Science/STEM

Family and Community Learning Facilitator Guide

About Family and Community Learning

Nine PBS Family and Community Learning is a series of workshops that engage families in hands-on collaborative and playful learning. Designed for families with children aged 5–9 (and younger/older siblings), the series uses both digital and tangible tools.

About Science/STEM

The STEM Power Hour is designed to support early learners in becoming confident, capable scientists. During each session, participants share a meal, learn about the engineering cycle, and have time to create and solve challenges independently and with their families and/or peers.

Facilitator Role

As the facilitator, you play a key role in helping parents and children engage in the workshops. Your role has two main goals:

1. Create and support safe and comfortable social learning environments where people participate freely.
2. Deliver information in a straightforward way as you use your facilitation skills to meet the workshop objectives.

Nine PBS and Partners Roles

1. Build capacity for Nine PBS and partners to support educators, families, and kids within their communities.
2. Strengthen the relationships between Nine PBS and partners and the communities they serve.

Science Power Hours and *Teaching in Room 9* science content is supported by

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Hi, Educators!

I am Dr. Arionna Ralleigh, an educator with over 15 years of experience. Currently, I am the Curriculum Design Manager at Nine PBS. My passion for classroom equality is seen in everything that I do.

We welcome everyone interested in connecting with Nine PBS in a meaningful way. Let's explore how the kids of our region can learn and grow together.

Please feel free to email me at aralleigh@ninepbs.org

Week 1: Science/STEM

A Seat at the Table | **Time** 60 minutes | **Target Audience** 5-8-year-olds with family members and/or caregiver

Activity Introduction

The first tables were invented by ancient Egyptians several thousand years ago (around 2500 BC). Initially, the table was a large piece of wood or metal placed on the floor to sit around and eat. Over time one large center leg, called a pedestal, or three to four outer legs were placed under the table to accommodate chairs for sitting. Throughout the centuries the table became a very central item, not only in our homes but in stores and other workspaces.

The dining table of a home holds more than plates, glasses, and bowls at mealtime. It is the gathering place where many happy memories are made between family members and friends: memories of mealtime conversations, a toddler play space, school or family projects, family game night, and so much more.

There are many other tables that play important roles in our lives as a society. They serve as the centerpiece for a meeting space. People seated at the table could be deciding how to design a community garden or the building plans for a new community school, or what books to place in the library. It is vital that everyone not only has the ability to access a seat at the table, but it is also equally important that they all feel welcome at the table. What fond memories do you have that took place at the dining table of your home, work, or community gathering place?

TIP **Take the time to explore all the media content before each session begins! This helps familiarize the content.**

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Activity 1: Lesson Progression

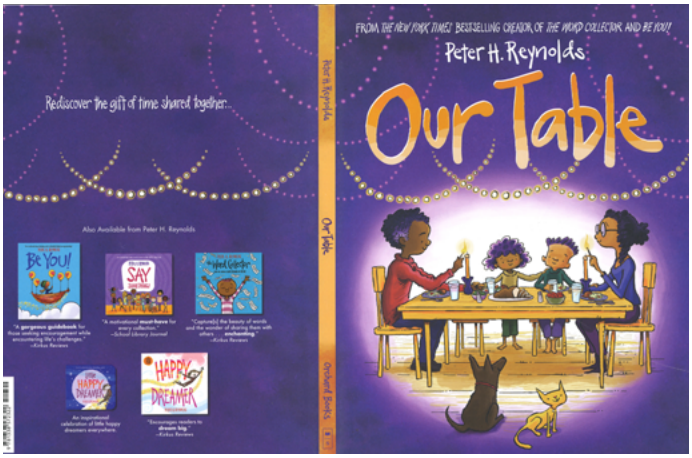
1. Snack and Icebreaker: 8 minutes

Share a slideshow of families around the world and what their tables look like, the foods they eat at their tables, or what possible games or activities they might play with their families at the tables.

2. Read Aloud: 15-20 minutes

Today we will be reading *Our Table* by Peter H. Reynolds. During reading aloud, students will practice drawing conclusions.

Conversation Prompts: As we look at different families and friends around the world, what do you notice that is similar to what you do or eat at your table with your family? What is different? What do you wonder?



