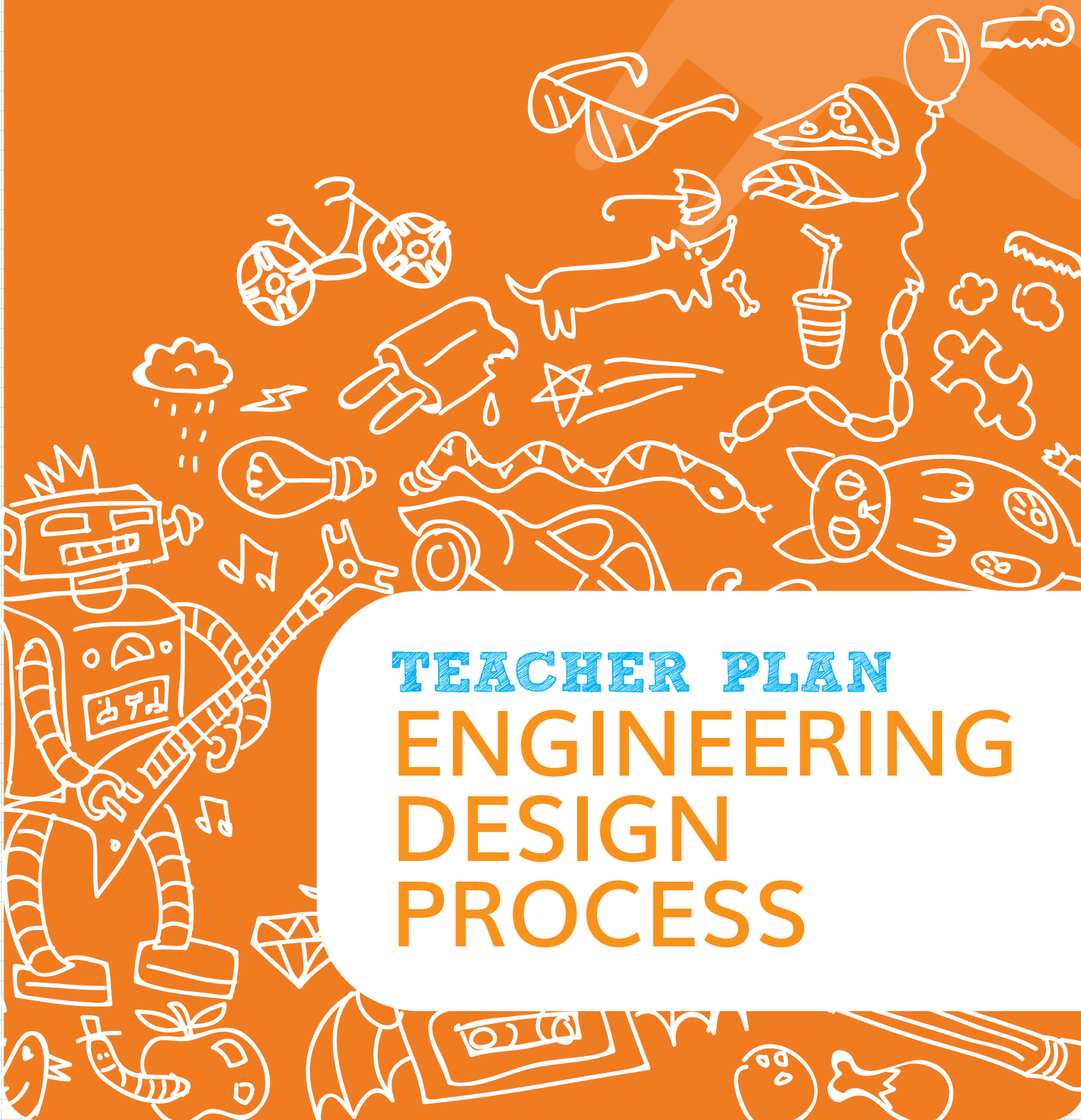




TEACHER PLAN ENGINEERING DESIGN PROCESS

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Why it is Essential to Invest Time and Materials for Brackitz Block Play:

- Developmentally Appropriate Learning
- Develops gross and fine motor skills
- Develops cooperation and communication skills
- Develops oral language
(the foundation of reading and writing)
- Supports the acquisition of the Common Core State Standards: English Language Arts and Math
- Supports the acquisition of the Next Generation Science Standards
- Supports STEAM learning

Brackitz Block Play Supports STEAM Learning for Young Children:

NAEYC endorsed the National Science Teacher Association (NSTA) position statement on early childhood science:

NSTA states teachers and other education providers need to provide a learning environment that encourages children to ask questions, plan investigations, and record and discuss findings.

Adopted by the NSTA Board of Directors January 2014

"STEM proficient students are able to answer complex questions, investigate global issues, and develop solutions for challenges and real-world problems while applying the rigor of science, technology, engineering, and mathematics content. **STEM proficient students are logical thinkers who are technologically, scientifically, and mathematically literate.**"

From the Maryland State STEM Standards of Practice

Brackitz Block Play Supports English Language Learners:

"Key idea from successful programs: reading and mathematics taught in the context of science are more effective than when taught in isolation."

Dr. Juliana Texley President, National Science Teachers Association

Brackitz Block Play Supports Children with Special Needs:

"Project-Based Learning is hands-on and high interest – a highly motivating instructional practice for all students and particularly those with special needs."

