

**Hands-On
Learning**

Week 7

**1st
Grade**

Independent Study Packet



**Educational Activities
to Create, Problem Solve,
Move, and Have Fun**

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This Activity Packet is a collection of open-ended learning challenges that encourage your child to create, build, design, and move. For these activities, you will need materials like paper, tape, markers, and scissors. You will also need other materials, but feel free to substitute with what is around your home.

We recommend allowing your child to choose 2-3 activities per day. Each packet contains a selection of “choice boards,” and these can be used over

multiple days. You may also want to review the packet together and make a week long plan using the planner included, or your own.

Brain Breaks can be used throughout the week to support your child in moving their body when they need to take a break from focusing on academic work. The STEM Design Challenge: Plan, Reflect, Revise sheet can be used to help your child dig deeper into the open-ended learning challenges.

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WEEKLY PLANNER



Name: _____

Month: _____ Days: _____ - _____ Year: _____

☐ MONDAY

To do list:

Course activities:

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☐ TUESDAY

To do list:

Course activities:

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☐ WEDNESDAY

To do list:

Course activities:

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☐ THURSDAY

To do list:

Course activities:

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☐ FRIDAY

To do list:

Course activities:

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WEEKEND ACTIVITIES:

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Brain Breaks

What are brain breaks? Young learners often struggle to stay focused for long periods of time. Brain breaks are short periods of time when we take a step away from the routine work we are doing. They are quick and effective ways to energize and refresh our thinking.

★ Research indicates that brain breaks improve concentration and relieve stress. They increase productivity and provide children with opportunities to develop their social skills and creativity through kinesthetic activities. They also boost brain function! Use these short brain breaks to help refocus before getting back to work.

- 1. Dance Party:** Put on some fun music and dance!
- 2. Keep It Up:** Get a beach ball and keep it from hitting the ground. Add an additional ball to make it even more fun!
- 3. Jump Counting:** Have your child count while jumping with each count. Challenge them by counting by twos, fives, or tens!
- 4. “Head, Shoulders, Knees, and Toes”:** Use a movement song like this one to get your child moving. For added fun, see how fast you can go! This is a great one for young learners.
- 5. Freeze Dance:** Similar to the Dance Party brain break, this one incorporates listening skills. When the music stops, your child must freeze and hold their position until the music begins again.
- 6. Physical Challenges:** Engage your child in the classic challenge of rubbing their belly, and patting their head. Another version to try is to grab your nose with your left hand, and grab your left ear with your right hand.

Brain Breaks

- 7. Race in Place:** Have your child stand up and run in place. On your signal, your child will get back to work.
- 8. Simon Says:** Play this oldie but goodie to see how well your child can follow specific directions...but only if Simon Says!
- 9. Rock, Paper, Scissors:** Teach your child to play this fun, quick game and see who wins! Best out of three.

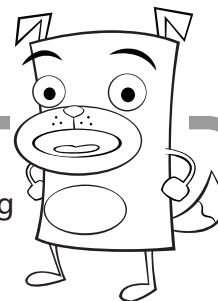
For another approach to brain breaks, try these:

- **Drawing or coloring**
- **Mental math:** Give a sequence of instructions for learners to follow while doing math in their head.
- **Invisible pictures:** Have your child draw an invisible picture in the air and try to guess what it is.
- **Story starters:** Begin a story for one minute and let your child finish the story on their own.

Name _____

Date _____

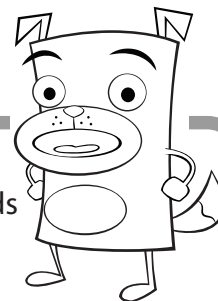
STEM Design Challenge: Plan, Reflect, Revise



Part 1: Plan

Directions: Create a plan for your STEM design challenge by drawing pictures or writing words in the space provided.

STEM Design Challenge: Plan, Reflect, Revise



Part 2: Reflect

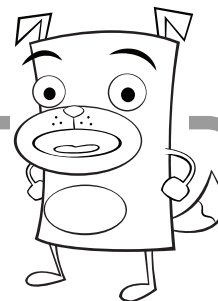
Directions: Reflect on your STEM design challenge by drawing pictures or writing words in the space provided. Think about the following questions:

- What worked?
- What did you change?
- What did you learn?
- What are you still wondering?

Name _____

Date _____

STEM Design Challenge: Plan, Reflect, Revise



Part 3: Revise

Directions: Draw a picture and/or write words to show how you would change your design based on what you learned!