3. Exploration: 20-50 minutes

Instructions: 5 minutes

You are a master builder! Imagine you have your own builder's workshop and store, and you specialize in building tables. A customer comes in with a special request; they want a new table for their home to build new memories with their family. A unique table that is different from any other table they have ever seen, as unique as their family. Can you build a prototype of the new table to show your customer? A **prototype** is your first idea in the form of a model. Prototypes are usually made from easily available materials and not as expensive as the materials you would use in your final build.

Building Criteria:

- The prototype should be smaller than a life-sized table found in a store or home.
- The prototype should fit inside of a 3-cubic-foot box with the lid closed.
- Any materials in your build kit are available to use during this build.
- The prototype should be built in 20 minutes or less.
- While building, think of what you will verbalize when sharing your prototype with others.

Materials List:

- Corrugated Cardboard
- Cardstock Paper
- Masking Tape
- Four Cardboard Tubes
- Colored Markers
- Flat Toothpicks
- Round Toothpicks

TIP **The pictures in are very important in this book. Make sure families can see them up close.**

5. Construction: 20 minutes
Each family/group will have 20 minutes to bond and create their prototype with students.

6. Clean Up and Prep for Sharing: 5 minutes

7. Sharing and Reflection: 5 minutes
One of the most essential steps in each table build group will be sharing their reflections and initial prototypes with their share group. Divide the groups into groups of 4 or 5 table builds. For online students and leaders, place two families in a breakout room and have them share and reflect together.

8. Teaching in Room 9: 3 minutes
Today, our teacher will pose a question to you, and then we will talk about it with our families.

Plan for a 1-minute turn and talk and then have the families share one or two words about who they think a scientist is. For online students, families/ groups may share what they are thinking in the chat.

Teaching in Room 9 - STEM - Week 1

Extensions and Enrichment:

Ready Jet Go! - Grow Gardens in Space
Ready Jet Go! - Grow Vegetables
Molly of Denali - Veggiezilla
Molly of Denali - Pick Blueberries
Join the Kids Garden Community

The Tabletop Challenge:

Tables have to stand the test of time in a home or workplace. Tables are not just meant to be beautiful, they must be durable and strong to meet the needs of the families and friends they serve. How strong is your table prototype? How much weight can your table support? Let's put our tables to the test, the strength test!

Create a data table for each table's strength test. There is a chart on the next page you can use to do this. After the initial build, the tables will be tested/ evaluated based on their strength. A series of one-half pound wood blocks will be placed on the center of the table until the table either collapses or supports a total mass of 10 pounds. Design teams can then use draft paper and pencil to draw out a redesign with improved strength of the structure in mind.

Extra Content:
You can also access PBS KIDS content free in the PBS KIDS Video app and the PBS KIDS Games app.
Robo Builder
Cyberchase

Credit and Sources:
Our Table
What I Eat
Family Meals

Tabletop Strength Test

	Sample Table	Table #1	Table #2	Table #3	Table #4	Table #5
Maximum weight in pounds supported	3.5 lbs					
10						
9.5						
9						
8.5						
8						
7.5						
7						
6.5						
6						
5.5						
5						
4.5						
4						
3.5						
3						
2.5						
2						
1.5						
1						
.5						

Color the box each time your table supports a half pound block.
This will create what we call a bar graph of our data.

Week 2: Science/STEM

Seeds of Change | **Time** 60 minutes | **Target Audience** 5-8-year-olds with family members and/or caregiver

Activity Introduction

There is life all around us, from the family members we love, to the pets we snuggle and play with, to the insects, trees, and plants we see each day. Living things can be huge, like the big blue whale. And they can be extremely small, so small you cannot see them without a microscope. These living things are vital to us, and our actions impact their growth, development, and survival.

One very common living thing that many humans enjoy interacting with are plants. Some plants are for eating. Others are vital for small insects to thrive and new growth to take place, while creating beauty all around us. Have you ever wanted to plant a garden? There are only a few things you need to grow a garden: all living things need food, water, and air to grow and thrive. Plants need plenty of sunlight, too. One of the most important things we need to grow a garden is our imagination.

Activity 1: Lesson Progression

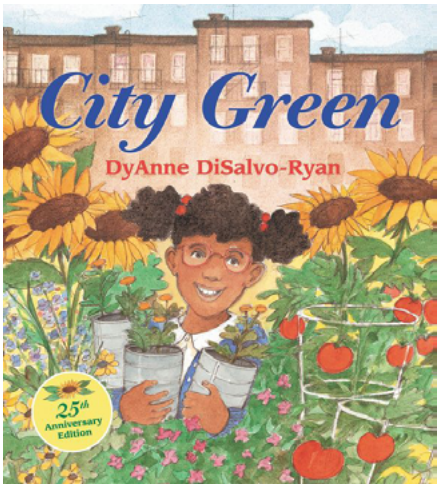
1. Snack and Icebreaker: 8 minutes

2. Read Aloud: 15-20 minutes
During this read aloud the students will be asked to predict and look at how the characters are developed through the story. Also, the students will use context clues to learn new terms. This book is long but amazing!