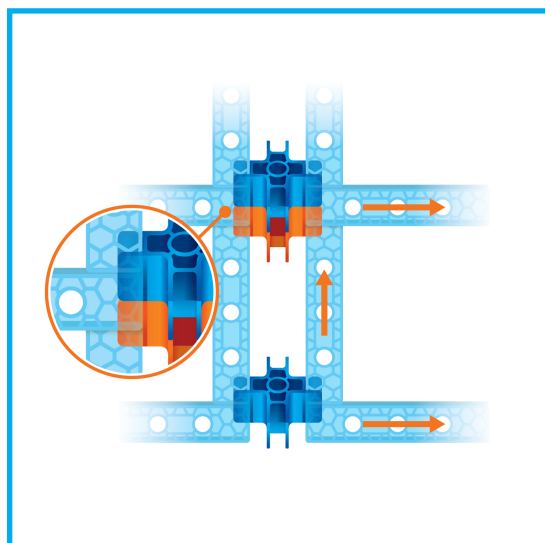
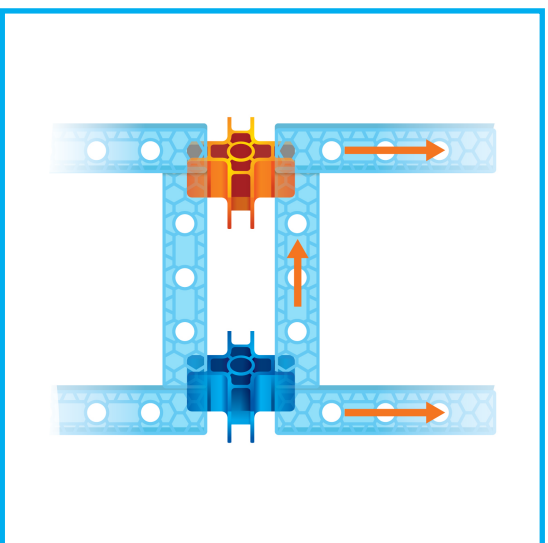
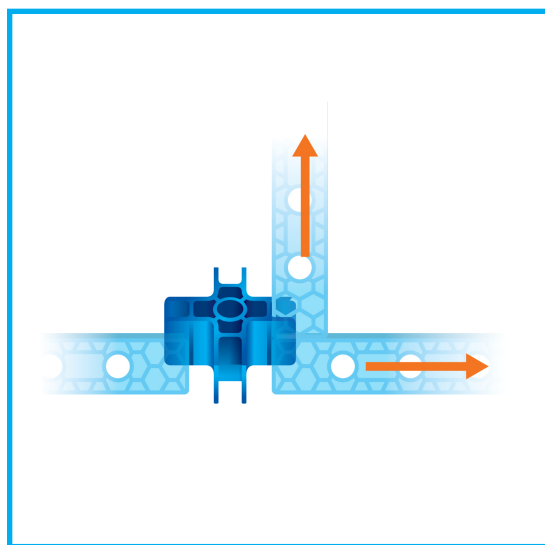
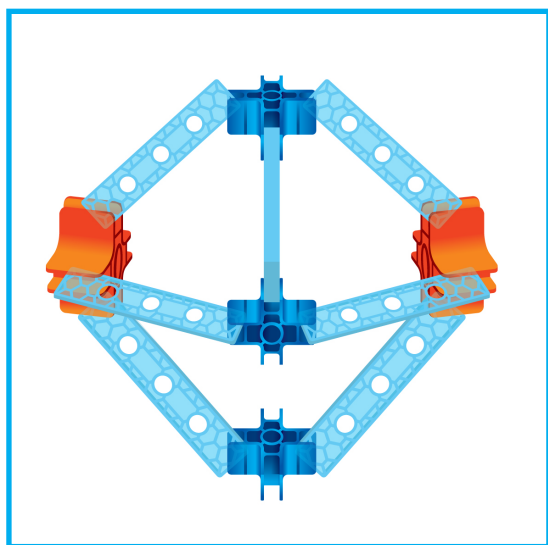
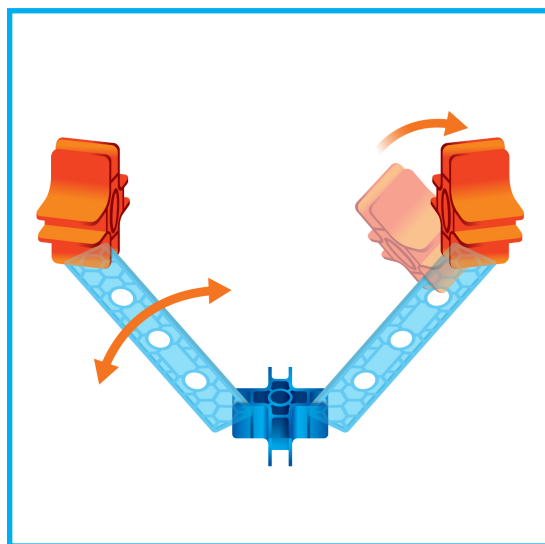
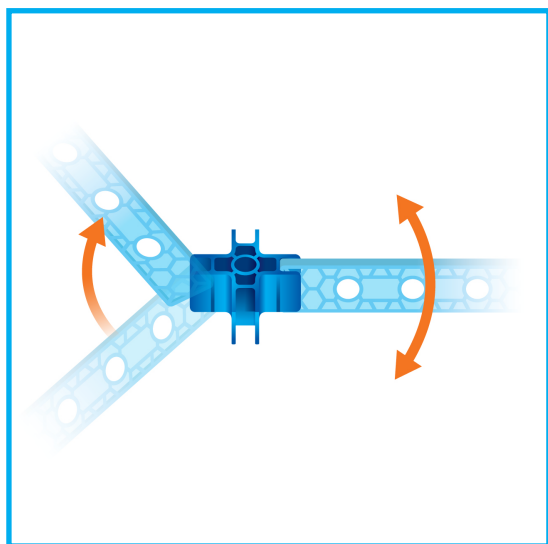
Restructuring Pre-service Preparation for Innovative Special Education (RePPRISE)

Brackitz Block Play Supports Children to Excel on PARCC and Smarter Balanced Assessments:

"Planning for effective teaching and learning environments in K–2 should address the unique developmental needs of young students. Literacy foundations should be developed through concrete objects, multiple hands-on experiences.....rather than decontextualized paper/pencil activities (e.g., worksheets), should dominate daily instruction in K–2. "

PARCC: Partnership for Assessment of Readiness for College and Careers

Connecting Imaginations



ARCHITECTURE: Engineering Design Process

OBJECTIVES:

Young students will understand how different types of towers (in this case a cantilever tower) are built through the steps of the Engineering Design Process.

Extension: Have students learn about and design other famous towers/buildings.

MATERIALS:

- 2 sets of Brackitz
- *The Three Little Pigs-An Architectural Tale* by Steven Guarnaccia
- Large piece of paper to record student responses
- *Amazing Buildings* (DK Readers, Level 2) by Kate Hayden
- Video clip: <http://bit.ly/1CCtdq9>
- Images of the construction of the Eiffel Tower (found through a Google search)

Step 1: Identify the Problem

Read students the book *The Three Little Pigs-An Architectural Tale* by Steven Guarnaccia.

- Discuss what materials each pig used and why.
- Discuss the job of an architect.
- Which pig was the best architect?
- Which house is going to hold up the best against wind, rain, snow, or an earthquake?
- Allow the students time to experiment with the Brackitz to create their own structures that are sturdy.

Step 2: Build Scientific Knowledge about Towers

Review informational books and videos about tower construction and the different types of towers, plus what makes a good structure. Include images of towers with different purposes, e.g., decorative (like the Eiffel tower), wind turbine, cooling towers, cell towers, etc.

Take a Virtual Field Trip to the Eiffel Tower:

- Watch the video: <http://bit.ly/1CCtdq9>
- After watching the video, discuss what students learned/observed
- Show the students pictures of the construction of the Eiffel Tower

Step 3: Brainstorm Solutions

Building your own Eiffel Towers

- Allow students time to experiment with creating their own versions of the Eiffel Tower with the Brackitz.
- Discuss what materials they could build with.
- How can you build a structure that won't fall over? How does it stay up?

Ask the students to think about creating the tallest tower they can and ask:

- What does a sturdy structure need?
- If your structure started out wobbly, what did you do to fix it?
- How can buildings and structures stay standing for a long time?

Step 4: Draft Plans

For older students have them draft plans for their towers on paper.