Whimsical Activity Choice Board

Directions: Choose one or more activities to complete at home.

Pretend to be a character in your favorite book.



Find a family member or a friend and give each other "dream assignments," like "Dream about a singing whale." In the morning, check in to see if they did their assignment.



If a bird lands near your home, ask them to send a message to a nearby friend. Ask your friend later if they received it.



Go to any room of the house, and give the furniture a name. Really try to select the name that feels right. Ask the furniture if they like their name, and some other questions about their life.



Find two plants, preferably one indoors and one outdoors, or each in different rooms, and imagine they are penpals. Write letters from one to another throughout the day, and read them to them.



Choose a time of day that is called Bad Mood O'Clock. It is when everyone is usually in a low mood. When Bad Mood O'Clock strikes, remind one another, "It's Bad Mood O'Clock," drink water, and laugh.



Movement Card Game



Our physical health is so important! Staying active not only promotes strong muscles and bones, it also helps with stress reduction, mental health, and even the quality of our sleep! Here is a fun at-home physical activity for the whole family to enjoy! Using simple materials, children will create a movement card game that the family can play together. Geared toward children in preschool through first grade, this activity is a great way to incorporate early reading and math skills while staying active! Your family will love putting their own spin on this fun and easy at-home game all about movement!

What You Need:

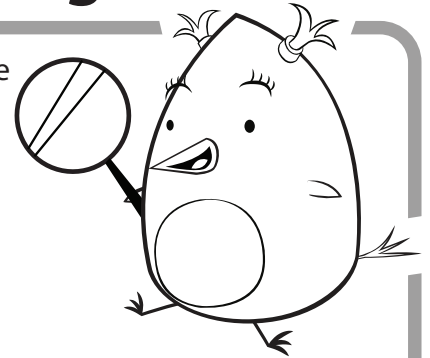
- Index cards or enough paper to make 20 small cards (about the size of a playing card)
- Markers

What You Do:

1. Using index cards or 10 small pieces of paper, write one movement on each card (e.g., jumping jacks, spins, hopping on one foot, touching toes, reaching for the sky, etc.).
2. Using 10 more index cards or pieces of paper, write the numbers 1–10 (one number per card).
3. Stack each set of cards (numbers and movements) next to each other facedown.
4. Invite your child to pick a card from each deck, then read the cards aloud.
5. Have all players stand up and complete the movement for the number of times specified (e.g., 8 jumping jacks).
6. Repeat with a new player choosing cards.
7. Play until you have gone through the entire deck at least one time.
8. Variation: Use a timer to see how many repetitions each player can complete in a given amount of time. For example, how many jumping jacks can each player complete in 30 seconds?

At-Home Scavenger Hunt for Young Learners

Directions: Explore your home and the area around your home to find the items listed below. Once you find the item, write a check mark next to it.



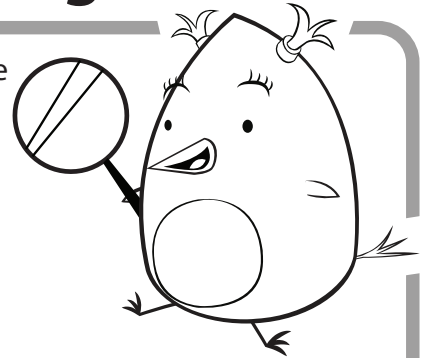
Inside

- | | |
|---|--|
| <input type="checkbox"/> Find something very soft. | |
| <input type="checkbox"/> Find an animal in a book. | |
| <input type="checkbox"/> Find a pair of matching socks. | <input type="checkbox"/> Find a photo of someone you love. |
| <input type="checkbox"/> Find a character eating in a book. | <input type="checkbox"/> Find someone being helpful in a book. |
| <input type="checkbox"/> Find a container that holds small things. | <input type="checkbox"/> Find two things that are green. |
| <input type="checkbox"/> Find an item that you can see yourself in. | <input type="checkbox"/> Find something that uses electricity. |

What is your favorite item from the indoor list? Draw it below.

At-Home Scavenger Hunt for Young Learners

Directions: Explore your home and the area around your home to find the items listed below. Once you find the item, write a check mark next to it.