Conversation Prompts: What is a garden? Where are gardens? Where can we plant a garden? How much space do we need to grow a garden? What is a garden? Where are gardens?

3. Exploration: 30 minutes

4. Instructions: 5 minutes
You are a gardener! Imagine the space around your home, areas in your neighborhood, near your church or school where you could create a garden space. What type of plants would you put in your garden? Plants that you eat? Plants that are pretty? Plants with flowers? Plants without flowers? Tall plants, short plants, plants that only grow on top of the surface? What color are the plants you imagine? It's time to begin to bring a garden to life by planning.



Build Criteria: Your gardening team will be given a plot of land to design and develop into a garden. Work together to decide what plants you want in your garden, where you would like the plants to be placed in the garden, and what other features you might want in your garden. Remember, plants need food, water, sunlight, and air to grow and thrive. Their food comes from the rich soil they are placed inside. Once you have a design for your garden, begin to create the garden with the materials you have been provided. Creating a prototype of your garden will help you greatly when it is time to create your real garden.

Kiddo Tips: If most of your group are younger or need different options, here are a few ways that you could change this build. Give them paper and let them draw out their garden without the building. They still need to think of placement and usability for others. Print coloring pages for the youngest members of the family so they can also design their garden. You can also tell them to prepare their garden by prepping their supplies and see where they place each thing.

Materials List:

- Flower Seeds
- Vegetable Seeds
- Green Poster Board
- Small Cardboard Boxes
- Construction Paper
- Twine
- Chalk
- Small Craft Sticks
- Terra-cotta Flowerpots
- Bag of Soil
- Liquid Glue
- Glue Stick
- 8 Pack of Markers
- Scissors
- Standard Ruler
- Sketchbook
- Masking Tape
- Pipe Cleaners
- Bag of Pebbles
- 6 Sharpened Pencils
- Craft Clay

5. Sharing and Reflecting: 5-6 minutes
We are going to create one large garden to stroll through as a group. Place your garden on one of the table spaces. Once all the gardens are in place, we will all begin to move around the room and look at all the sections of our one, big, beautiful garden.

6. Teaching in Room 9: 3 minutes
You will have a few take-home items: packs of seeds, planting pots, and soil and a fact sheet on different types of gardens for small spaces.

Teaching in Room 9 - STEM - Week 2

Extensions and Enrichment:
Ready Jet Go! - Grow Gardens in Space
Ready Jet Go! - Grow Vegetables
Molly of Denali - Veggiezilla
Molly of Denali - Pick Blueberries
Join the Kids Garden Community

Planting Seeds

Planting seeds in a small pot is a simple and rewarding activity.
Follow these step-by-step directions to ensure successful germination and growth.

Materials List:

Pot with drainage holes

Seed packet

Potting soil

Watering can

Plastic wrap (optional)

Steps:

1. Fill the Pot with Soil: Fill the pot with seed starting mix or potting soil, leaving about an inch from the top. Gently press down the soil to create a firm, even surface.

2. Read the Seed Packet: Carefully read the instructions on the seed packet. It will provide valuable information such as planting depth, spacing, and sunlight requirements.

3. Plant the Seeds: Create small holes in the soil according to the recommended planting depth on the seed packet. Place the seeds in the holes and cover them with soil. Pat the soil down gently.

4. Water the Seeds: Use a watering can or spray bottle to moisten the soil thoroughly. Ensure that the water drains through the bottom of the pot. Avoid overwatering, as it may lead to fungal issues.

5. Cover (Optional): If specified on the seed packet, cover the pot with plastic wrap or a plastic lid to create a greenhouse effect. This helps retain moisture and warmth, promoting germination.

6. Place in a Warm Spot: Put the pot in a warm, well-lit area. Most seeds require warmth to germinate successfully. Ensure they receive adequate sunlight or use a grow light if necessary.

7. Monitor and Water: Keep a close eye on the soil moisture. Water the seeds whenever the top layer of soil feels dry. Be consistent but avoid overwatering.