Step 5: Build/Test/Evaluate/Build

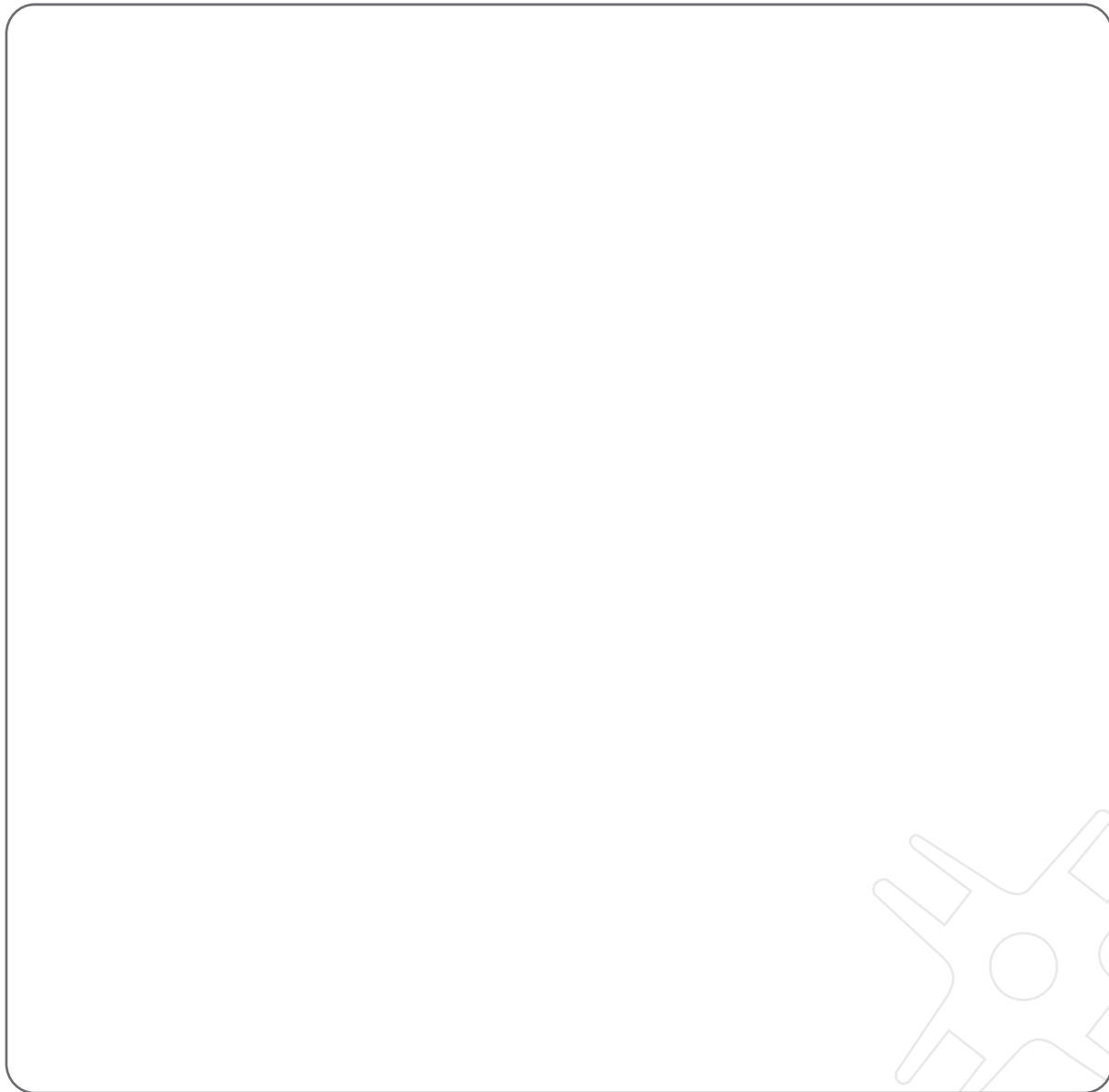
During Block Center time provide Brackitz and have the students separately or in small groups test out their designs and create/refine new ones.

- Ask them to identify why they are building it a certain way.
- Once complete, share the structures as a class and compare/contrast the differences between each structure.

Step 6: Share Results

Have the students share and explain the successful and unsuccessful tower designs. Have them describe the towers using the academic math vocabulary they learned about towers.

Notes:



BRIDGES: Engineering Design Process

OBJECTIVES:

Young students will understand the basic concept of a bridge and how different types of bridges function through the steps of the Engineering Design Process.

(this lesson could be expanded to a 1-3 week unit)

MATERIALS:

- Brackitz in the block center
- A selection of toy goats of various sizes
- White board or a large piece of paper
- Materials for grass, dirt and water (i.e. felt, paper, etc.)
- Clipboards, paper, drawing and writing utensils

Step 1: Identify the Problem

Read aloud a version of *The Three Billy Goats Gruff* during the literacy block. Discuss with the students why the goats needed a bridge.

Step 2: Build/Test/Evaluate/Build

Review informational books and videos about bridge construction and the different types of bridges. Include images of bridges with:

1. Different purposes, e.g., foot bridges, traffic bridges, train bridges, and pipeline bridges.
2. Different designs, e.g., suspension, truss, arch, cantilever, etc.
3. Share information and academic language about bridge structure e.g. beams, trusses, arches, span, approach, pilings, walls, barriers, rafters, posts, supports, framework, etc.

Step 3: Brainstorm Solutions

Ask the students: How did the goats cross the river? Do you think you could design a bridge for the goats? What kind of bridge can be built to hold all of the different goats that vary in size and weight?

Step 4: Draft Plans

Have the students draft written plans for their bridges. Provide the materials they will build with Brackitz pictures, plus vocabulary words for them to refer to while creating their plans. Model as needed.

Step 5: Build/Test/Evaluate/Build

During Block Center Time provide Brackitz and have the students separately or in small groups test out their designs and create/refine new ones.

Design a testing stage for each bridge and record the results on the clip boards or large chart paper.

1. Does the bridge support the smallest billy goat?
2. Does the bridge support the middle billy goat?
3. Does the bridge support the biggest billy goat?
4. Can all three billy goats stand on the bridge at the same time?