Outside

- | | |
|---|--|
| <input type="checkbox"/> Find a stick that is smaller than your hand. | |
| <input type="checkbox"/> Find something that smells good. | |
| <input type="checkbox"/> Find something that is round. | <input type="checkbox"/> Find something that is heavy. |
| <input type="checkbox"/> Find a stick that is larger than your hand. | <input type="checkbox"/> Find something orange. |
| <input type="checkbox"/> Find something that needs sunlight to live. | <input type="checkbox"/> Find something that flies. |
| <input type="checkbox"/> Find something that helps people stay safe. | <input type="checkbox"/> Find something that crawls. |

What is your favorite item from the outdoor list? Draw it below.

Building Brick Challenge: Build a Tall Tower



What do you think the tallest building in the world is? The Empire State Building? Big Ben? Nope, it's the Burj Khalifa located in Dubai! It soars over 2,716 feet into the sky.

In this activity, your child will be challenged to build a tall tower of their own out of building bricks! The instructions include question prompts to guide students through the design challenge, and encourages them to adapt their designs until they are satisfied with the final product.

What You Need:

- Building bricks of any size and shape

What You Do:

1. Ask your learner, "Can you build a tall tower?"
2. Encourage your child to make a **plan**. Ask, "How many bricks do you think you will need?" or "Are you going to build a foundation?"
3. Give your child time to **create** their design. Ask, "Do you need help?" (They should ultimately be doing most of the building.)
4. Have designers **play** with their new design. Ask, "What kind of building is this?" or "Who lives in this tower?"
5. After testing out the design, ask your learner about ways they can **adjust** their design. For example:
 - Is there anything you want to change about the tower?
 - How can you make the tower stronger?
 - Do you need other tools or objects to make the tower taller?
 - Do you think the tower will stay up if the wind blows, or during a storm or earthquake?
6. Challenge designers to share their new designs. They can record a video, or draw a picture of the design and add a few sentences describing it. Ask some prompting questions, such as:
 - What did you enjoy the most about building the tower?
 - What would be the purpose of the tower?
 - Where would this tower be the most useful?
 - Where would this tower be the least useful?

Building Brick Challenge: Build a Tall Tower



Amplify this challenge! Choose one or more of the following questions to add a new level of difficulty to the challenge:

- Can you count the number of bricks you used?
- Is there another way you can measure the height of the tower?
- Can you build a tower as tall as you are?
- Can you build a city of towers?
- Can you rest something on top of your tower?

Design Your Own Planet



Imagination is a spark needed to make the best inventions or art. In this activity, Design Your Own Planet, learners will imagine a new planet in the solar system. What will it look like? What are the inhabitants like? Children can let their imaginations run wild and include as much scientific thinking as they desire with this design challenge. While you are leading your child through the activity, allow them to work independently. Geared toward children from preschool through second grade, this fun activity will intertwine arts with science, and get your child's creative juices flowing.

What You Need:

- Internet access
- Craft materials around the house. Some ideas are:
 - Paper
 - Tape
 - Glue
 - Balloons
 - Paint
 - Paintbrushes
 - Construction paper

What You Do:

1. Do a search online for pictures of Earth from outer space and show them to your child. Talk to your child about what Earth looks like, and discuss different environments, such as rainforest or deserts.
2. Now show them online photos of other planets and explain that there are other planets in our solar system. Ask your learner, "Can you design and make your own planet?"
3. Encourage your child to make a **plan**. Ask your learner, "What will your planet look like? What animals will live on the planet? What is the name of your planet? What materials do you need to make your vision come true?"
4. Give your child some craft materials and have them **create** their design. Allow them to work independently, but be available with ideas and suggestions if they ask for help. As your child creates their planet, ask them, "Is this what you imagined? What other materials do you need for your planet?"
5. Tell your little designer to **play** with their new planet. Have them imagine landing on their planet in a spaceship. What would they do? What would they see?
6. After imagining their journey through their planet, ask your child what ways they can **adjust** their design. For example, ask questions like, "What do you want to change about your planet? What do you wish your planet had?"

Design Your Own Planet



7. Have your creator make any changes they find necessary.
8. Challenge designers to **share** their planet. They can record a video or draw their design on paper. They can mention what the planet looks like, what the temperature and environment is like, and what animals live on the planet.

Amplify this challenge! If your child enjoyed this challenge, take them one step further.

Ask them one or more of these questions:

- Can you create different ecosystems or environments on your planet?
- Can you imagine other creatures living on the planet that do not exist on Earth? Do they breathe? What do they do?

Design Challenge: Building a Bridge



This challenge is a great introduction to design thinking because it will capture your child's interest in a way that is fun and empowering. The task at hand is to design a bridge that is made out of marshmallows and toothpicks, focusing on its functionality. The bridge must be six inches long and able to hold four medium-sized paperback books.