8. Transplant (Optional): Once the seedlings have grown large enough and the risk of frost has passed, you can transplant them into a larger container or directly into your garden.

9. Enjoy the Growth: Watch as your seeds germinate and grow into healthy plants. Remember to provide them with proper care, including sunlight, water, and nutrients.

By following these steps, you'll create an ideal environment for your seeds to sprout and flourish in a small pot. Happy gardening!

Week 3: Science/STEM

You Are a Masterpiece | **Time** 60 minutes | **Target Audience** 5-8-year-olds with family members and/or caregiver

Activity Introduction

Music! Music can be inspiring, music can make you feel happy, music can make you feel sad, music can make you remember a fun time like a birthday party or family gathering, music is a very familiar part of our lives. Music is defined as vocal (which means your voice) or instrument sounds (or both) combined in such a way as to produce beauty, harmony, and the expression of emotion. Have you ever heard beautiful music? Did music ever make you feel happy, excited, sad, or even giggly?

Music is made by using instruments. Your voice is an instrument. And there are thousands of other instruments. The oldest musical instrument in the world is a 60,000-year-old flute, and it is a treasure of global significance. It was discovered in the Divje Babe cave near Cerkno (which is a small area of Slovenia, a country in Europe). It was made from the left thigh bone of a young cave bear and has four pierced holes.

Activity 3: Lesson Progression

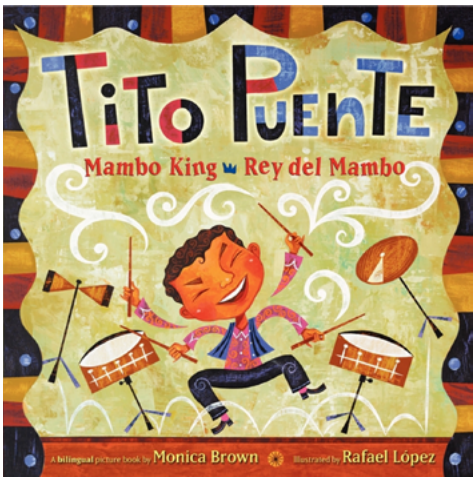
1. Snack and Icebreaker: 8 minutes
Share a slideshow with familiar instruments.
Families will be asked to identify the instrument by sound, and then asked if they can mimic (to copy) the sound.

2. Read Aloud: 10-20 minutes
We will be reading *Tito Puente-Mambo King* by Rey del Mambo. The students will practice making predictions and analyze the author's purpose.

Conversation Prompts: Can you identify the instrument you hear? Can you mimic or copy the sound of each of the instruments? Is there an instrument on the screen that you have played (or are learning to play)? Is there an instrument on the screen that you have pretended to play? Share that the last slide contains a picture of the oldest instrument found, the flute.

3. Exploration: 20-30 minutes

Instructions: 20-30 minutes
Musical instruments have been made for thousands of years, from a variety of very simple materials to very expensive and complex materials. You can make an instrument out of almost anything, all you need is your imagination! We are going to end our time together today with a jam session! We will all create instruments and then play a song together that we all know and love. (Play the Sesame Street song again.) Do you remember hearing this song today? Practice playing this song with your instrument as you build, we want to be ready for our concert at the end of our time together.



Build Criteria: Each family can build instruments independently or in pairs, using the materials found at the community tables. Remember the community table means that we are all getting our materials from the same place, please take a small amount of each of the different materials you want to use.

Materials List:

- Large Craft Sticks
- Bag of Rubber Bands
- 8 Pack of Markers
- Scissors
- Standard Ruler
- Sketch Book
- Masking Tape
- Jumbo Straws
- Regular Straws
- Paper Plates
- Paper Rolls
- String
- Fishing Line
- Balloons
- Plastic Cups
- Beads
- Yarn
- Cardboard
- Small Craft Sticks
- Aluminum Foil
- Plastic Wrap
- Sand
- Bag of Pebbles
- Large Glue Stick
- Liquid Glue
- Scotch Tape
- Hot Glue Gun
- Hot Glue Sticks
- Velcro
- Wooden Suckers
- Plastic Cutlery
- Paper Cups
- Paper Saucers
- Brads
- Paper Clips
- Egg Cartons
- Plastic Easter Eggs
- Plastic Tubing
- Six Pack of Pencils

5. Construction: 20 minutes
Each group will have 20 minutes to complete the task with their family group.

6. Clean Up Time: 5 minutes

7. Sharing and Reflection: 5-6 minutes
All participants will come together with their instruments. With the Sesame Street theme song playing softly in the background, we will all play along with our newly made instruments.