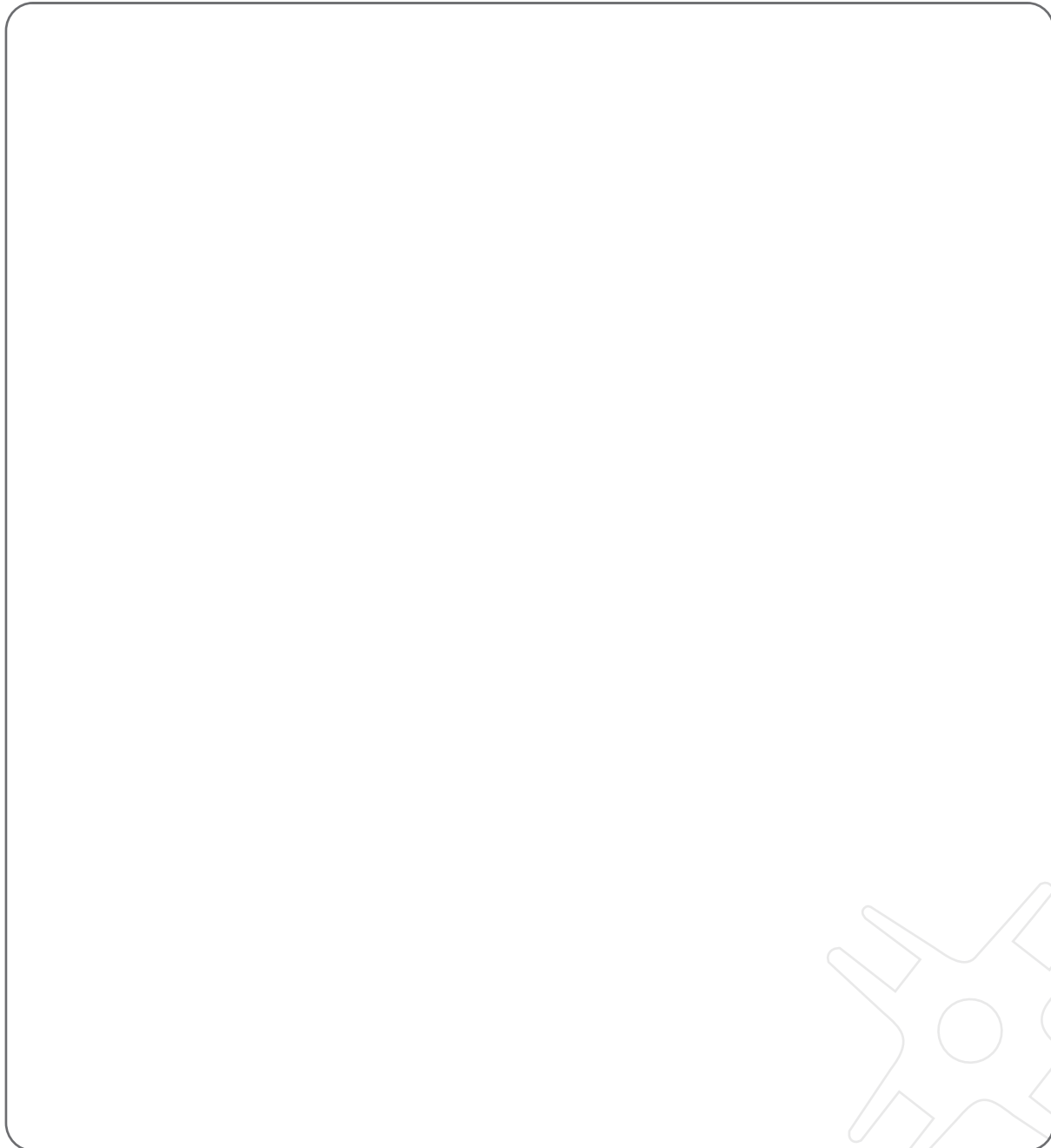
Step 6: Share Results

Have the students share and explain the successful and unsuccessful bridge designs. Have them describe the bridges using the academic vocabulary they learned about bridges.

Take pictures and/or videos of the bridges to share with families or other students in the school.

- Record the set designs and bridges with photographs and drawings.
- Create a class book of the students designs and photos of the testing stage.

Notes:



CITY PLANNERS: Engineering Design Process

OBJECTIVES:

Young students will understand the importance of and process of making maps through the steps of the Engineering Design Process. This lesson can be adapted for use with state, national, or world maps.

MATERIALS:

- Brackitz
- Paper and digital maps of local cities
- Masking tape in different colors
- Clipboards, paper, drawing and writing utensils
- White board or large pieces of paper
- Items such as a train set, vehicles, silver foil for bodies of water, felt for grass or parks, small buildings, etc.

Step 1: Identify the Problem

Read aloud a story in which the main character was helped by or used a city map (see suggested texts). Discuss problems that maps can solve using the following questions:

Why are maps important? What kind of things can you find on a city map? How did a map help in the story? Do you know someone who uses a map? How or when was it used?

Step 2: Build Scientific Knowledge about City Maps

Review fiction and informational books and videos about city maps.

- Have students explore major features of digital and paper maps.
- Build vocabulary about public places: park, housing, school, workplace, museum, library, restaurant, church, zoo, hospital, airport, train station, etc.
- Build math vocabulary: next to, behind, in front of, under, above, inside, outside, across, between, etc.
- Build map vocabulary: compass rose, key, legend, scale, etc.
- Create a chart showing important features of your chosen map.

Step 3: Brainstorm Solutions

Discuss:

Would there be factories or parks?
A mall or small shops?

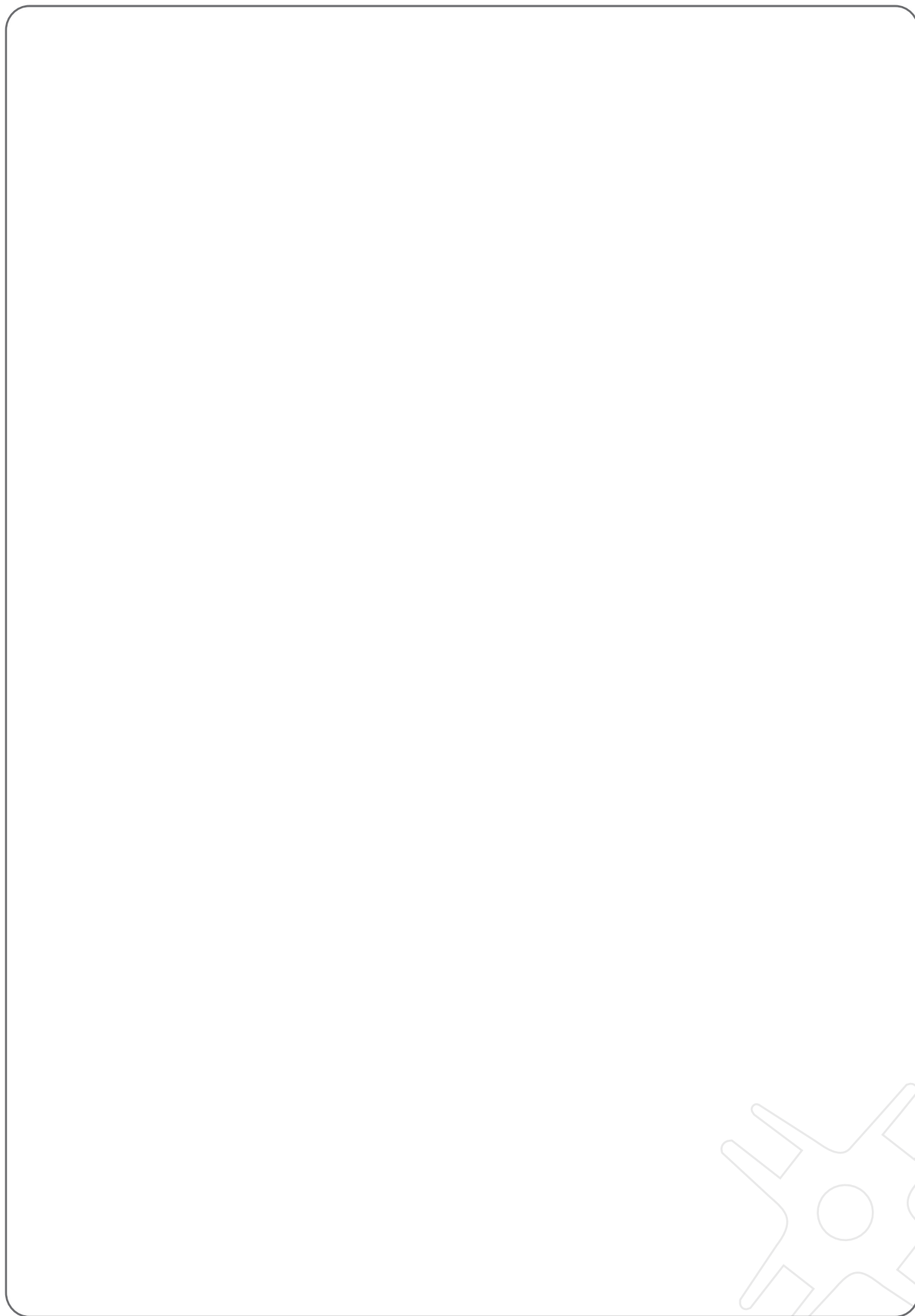
Highways or bikeways? Discuss issues such as pollution, congestion, or noise.