We have laid out step-by-step instructions that are useful to follow as a guideline of the design thinking framework, but feel free to go beyond what we have written out. Your job is to help your child through the design thinking process by teaching them the importance of empathy, brainstorming, and prototyping. Each step in the design thinking process is essential, so make sure to complete each step in the instructions.

What You Need:

- Marshmallows
- Toothpicks
- Four medium-sized paperback books
- Tape measure or ruler
- Pen and paper for note-taking

What You Do:

1. Explain the prompt to your child by telling them that they have been asked to design a bridge that is six inches long and can hold four medium-sized paperback books.
 - a. Allow your child to play with a ruler so they can visualize six inches, and allow them to hold the four books so that they can have a better idea of how strong their bridge should be.
2. Next, ask your child to **define** a bridge and its purpose. If you'd like, feel free to look at pictures of bridges online so that your child can see a variety of designs. Remind your child that they should remember the purpose of a bridge when they start to make theirs. Some questions you can ask your child include:
 - a. What is the purpose of a bridge? (Potential answer: A bridge is a structure that connects two pieces of land across water. A bridge must be able to carry cars and other objects on it, and it must be able to stand on its own over a body of water.)

Design Challenge: Building a Bridge



- b. What, specifically is the purpose of your bridge? (Answer: To be six inches long and hold four books.)
3. Allow your child to **ideate**. Give them a pen and a piece of paper, and ask them to brainstorm various designs of bridges they can make using toothpicks and marshmallows.
- a. If your child has a difficult time drawing or writing their ideas, feel free to talk it through with them while you write their ideas down on paper.
4. After your child has finished brainstorming, tell them to choose the design they think would be best. Refer back to their answers from step 2, and ask them to prioritize the purpose of the bridge when choosing which one to make.
- a. This is an important step of the design thinking process because it teaches your child to prioritize the functionality of their design over their personal preferences. This also prevents them from getting too emotionally attached in case their design doesn't work.
5. Now, for the fun part: **prototyping**, or building! Give your child the marshmallows and toothpicks, and let them begin making their bridge.
- a. Allow your child to work independently as much as possible, but be sure to help out wherever is needed.
6. Finally, it's time to **test** your child's prototype. Ask your child the following questions while they test out their bridge:
- a. Does the bridge you created stand on its own without falling?
- b. Does the bridge measure six inches in length?
- c. Can the bridge hold four books without toppling?
7. If your child's bridge is unsuccessful in any way, make sure that they aren't discouraged. Frame their failure as an opportunity to try again, and help identify what parts of their design they need to improve. Take your child back to the start of the design thinking process, and repeat these steps until they have created a bridge they are proud of!

Design Challenge: Making a Boat



In this activity, your child will be tasked to create a boat that can successfully float 25 pennies. They can be creative with how they make their boat and can use any household items. We have given instructions which you can use to guide your child through the design thinking process. We have also given step-by-step instructions for making a boat in case your child is stuck and needs some inspiration.

What You Need:

- Plastic straws
- Duct tape
- Plastic wrap
- Plastic container/Tupperware
- Mini paper cup
- 25 pennies set aside in a plastic bag
- Pen and paper for taking notes

What You Do:

1. Before your child gets to work, make sure that they fully understand the prompt of this challenge. Explain to them that they're supposed to use the materials you're providing in order to create a boat that will hold 25 pennies and stay afloat.
2. Ask your child some of the following questions so that they start thinking about why certain things float and why others sink:
 - a. Besides a boat, what are some things you know that float in water?
 - b. What are some things that sink in water?
 - c. Why do you think a boat is able to float? (Answer: the concept of buoyancy.)
3. Explain to your child that buoyancy is a force underneath an object that pushes it upward. When an object (like a boat) has more buoyancy, it can float higher on the water because it is being pushed upward with more force.
4. After your child fully understands the prompt of this challenge and has considered the properties of objects that float, they can begin **brainstorming** different ways to build a boat of their own.
 - Feel free to show your child all the materials you will provide, but don't let them start building just yet. Instead, have them draw or write down their ideas on a piece of paper so that they can refer back to them later. (You can also write them down if you'd like.)
5. Once your child is done brainstorming, ask them to choose the idea they think will work best. Be sure to ask them why they are choosing this design, emphasizing the purpose of the boat (to float 25 pennies).