8. Teaching in Room 9: 4 minutes
"Like Tito Puente-Mamba King, scientists want to make the leave their mark on their community. Join me as we learn ways that scientists do this in their work."

Teaching in Room 9 - STEM - Week 3

Extensions and Enrichment:
PBS Tunes
Wash and Sing
Pinkalicious Party

Week 4: Science/STEM

Home Is Where the Heart Is | **Time** 60 minutes | **Target Audience** 5-8-year-olds with family members and/or caregiver

Activity Introduction
Pictures will be on display (gallery format) of different houses from around the world; encourage the participants to view as they arrive.

Our home is where we go to relax after a long day at work, school, or play. We go home to cook and eat, to spend time with our family, to sleep. Our home is unique to who we are and where we live. Homes come in many different shapes and sizes, some homes are single family, two family, some homes are in buildings with many units called apartments. Some homes are square, some are round. Some are tall and some are very short. Some float on water, and some are even underground.

The building structure that makes up our home depends on many things. One of the most important things to consider when building a home is the climate we live in. Climate is a word that describes the long-term weather pattern where you live in the world. Is it very dry and hot most of the time? Is it very wet and rainy most of the time? Is it very windy and cold most of the time? Or is it warm, cold, hot, and rainy? Do you have a basement? Many areas in the United States, and around the world, cannot have basements. Because the climate also affects the type of soil (soil is a fancy word for dirt and the layers beneath the dirt on the ground) your home is built on, some soil is not strong enough to support a basement. So, the materials we build our homes out of and the shape of our homes have to be able to stand up to the climate in the area we live.