Step 4: Draft Plans

Build a model city with the class, using Brackitz and other materials. Use shapes to represent the foundations and boundaries of the buildings.

Add roads, bikeways, train tracks, bridges, parks, bodies of water, etc. Create a map of the city on chart paper.

Notes:



CONSTRUCTION: Foundations and Floors

OBJECTIVES:

Young students will learn about the construction of buildings (foundations and floors) through the steps of the Engineering Design Process.

(this lesson could be expanded to a 1-3 week unit)

MATERIALS:

- Brackitz
- Masking Tape
- Large pieces of white paper, clipboards, paper, drawing and writing utensils
- Images of buildings during and after construction, foundations, blue prints and architectural plans
- Books about buildings and construction sites

Step 1: Identify the Problem

Read your favorite book about the construction/building process (see suggested texts). Find books that show buildings your students may recognize from where they live, travel or places they may have seen in books or in movies, etc. Show and discuss with students real blue prints and architectural plans and how these plans help people build buildings successfully.

Step 2: Build Scientific Knowledge about Building Foundations and Floors/Stories

Foundations:

- Introduce the students to the concept of a foundation. In its simplest form, a foundation is the natural or prepared base on which a building stands. Google search "building foundations" and share images of real foundations.

Stories/Floors:

- Introduce the students to the idea of stories. In its simplest term, the height of a building can be described by the number of floors, levels or "stories" that are above ground (anything below ground level is discounted).

Discuss:

1. Shape: Is the building the same shape as the foundation?
2. Size: Is the building small, medium or large, tall or short, high or low?
3. How tall is the structure? How many stories are there?
4. Compare and contrast. How are the structures the same? How are they different? Which is the widest / tallest / shortest, longest, etc.

Academic Math Vocabulary:

shape names, sizes, measuring, predicting, comparing and contrasting.

Step 3: Brainstorm Solutions

Lay out a masking tape base on the floor that marks the maximum floor area allowed for the project. Refer to this as the "foundation."

Suggestions:

- A. Give the students several different shapes/sizes to choose from for their foundation. Be sure to create a shape/size that will allow them to build a sturdy base for their structure.
- B. Have the students create and map their own foundation plan.
- C. Have the students work in teams and give each team a different floor area size/shape.
- D. Start with easily identifiable shapes and move on to more abstract shapes.
- E. Shape: Is the foundation an identifiable/nameable shape or an abstract shape?
- F. Size: Is the foundation small, medium or large?
- G. Predict: How wide can your structure be? Use Brackitz as the non-standard unit of measurement.
- H. Predict: How tall can your structure be? Use Brackitz as the non-standard unit of measurement.

Academic Math Vocabulary:

shape names, sizes, measuring, predicting, and estimating

Step 4: Draft Plans

Have children draw their own blue prints and/or architectural drawings for their own buildings. Provide the materials they will build with Brackitz pictures and vocabulary words for them to refer to while creating their plans. Model as needed.

Step 5: Build/Test/Evaluate/Build

During Block Center Time provide Brackitz and have the students separately or in small groups test out their designs and create/refine new ones.

Step 6: Share Results

Have the students share and explain the successful and unsuccessful building designs. Have them describe the buildings using the academic vocabulary they learned about buildings.

Take pictures and/or videos of the buildings to share with families or other students in the school.

- Record the set designs and buildings with photographs and drawings.
- Create a class book of the students designs and photos of the testing stage.

Notes:



EXPLORATION SPACE: *The International Space Station*

OBJECTIVES:

Young students will understand the basic concept of living in space by constructing the International Space Station through the steps of the Engineering Design Process.

(this lesson could be expanded to a 1-3 week unit)

MATERIALS:

- 2 sets of Brackitz
- *I Want to be an Astronaut* by Byron Barton
- Large piece of paper to write student responses on, divided into two columns (Earth and Space)
- *Kids Book About the International Space Station* by AJ Ryles
- Video clip: <http://bit.ly/1kNWQhF>
- Images of the International Space Station found through a Google search

Step 1: Identify the Problem

- Read the students the book *I Want to be an Astronaut* by Byron Barton and discuss what astronauts need in order to live in space.
- How do they get into space?
- What does a rocket need to get into space?
- How can astronauts survive in space?
- What kind of structure do they need to live in to ensure their safety?

Step 2: Build Scientific Knowledge about Living in Space

Virtual Field Trip to the International Space Station

- Watch this video: <http://bit.ly/1kNWQhF>
- After watching the video, discuss what students learned/observed.
- Show the students pictures of the International Space Station.
- Discuss with students the differences between living on Earth and living in space.
- Where do astronauts live in space?
- What do astronauts need to live in space?

Step 3: Brainstorm Solutions

- Read the book *Kids Book About the International Space Station* by AJ Ryles
- After reading the book, discuss what the students learned.
- What is the purpose of the International Space Station?
- Why is the International Space Station built the way it is?
- How do the different parts of the Space Station work together?
- What would happen if one part was taken away, like the solar panels?

Step 4: Draft Plans

Have the students draft their own plans for a space station.

Step 5: Build/Test/Evaluate/Build

Building Our Own International Space Stations

Present the students with the Brackitz and allow them time to explore and experiment with creating their own versions of the International Space Station.

- Ask them to identify why they are building it a certain way.
- Also ask the students to identify the different parts of the International Space Station.