Design Challenge: Making a Boat



- This is an important step of the design thinking process because it teaches your child to prioritize the functionality of their design over personal preferences. This also prevents your child from getting emotionally attached to one design.
6. Next, allow your child to begin **building**. Be sure to supervise for safety purposes, but allow them to work independently through challenges as much as possible.
 7. After your child is done building, it's time to **test** the design. Have your child place the 25 pennies on their boat, counting them aloud one by one. Then, fill a container with water to serve as a "pool" for the boat to float on. Next, have your child place their boat on the water and observe whether it successfully floats the pennies.
 - a. If your child's boat successfully floats with 25 pennies in it, congratulate them for their success!
 - b. If your child's boat sinks, make sure they aren't discouraged. Ask your child what they think went wrong and why. Then, encourage them to go back and repeat this process in order to make a boat that works next time.

Below, we have written instructions for building a boat in case your child is struggling to come up with ideas. Feel free to have your child build something entirely on their own, or use the procedure below:

1. First, take a piece of duct tape and stick some plastic straws to the adhesive side of the tape.
 - Ask your child why plastic straws are a useful item to make a boat out of. (Answer: plastic straws are buoyant, meaning they're able to float in water.)
2. Next, wrap your straws and duct tape in plastic wrap.
 - Ask your child why they think using plastic wrap is useful. (Answer: plastic wrap makes the boat "waterproof.")
3. Tape down the plastic wrap using duct tape to secure it in place.
 - At this point, you have finished building the boat's structure.
4. After your child has finished building their boat, have them tape down a small paper cup to serve as a weight holder for their pennies.
 - Ask your child why they think it's important to have a weight holder. (Answer: a weight holder balances out the weight of the boat, so it won't tip over when you place the pennies on top.)
5. Next, have your child add the pennies inside the cup one at a time, counting how many there are.
6. Finally, test out your child's boat!

Fish Patterns



If you looked underwater in any ocean or sea you would see a stunning variety of patterns on all of the fish. From polka dots and stripes to zig-zags and geometric designs, fish are unique creatures with an incredible variety of features. These naturally occurring looks are popular in fashion, too. This activity combines math patterns with design. Using markers and construction paper, your child will design their own fashionable fish while practicing how to create a variety of patterns.

What You Need:

- Construction paper
- White paper
- Markers
- Pencil
- Scissors
- Craft glue

What You Do:

1. Help your child draw the outline of a fish on a sheet of white paper. Try to make it as large as possible to fill the page.
2. Have your child cut the fish out of the paper.
3. Encourage them to divide the fish up with lines. Within each of the shapes they create with their lines, there will be a different pattern.
4. Ask your child to name as many patterns as they can think of before they begin drawing. Some of these patterns may include: zig-zags, polka dots, plaid, stripes, argyle, diamonds, and geometric patterns.
5. Have them use markers to create a completely different pattern in each section of the fish. They can be as colorful and complex as they like.
6. Glue the patterned fish to a solid sheet of construction paper and hang it on a wall to help remember the variety of patterns that your child can create!

Create a Collagraph



Print-making is thought to have originated in China after the invention of paper in the 2nd century AD. This activity features a special kind of print-making called collagraphy, where flat materials are layered and glued onto a base, then painted and used to create a final finished print. Using this ancient art is a great way to teach your child about history and inspire their creativity at the same time.

What You Need:

- Pencil
- Sketch paper
- Cardboard
- Various textured materials, such as burlap, sandpaper, string, or fabric
- Craft glue
- Scissors
- Tempera paint
- White paper
- Black fine point marker

What You Do:

1. Before you get started, go online with your child and look at collagraphs by Barbara Garrison, whose works have graced the pages of children's books such as *The Frog House*. Note how the different textures she uses affects the look of the finished picture.
2. Have your child think about how they want their finished print to look, and encourage them to make a few sketches.
3. Next, have your child use scissors to begin cutting shapes out of the materials, using the sketch as a guide.
4. Now they can layer the materials onto the cardboard base, securing them with craft glue. Remind your learner to think about how the different textures and shapes will look after they've been printed.
5. Set the collagraph aside, and let it dry for 2–3 hours.
6. Once it's dry, it's time to start printing! Have your child paint over the collagraph with tempera paints. They can use as many colors as they want, using different colors for different parts of the painting.
7. Have them press the painted collagraph onto a sheet of paper to create their print. They can paint and print their collagraph as many times as they like!
8. Set the prints aside to dry.
9. When dry, your child can use a fine point marker to add details to finish the artwork.
10. Let them pick the perfect spot to display their finished print.