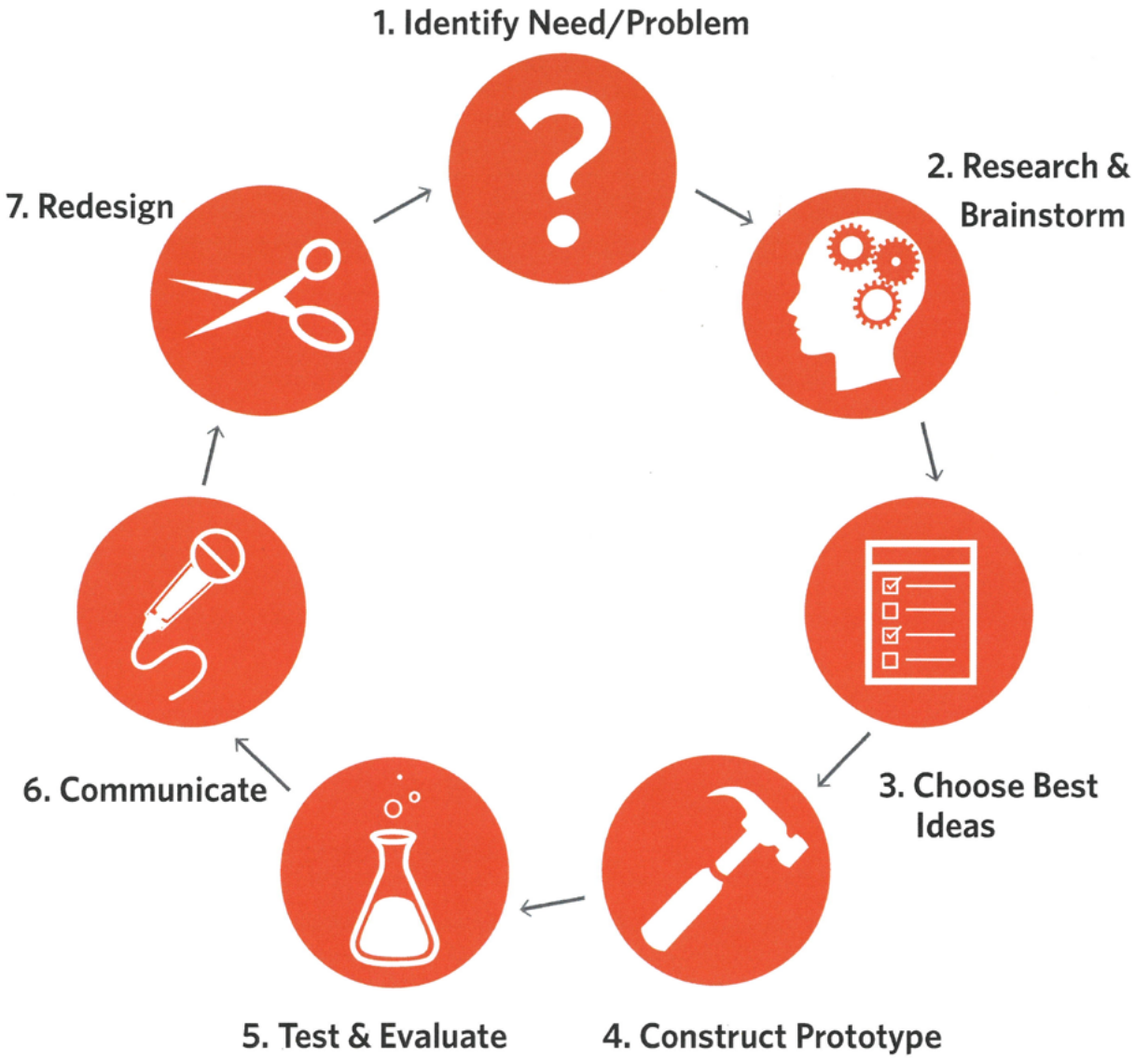
Activity 3: Lesson Progression

1. Discovery: 10 minutes
The discovery of the Engineering Design Cycle occurs naturally. Facilitator will record the responses from the full group discussion on chart paper or a white board.

Conversation Prompts: Please share what you were thinking as you brainstormed how you were going to fulfill your build, your table, design your garden, or construct an instrument. Brainstorming is something everyone does, almost automatically, when faced with a challenge or coming up with a new idea. Brainstorming is allowing yourself to imagine as many possibilities to solve a problem or "make your customers dreams come true." What came to your mind as you thought about making a table for your customer? What did you think about your design before, during, and immediately after the build?

2. Sharing and Reflection: 5-6 minutes
Once the share time is complete, the facilitator will point out through their responses that the builders all thought about the request (1-need/problem), based on their prior knowledge of tables (gardens and instruments), developed some design ideas (2-research/brainstorm), they knew time was short so they quickly decided on one idea to pursue (3-choose best idea), and they began to build (4-construct prototype), as they built they noticed things that needed to be changed for success (5-test & evaluate), and they communicated with one another to get the task completed (6-communicate), and you constantly thought about ways you could improve your design/prototype as you were building and even afterwards (7-redesign). This is how all good designers and builders (what we call engineers-YES!--you are an engineer!) think and go about addressing people's needs and solving problems.

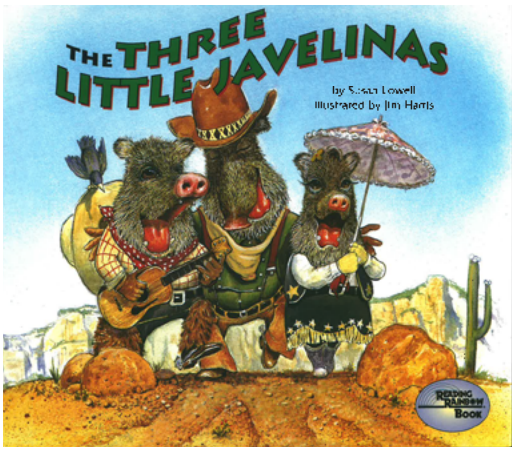
Engineering Design Cycle



3. Teaching in Room 9: 4 minutes
Scientists, today our teacher is going to talk to you about sun and shade. You may use this information a little later in your build so feel free to take notes in your notebook if you would like.

Teaching in Room 9 - STEM - Week 4

4. Read Aloud: 10-15 minutes
Today we will be reading *The Three Little Javelinas* by Susan Lowell. Stop reading after page 14. The students will practice identifying cause and effect and problem and solution.



6. Exploration: 15-40 minutes
Can you help the javelinas ((ha·vuh·lee·nuhz) out? Can you help them build a house that can protect them from the coyote? Your prototype today will be smaller than an actual house, of course. Again, the build should be able to fit inside this 3-cubic-foot box, with the lid closed. You may use any of the materials in your build kit as you like or from the community table; please remember others will need materials from this source as well. You will have about 25 minutes to build a free-standing home for the javelinas. And feel free to build in any devices that can stop the coyote from trying to catch a javelina again. And remember the environment (the climate) the javelinas live in. Is it different from yours? As you build, please think about what you would like to say when you share your build with others. The engineering design cycle is a perfect guide to help you prepare for your share as you go through your build today.