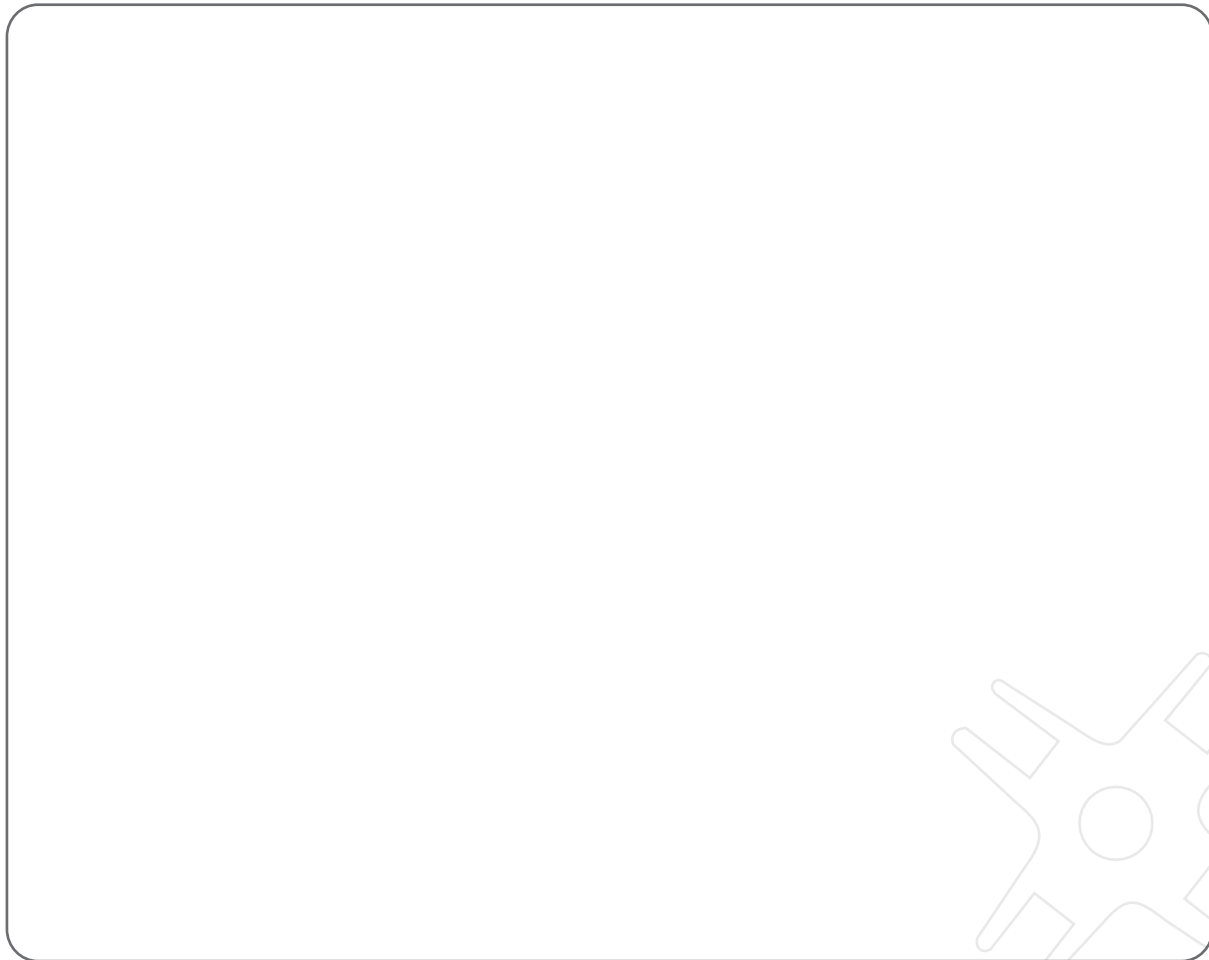
Once complete, share the structures as a class and compare/contrast the differences between each structure

Step 6: Share Results

Have the students share and explain the successful and unsuccessful space station designs. Take pictures and/or videos of the space stations to share with families or other students in the school.

- Record the set designs and space stations with photographs and drawings.
- Create a class book of the students designs and photos.

Notes:



THE LANGUAGE OF ENGINEERS: *Symmetry and Patterns In Structures*

OBJECTIVES:

Young students will understand the concepts of symmetry and patterning.
 (this lesson could be expanded to a 1-3 week unit)

MATERIALS:

- Brackitz
- Lots of space
- Mirror tiles
- Large white paper
- Symmetrical objects and non-symmetrical objects to sort. Objects might include plastic teddy bears, foam shapes (circle, square, rectangle, triangles).

Step 1: Build Scientific Knowledge about Symmetry.

- Introduce the idea of symmetry to the students with a couple of group activities (see suggested texts). In the most basic terms, something that is symmetrical is "the same on both sides."
- Present an array of familiar classroom manipulatives and resources and discuss which ones are symmetrical e.g. plastic teddy bears, and which ones are not e.g. a rock from the block area. Have the students sort the items.
- On a large piece of white paper, draw an oval with a line down the middle. Ask the students to help you draw a face, emphasizing the symmetrical placement of each feature. Have the children point to where the eyes, nose, ears, mouth, and eyebrows will go.
- Give the children their own, smaller ovals and have them draw themselves. Provide mirrors. Discuss the symmetrical nature of their faces as they draw, e.g., if you put one eye there...you have to put the other eye here, etc.

Step 2: Build/Test/Evaluate/Build

Using Brackitz, demonstrate some shapes that you can make that are symmetrical. Start with the simplest shapes you can make e.g. squares and rectangles.

Have the students help you sort the connectors into baskets of 3 pronged or 4 pronged first, and give each student or group of students, one type of connector to work with.

Give the students plenty of time to explore making these shapes. Guide them to test if their shape is truly the same on both sides. You can do this by placing a piece of string down the middle of the shape and comparing each side.

Test and redesign as much as needed. You can also trace the outline of the shape on a large piece of paper and demonstrate how to fold the paper in half to see if the shape is indeed "the same on both sides."

- **Extending the initial shapes:**
Model with a simple shape how to add on Brackitz to create a bigger version of the chosen shape. Have the students work with you to extend the shape, and if possible assign each student a "task" so they can better understand the idea of a repeating pattern. Verbalize, as

an example, that student 4 will always be after student 3, and you can't skip over student 2, etc.

- Give the students time to explore this concept and be on hand to help them redesign as needed. Encourage them to try different shapes and sizes. This exploration might need a larger space than usual.

Discuss:

1. What does symmetrical mean?
2. How can you tell if a shape is symmetrical?
3. Are all shapes symmetrical?
4. Can you name any of the shapes that we made?

Academic Math Vocabulary:

symmetrical, same/different, shape names and properties and attributes

Step 3: Build Scientific Knowledge about Patterning.

Once the students are used to forming symmetrical shapes, introduce the idea of building upwards. Model with a simple shape like a square.

Verbalize your actions as you build, so that the students can hear the repeating pattern as you extend the structure.

Step 4: Build/Test/Evaluate/Build

- Divide the students into groups. Assign each group a specific shape to build with Brackitz.
- Give each group a specific number of repeats, such as group 1 has to repeat the pattern 5 times and group 2 has to repeat it 6 times.
- Ask each group to make their shape into a taller structure, using a repeating pattern as before.

Discuss:

1. What can you tell me about the structure?
2. What does "pattern" mean?
3. Do you notice any patterns?
4. How many times does the pattern repeat?
5. Can you see any other patterns in the classroom?

