be mirror opposites or symmetrical. Have students share with partners any other objects (face, butterfly) that can be symmetrical.
 - Make one of the designs and have students find a part that matches to complete the design.
 - Have volunteers come up and finish the second half of a design or play “Half a Shape” and make half of a shape in one color and ask students to come and finish the shape in a different color.
- Small Group: Look-Alikes (Activity 10)
 - Review with each small group about how symmetrical objects are objects with two sides that look the same only reversed, like in a mirror.
 - Have students make a symmetrical design on the board and use a grid or a mirror to check.
 - Play Symmetry Search where partners take turns putting matching tiles beside each other to make a symmetrical design.

Day 4

- Whole Group: Shape Search (Activity 2)
 - Show the designs on the mat and discuss whole group about the designs that can be found in both nature and man-made products. Have students describe what the design looked like.
 - Ask four volunteers to come and make each design and explain what shapes and positions are being used as they build them. Have four other volunteers come and rearrange the tiles to make a new design.
 - Play Shapes and Colors by making a tile train with each new tile being different in only

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one way (shape OR color).

- Small Group: Flowers (Activity 3)
 - Discuss flower shapes and sizes and have students use tiles to re-create and create their own flowers.
 - Discuss if flowers are symmetrical and how different tiles make different looking flowers.
 - Play Missing Parts where a leader makes a repeating flower pattern and removes some of the tiles and other players try to complete the pattern.

Day 5

- Whole Group: Flags (Activity 8)
 - Show a picture of the United States flag and talk about the colors, shapes, and designs that are on it. Have a volunteer come and make one of the flags on the mat and have students discuss what shapes and patterns are used on the flag.
 - Have another student come and make the other flag. Have students draw on a piece of paper a new flag design using colors and shapes in a repeating pattern.
- Small Group: Magic Squares (Activity 7)
 - Show students the Magic Square and talk about the shapes, colors, and patterns. Have students make the square with matching colors and shapes in each row or column.
- Next have students make a new Magic Square with no matching colors or shapes in each row. Discuss how this one is different from the first.

Summary: Leave the tiles, blocks, and mats out in a math station for students to repeat any of their favorite activities or build new creations using the shape and color tiles.

Reflection (InTASC 9)**Reflect On:**

- *Preparation*
- *Planning*
- *Teaching*
- *Student Engagement and Participation*

*Evidence of Student Learning***Standards**

Council of Chief School Officers. (2011, April) *Interstate Teacher Assessment and Support Consortium (InTASC) model core teaching standards: a resource for state dialogue*. Washington DC. Retrieved from

http://www.ccsso.org/documents/2011/intasc_model_core_teaching_standards_2011.pdf

North Dakota Department of Public Instruction. (2008) *North Dakota health content and achievement standards*. Bismarck, ND. Retrieved from <https://www.nd.gov/dpi/uploads/87/health2008.pdf>

North Dakota Department of Public Instruction. (2011) *North Dakota English language arts & literacy content standards*. Bismarck, ND. Retrieved from https://www.nd.gov/dpi/uploads/87/ELA_JUN0811.pdf

North Dakota Department of Public Instruction. (2012) *North Dakota library and technology content standards*. Bismarck, ND. Retrieved from https://www.nd.gov/dpi/uploads/87/lib_tech.pdf

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