Tip: Here are a few different ways to make this a smaller build. Everyone pick one problem to try and solve. The supplies for the build are picked for the families. The littlest of the family members can draw what they want their house to look like.

Materials List:

- Regular Straws
- Jumbo Straws
- Masking Tape
- Sketch Book
- Standard Ruler
- Scissors
- 8 Pack of Markers
- Plastic Cutlery
- Paper Cups
- Paper Plates
- Brads
- Paper Clips
- Cotton Balls
- Sand
- Bag of Pebbles
- Plastic Wrap
- Aluminum Foil
- Small and Large Craft Sticks
- Cardboard
- Yarn
- Beads
- Plastic Cups
- Balloons
- Fishing Line
- String
- Paper Rolls
- Paper Plates
- Rubber Bands
- Wooden Skewers
- Plastic Tubing
- Glue Stick
- Liquid Glue
- Scotch Tape
- Hot Glue Gun
- Hot Glue Sticks
- Foam Stickers
- Velcro

7. Sharing and Reflection: 5-8 minutes
Divide the large group into groups of three for sharing and reflection. Using the Engineering Design Cycle as a framework, each build group will share with the other two groups in their triad, sharing their brainstorming/ideation process. How they went about their build, what changes and adjustments they had to make along the way, and how they tested their device. Remember to explain what each of the materials represent (cardboard is representing brick, cotton balls are tumble weed, etc., from the story).

8. Read Aloud: 5-6 minutes
We will be reading The Three Javelinas by Susan Lowell. We will be reading pages 14 to the end.

Extensions and Enrichment:
PBS Play and Learn
PBS Cat in The Hat
PBS Daniel Tiger Storytime
PBS Daniel Tiger At Home
PBS Cyberchase

Week 5: Science/STEM

A Place to Call Home | **Time** 60 minutes | **Target Audience** 5-8-year-olds with family members and/or caregiver

Activity Introduction

During our last visit we talked about different homes. We shared that homes are built based on the climate they are built in. A home, whether it is a house, apartment, hut, igloo, etc., must be built to stand up to the long-term weather in the area that they are built. Builders have to consider how the weather affects the soil or ground where the house is built. Homes are also built with materials, usually they are built with materials that are native (native means it originates from a certain place) to the area. How many of you were born here in [insert name of city where session is taking place, example: St. Louis? Then, you are a STL native because you were born here, or you came from here. The Cardinal Flower is a plant with flowers that is native to Missouri. It can grow in other states, but it started or originated in Missouri.

Conversation Prompts: We have looked at many homes where humans live. Have you ever thought about where the animals that live in your neighborhood might live? What does their home look like? What materials do you think their homes are made from?

Activity 5: Lesson Progression

1. Snack and Ice Breaker: 8 minutes
We have looked at many homes where humans live. Have you ever thought about where the animals that live in your neighborhood might live? What does their home look like? What materials do you think their homes are made from? View slide deck with pictures of animal homes in nature. Invite participants to answer the question prompts as they view each slide. What does their home look like? What materials are their homes made from?

2. Teaching in Room 9: 4 minutes
"Scientists, today our teacher is going to explore other places where animals live." After the video, have the family turn and talk about what animals they have seen near their home.

Teaching in Room 9 - STEM - Week 5

3. Read Aloud: 15 minutes
We will be reading *Carpenter's Helper* by Sybil Rosen.

Build Criteria: We are going to start today with putting our ideas, our designs on paper. We are going to draw the birdhouse we plan to build. Complete the Birdhouse Blueprint (next page) before you start to build. Make sure your drawing is complete (did you check all the boxes?). Once your blueprint is checked as complete, start securing your materials from the community tables and begin your build.

4. Sharing and Reflection 8-10 minutes
We will use our time today to secure our build and building materials in preparation for next week. Please place your blueprint and your birdhouse in the birdhouse storage container. Place all the materials you have collected for your birdhouse in your storage container along with your other supplies. Please make sure to clean your area thoroughly.