Academic Math Vocabulary:

pattern, repeating, directional words, shape names, height/width, taller/wider

TOOLS OF SCIENTISTS: *Estimating and Measuring*

OBJECTIVES:

Young students will learn about estimation and measurement
(this lesson could be expanded to a 1-3 week unit)

MATERIALS:

- Brackitz
- Your favorite book about using non-standard measurement (see suggested texts)
- White board or a large piece of paper
- Clipboards, paper, drawing and writing utensils.
- Standard measuring tools – rulers, measuring tape, yard sticks
- Masking tape (several different colors)

Step 1: Identify the Problem

- Read a text that introduces the idea of non-standard measurement (see suggested text), preferably one that features a character who solves a problem with measurement and estimation.
- Define the term length simply, i.e., "Length refers to how long or tall something is."
- Define the term estimation simply i.e., "Your best guess, based on what you know."
- Discuss: What could we use to measure small things in our classroom? Brainstorm what to use and make a list of things to measure. Small things might include blocks, books, pencils, shoes, game boxes etc.
- Discuss: What could we use to measure bigger things in our classroom? Brainstorm what to use and make a list of things to measure. Big things might include tables, carpets, door frames, bookshelves, windows, children/teachers etc.

Step 2: Build Knowledge about Measurement and Estimation.

Choose 3 different things to measure in the classroom. Model using the Brackitz, placing them alongside the item and adding on pieces, counting them as you go. Choose things that will encourage the students to build along a surface (horizontally on a table top) as well as upwards (vertically against a door frame).

Discuss:

1. How long each item is/how many Brackitz did you use?
2. Which are the longest/shortest things?
3. Are any of the items the same length?

Academic Math Vocabulary:

tall/small, long/short, high/low, numbers and counting, same/different, positional words and ordinal numbers (first, second, third etc.)

Choose 3 different things in the classroom to estimate the length. Using the Brackitz, model how to estimate. For younger students, start with the concept of more/less. Start simple, e.g., "Do you think that the table is more or less than one Brackitz?" or "Do you think the door frame will use more or less Brackitz than the table?"

Measure one thing as a baseline measurement (a table) and then take the Brackitz that you used to measure that item and hold it up to another item (the door frame) to compare. If the children grasp the idea of more/less easily, transfer the focus to the actual number of Brackitz used.

Discuss:

1. Which item used the least/most Brackitz?
2. How many Brackitz did we estimate for the...?
3. Did we under-estimate or over-estimate?

Academic Math Vocabulary:

more/less, same/different, estimate, accurate, under/over, numbers and counting.

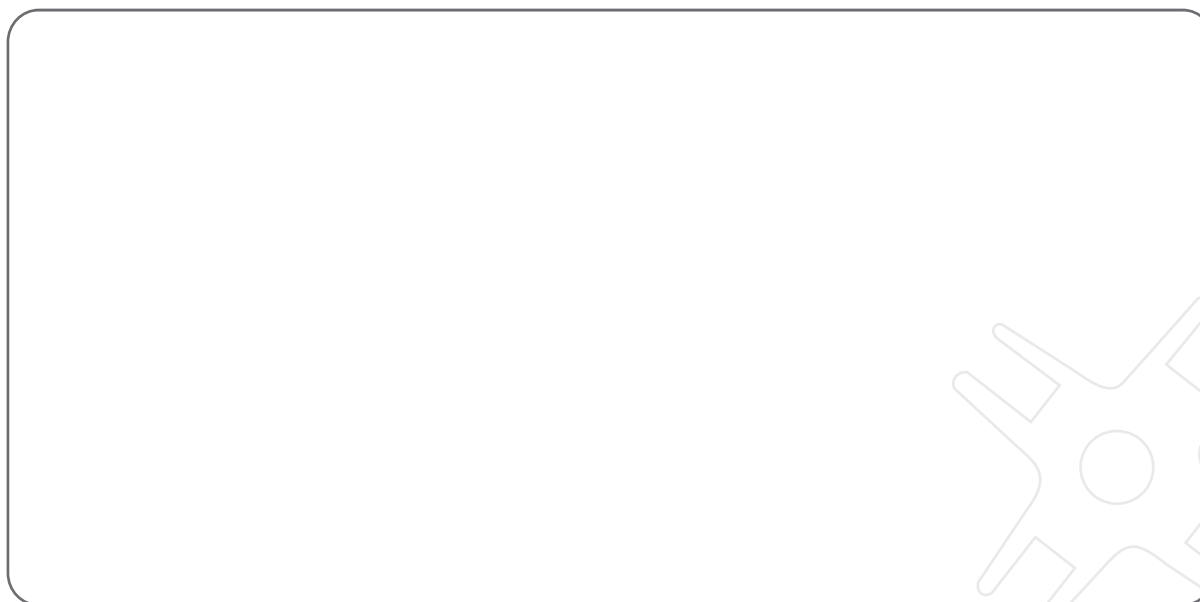
Step 3: Build/Test/Evaluate/Build

- Encourage the students to explore the classroom independently and find at least 3 more things that they can estimate and measure with Brackitz.
- Take the students onto the playground and ask them to find 3 more things to measure, making an estimation first. Be sure to have a camera handy to record the activity.
- Encourage the students to choose things they can measure in different directions – horizontally and vertically.

Step 4: Share Results

Take pictures and/or videos of the students estimating and measuring to share with families or other students.

Notes:



THE ZOO: Tools of Scientists Graphing

OBJECTIVES:

Young students will understand the basic concepts of graphing while learning about zoos.
 (this lesson could be expanded to a 1-3 week unit)

MATERIALS:

- Brackitz
- Zoo books, fiction and informational
- Plastic zoo animals
- Zoo maps e.g. <http://bit.ly/1WgsCEX>
- White board or large piece of paper
- Clipboards, paper, drawing and writing utensils

Step 1: Identify the Problem

- Read a variety of fictional and informational books about the zoo at circle time.
- Ask the students: "What have we learned about zoos?" Brainstorm a list of the students' ideas and record on chart paper.
- "What is your favorite animal?" Brainstorm a list of animals and record on chart paper.
- Group, graph, or display the students' favorites. Here are two ideas that show the students how to use Brackitz to represent their results:

Idea #1

Use Brackitz to make a grid to graph the results. Each student finds a plastic replica of their favorite animal and places it in the appropriate grid. If you do not have enough animals the students can draw their own animals on post-it notes.

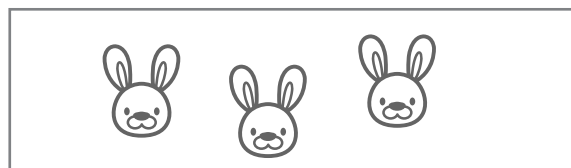
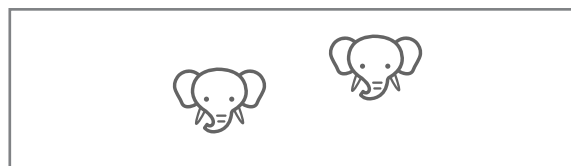
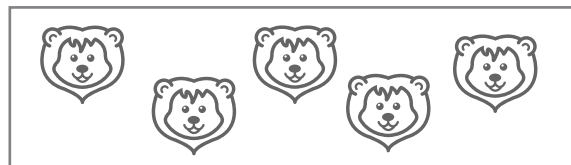
Once the graph is complete, discuss what it shows:

1. How many animals are in each group?
2. Which animal/column has the most votes?
3. Which animal/column has the least votes?
4. Are there any animals/columns that have the same number?

5			
4			
3			
2			
1			

Idea #2

Use Brackitz to make several different enclosures in which to group the animals. Model making different size enclosure to fit larger numbers of animals.



Once the groups are complete, discuss what it shows:

1. How many animals are in each group?
2. Which animal/enclosure has the most votes?
3. Which animal/enclosure has the least votes?
4. Are there any animals/enclosures that have the same number?

Academic Math Vocabulary: most/more, least/less, same/equal, sort/group/classify

Notes:


 A large rectangular box for taking notes, with a faint gear-like graphic in the bottom right corner.

THE ZOO II: Tools of Scientists Mapping

OBJECTIVES:

Young students will understand the basic concepts of mapping while learning about zoos through the steps of the Engineering Design Process.
 (this lesson could be expanded to a 1-3 week unit)

MATERIALS:

- Brackitz
- Zoo books, fiction and informational
- Plastic zoo animals
- Zoo maps e.g. <http://bit.ly/1WgsCEX>
- White board or large piece of paper
- Clipboards, paper, drawing and writing utensils

Step 1: Identify the Problem

After reading a variety of books about zoos and/or viewing videos of zoos ask the question:

"Do you remember (or know) what a zoo looks like? What kind of things might you find at the zoo?" Brainstorm and write down a list of animals, buildings, attractions, vendors, paths, water features, dining and shopping, restrooms, first aid stations, guest services etc.

Ask the students how people would know how to find what they are looking for.
 Answer: A map.

Step 2: Build Scientific Knowledge about Maps of Zoos

- Read a book about the zoo during the literacy block that features a map of a zoo.
- Review maps of real zoos both paper and online. Share some maps of real zoos.
- Brainstorm a list of features of a map of a zoo and create a chart.
- Focus on positional and directional words - next to, behind, in front, under/below/ beneath, on top, inside, outside, across, beside, between, etc.
- Focus on map vocabulary: Compass Rose, Map key, Map Legend, Scale

Step 3: Brainstorm Solutions

With the assistance of the students create a simple map of a zoo with Brackitz and other materials. Copy the map of the zoo on chart paper.

Step 4: Draft Plans

Have each student draw their own map of a zoo. Model how to draw an enclosure, signposts, paths, bodies of water, etc.

Step 5: Build/Test/Evaluate/Build

Have the students create their zoos in small groups. Encourage them to build structures, test them (are they big enough/tall enough?) and redesign them if necessary.

- Model how to make enclosures and exhibits as well as buildings, paths, signposts, and fences.
- Make suggestions: Which animals need bigger/smaller, narrow/wider enclosures? Which animals need taller/shorter fences? Which animals can go next to each other and which ones need to be separated - what could you put in-between? How could you make this longer/shorter? Do you want more/less animal enclosures? What shape are you making? What size were you thinking for this enclosure?

Step 6: Share Results

- Take photographs of the final zoos and display them next to the original maps made by the students.
- Encourage each group to find a friend/teacher and take them on a guided tour of the finished zoo.
- Create a class book of the students zoo maps and photos.

Notes:



The Brackitz Educational Difference: Developmentally Appropriate

STEM

- Creative problem solving
- Discovery
- Mapping and spatial topography
- Scientific collaboration and exchange of ideas
- Purposeful planning
- Sorting/Classifying
- Numbering and counting
- Size and relational comparisons

All CCS Math Standards

- Counting and cardinality
- Operations and algebraic thinking
- Numbers and operations in bases ten
- Measurement and data geometry

All CCS English Language Arts Standards

- Speaking and listening
- Reading literature
- Reading information
- Language
- Writing
- Reading foundations

Bridges Literacy Connections Suggested Texts:

The World's Most Amazing Bridges
by Michael Hurley

The Three Billy Goats Gruff (Paul Galdone Classics)1
by Paul Galdone

You Wouldn't Want to Work on the Brooklyn Bridge!: An Enormous Project That Seemed Impossible
by Tom Ratliff and David Salariya

Bridges: Amazing Structures to Design, Build & Test (Kaleidoscope Kids)
by Carol A. Johmann and Elizabeth Rieth

Bridges
by Etta Kaner and Pat Cupples

Bridges: SeeMore Readers Level 2
by Seymour Simon

Bridges (True Books: Buildings and Structures)
by Elaine Landau

The Ultimate Construction Site Book
by Anne-Sophie Baumann and Didier Balicevic

The Construction Alphabet Book
by Jerry Pallotta and Rob Bolster

A Year at a Construction Site (Time Goes By)
by Nicholas Harris

How a House Is Built
by Gail Gibbons

Stephen Biesty's Cross-sections Castle
by Stephen Biesty

Construction Literacy Connections Suggested Texts:

Stephen Biesty's Incredible Cross-Sections
by Richard Platt and Stephen Biesty

Block City
by Robert Louis Stevenson and Daniel Kirk

The Ultimate Construction Site Book
by Anne-Sophie Baumann and Didier Balicevic

The Story of Buildings: From the Pyramids to the Sydney Opera House and Beyond
by Patrick Dillon and Stephen Biesty

Look at That Building: A First Book of Structures
by Scot Ritchie

Building a House (Mulberry Books)
by Byron Barton

Construction
by Sally Sutton and Brian Lovelock

13 Architects Children Should Know
by Florian Heine

Symmetry Literacy Connections Suggested Texts:

What Happened at Wizard School (Tantan Math Story: Math Concepts: Space, Shape, Symmetry)
by Cecil Kim and Joo-yoon Lee

Pattern (Math Counts)
by Henry Arthur Pluckrose

What Is Symmetry in Nature? (Looking at Nature)
by Bobbie Kalman

Mr. Noisy's Book of Patterns Learn to Read, Math
by Rozanne Lanczak Williams

Mr. Noisy's Book of Patterns Big Book (Learn to Read: Math Series)
by Rozanne Lanczak Williams and Kathleen Dunne

Is It Symmetrical? (Little World Math)
by Nancy Kelly Allen

Pattern Fish
by Trudy Harris

Amazing Buildings (DK Readers, Level 2)
by Kate Hayden

Amazing Buildings
by Philip Wilkinson and Paolo Donati

From Mud Huts to Skyscrapers
by Christine Paxmann and Anne Ibelings

13 Buildings Children Should Know
by Annette Roeder

When I Build With BlocksJ
by Niki Alling

Dreaming Up: A Celebration of Building
by Christy Hale

Iggy Peck, Architect
by Andrea Beaty and David Roberts

Tools Literacy Connections Suggested Texts:

How Big Is a Foot? (Young Yearling Book)
by Rolf Myller

Measuring Penny
by Loreen Leedy

How Long or How Wide? A Measuring Guide (Math Is Categorical)
by Brian P. Cleary and Brian Gable

Size (Math Counts)
by Henry Pluckrose

Finding Shortest and Longest (Getting Started with Math)J
by Amy Rauen

Me and the Measure of Things
by Joan Sweeney and Annette Cable

Super Sand Castle Saturday (MathStart 2) 1st (first) Edition
by Murphy, Stuart J.

How Tall, How Short, How Far Away?
by David A. Adler and Nancy Tobin

The Long and Short of It
by Cheryl Nathan and Lisa McCourt

Inch by Inch
by Leo Lionni

Is a Blue Whale the Biggest Thing There Is? (Wells of Knowledge Science)
by Robert E. Wells



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brackitz.com/ideas

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