Birdhouse Blueprint

Complete a detailed drawing of the birdhouse you will build. The drawning must include the following:

- Birdhouse basic structure (there are several to choose from)
- Color (if you plan to paint or color your birdhouse)
- Perch(place where a bird stands outside the house)
- Entry (hole for going in and out)
- Shingles (cover and protect the roof)
- Any other decorations you will use
- String/hook (to hang or attach the birdhouse)

Week 6: Science/STEM

A Place to Call Home | **Time** 60 minutes | **Target Audience** 5-8-year-olds with family members and/or caregiver

Activity 6: Lesson Progression

1. Snack and Ice Breaker: 8 minutes
We are going to continue our look at animals and their homes in nature. We saw last time that different animals, depending on their size, food needs, and safety, live in a wide variety of homes in nature. View live feed from the bald eagle nest and answer the question prompts. (What does their home look like? What materials are their homes made from?)

Live Feed Bald Eagle Nesting - Viewing Link
Alternate Bald Eagle Feed - Viewing Link

3. Read Aloud: 15 minutes
We will be reading *Ruby's Birds* by Mys Thompson. The readers will practice making predictions and identifying cause and effect throughout the story.

4. Exploration: 20-45 minutes
We are going to complete the birdhouse build today. Your birdhouse will hang somewhere near your home, so our sharing today will spotlight each design as it hangs in place. We have created a birdhouse gallery with places for each birdhouse to hang. Next to each station is a place to clip your Birdhouse Blueprint. Please don't be concerned that your birdhouse does not look exactly like the blueprint. Remember when we use the Engineering Design Cycle, our plans can change as we move through our build. That's the great part about engineering, we get to use our great ideas as we work to solve problems and address needs. Once you have finished your build, place your birdhouse in the gallery.

5. Sharing and Reflection 15 minutes
Groups will hang their birdhouses in the Birdhouse Gallery along with their blueprint. Everyone will be able to walk through the gallery and view each of the birdhouses. Families will take their birdhouses home to hang in the front yard, back yard, or porch, etc.

6. Teaching in Room 9: 4 minutes
Scientists, today our teacher is going to remind us what scientists do. Use this video as the introduction to your celebration and ending to the program.

Teaching in Room 9 - STEM - Week 6

Extensions and Enrichment:
Bald Eagle Live Stream
Southwest Florida Bald Eagle Live Stream
St. Louis Zoo Live Stream

Contributor

Barbara Pener is a retired public school teacher who spent 30 years serving the Kirkwood School District in the St. Louis metropolitan region. She has taught health and wellness, chemistry, astronomy, technology, earth science, coding, and robotics. She earned her undergraduate degree in education from the University of Missouri-Columbia, and two master's degrees in technology and secondary science education from Webster University in St. Louis. Barbara is also a certified novel engineering trainer through Tufts University Center for Engineering Education and Outreach.

She currently serves as a STEM educational consultant for the Washington University-Institute for School Partnership (ISP), where she assists in the review and writing of science and technology curriculum, as well as professional development facilitation. Barbara embraces technology and recognizes the importance of its integration in the 21st century classroom. She continues to demonstrate her commitment to the STEM-infused classroom in her role as the STEMpact project coordinator for ISP: STEM Teacher Quality program. This program is designed to equip educators with the tools and strategies for authentic STEM classroom integration.

She also is the director of STEM Teacher Quality, a year-long experience for teachers in the St. Louis region. The program teaches educators the art of authentic STEM integration in any content-area classroom.

Barbara is also an instructor at Washington University where she teaches a course titled Geospatial Thinking for Teachers. The STEM course is designed to teach educators how to use a geospatial lens and GIS technology in the delivery and mastery of their content. She is also a volunteer participant in the STEMSTL Ecosystem, a collaborative consortium committed to equitable access to high-quality STEM learning for all students in the St. Louis metro region.

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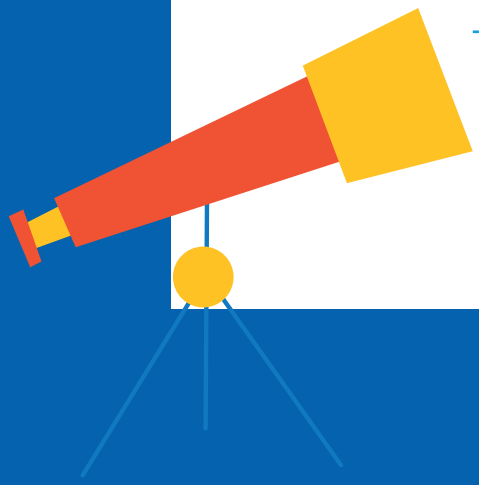

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