summer activity guide

Invention & Imagination

ages 16-18

About the Summer Activity Guides

Summers are for fun and engaged learning. In 2020 as the impact of the pandemic is widely felt, summer opportunities will be different for young people, families, and afterschool and summer program staff. The Summer Activity Guides were developed to help engage youth with supportive adults in a range of places.

The activities and resources in the Summer Activity Guides are intentionally designed to support youth-serving summer programs in driving consistent engagement and providing ongoing opportunities for youth skill-building and emotional well-being. In addition to the activities for youth, supplemental materials will be available to support professional development and enhance family engagement.

The Guides include 150 original activities and challenges organized by four different age groups (5-9) (10-12) (13-15) (16-18). The activities are adaptable for in-person and virtual instruction, or a hybrid of both, as well as sent as take-home packets.

All activities should be safely executed and aligned with state and local health guidelines.

Wildlife Journal

CHALLENGE DESCRIPTION

In this STEAM challenge, teens will keep an illustration journal of various wildlife they see in and around their community. As part of the 'Invention & Imagination' unit, this challenge is designed to help teens learn about the different types of animals that live in their community. This challenge supports the development of creativity, critical thinking, and problem-solving skills.

SUPPLIES

- A journal, notebook, or loose-leaf paper
- Pen or pencil
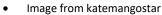- Markers, colored pencils, or crayons

STEPS

- Nature is all around us! Have you ever stopped to look at the different animals that live in your neighborhood?
- In this challenge you will keep a wildlife illustration journal where you will draw pictures of the different animals you see around your community. This can include different types of birds, insects, squirrels, or anything else you come across.
- Take about 30 minutes to walk around your community with your journal and a pen or pencil.
- Whenever you see a new animal, draw a picture of it in your journal and write down any identifying characteristics (size, color, shape, what it was doing or eating, etc.)
  - If you'd like, you can also add color to your illustrations for more detail
- After you have finished your walk, try to identify the animals you found using the following website: https://www.backyardnature.net/i-ident.htm
- Once you've identified the animals, answer the following questions in your journal:
  - What is this animal called?
  - What does this animal eat?
  - What is unique about this animal?
- Continue your wildlife journal walks every day for at least a week (feel free to extend this over a couple of weeks if you'd like!)

CREDITS

- Image from katemangostar

ADAPTATIONS

- Teens can also take pictures of the various animals they find and create a digital journal using a Word document.
- If facilitating in-person, teens can work together by walking in the community and researching the animals as a group.
- If teens cannot go outside, they can research animals that are native to their area to complete this challenge.

EXTENSIONS

- You can extend this challenge by going to a different community to see how the animals differ in that area.
- Explore how the animal species you observed impact your community. Are they carnivorous, pollinators, etc.?
- Don't have a journal or notebook? Make your own! Staple or tie together loose-leaf paper and create a cover for your journal that you can decorate.
- This challenge can also be done with plants! Keep an illustration journal of the different animals you see around your community, such as trees, flowers, etc.

Melted Crayon Art

ACTIVITY DESCRIPTION

In this art activity, teens will create an abstract art design by melting crayons. As part of the 'Invention & Imagination' unit, this activity supports the development of creativity, self-expression, problem solving, and creative inquiry.

SUPPLIES

- Crayons
- Canvas or cardstock
- Pencil sharpener, food grater, or knife
- Wax paper
- An iron or hairdryer

STEPS

- In this activity you will create melted crayon art in the design of your choosing.
- Take out your crayons and select the colors you would like to use. You can use the whole rainbow or go with a specific palette (such as only blues and purples).
- Use a pencil sharpener, grater, or similar to create piles of colorful crayon shavings.
- On your canvas or paper, lay out your design using the crayon shavings. You can create patterns, shapes, designs, or make it random!
- Cover your design with wax paper – this stops the pieces from moving around or flying off the canvas.
- Use your iron or hairdryer to melt the crayon shavings. Keep melting until you have your desired design.
    - Be careful, this can get hot and wax can splatter!
- Let the wax dry for at least 20 minutes to ensure it is completely cooled and hardened.
- Remove the wax paper and admire your finished work of art.

ADAPTATIONS

- If facilitating virtually or digitally, create a crayon art to show teens as an example.
- If facilitating virtually, create a time for teens to share their crayon art creations with one another.

EXTENSIONS

- Melt your crayons on black or colored cardstock, rather than white, for a different effect.
- Draw images underneath or on top of your melted crayons to add to the design. You can cut out images from magazines and glue them to your canvas before melting your crayons.
- There is a whole world of crayon-related art you can try! Some examples include creating candles out of melted crayons, crayon jewelry, crayon ornaments, etc.
    - Check out this site for more inspiration: https://heatherednest.com/melted-crayon-art-craft-ideas/

QUESTIONS FOR DISCUSSION

- What did you learn from this activity?
- What was the inspiration for your design? Was it hard to create? Why or why not?
- Did you make any mistakes? How did you fix those mistakes?

Build Your Own Speakers

ACTIVITY DESCRIPTION

In this STEM activity, teens will build a speaker for their cellphone or MP3 player using household objects. As part of the 'Invention & Imagination' unit, this activity supports the development of analyzing situations, solving problems, creativity, design thinking, and critical thinking.

SUPPLIES

- An empty paper towel roll
- A paper or plastic cup
- Scissors
- Cellphone or MP3 player
- Markers or colorful tape (optional)

STEPS

- In this activity, you will build your own speakers to use with your cellphone or MP3 player.
- Trace the open end of your paper towel roll onto the side of your cup, towards the bottom of the cup.
- Cut a hole the exact size of the circle you traced, so the paper towel roll fits snugly into the hole.
- Cut a square slit the width of your cellphone or MP3 player along the other edge of the paper towel roll that is not inserted in the cup.
- Stick the speaker end of your cellphone or MP3 player into the slit in the paper towel roll.
- Play some music and hear your speakers in action!
- So, how does this work? When you place your phone speaker into the paper towel roll, the roll feeds sound into the cup. This directs the sound out at a smaller angle than it would have come out without the speaker. Sound directed into a smaller angle sounds louder.
  - For example, think of how your voice sounds louder when you speak into a megaphone or a rolled-up piece of paper – this is the same concept!

ADAPTATIONS

- If facilitating virtually, create a space for teens to show off their speakers and try them out with their peers.

EXTENSIONS

- Decorate the empty paper towel roll and cup with a fun or colorful design to personalize your speakers.
- Experiment with creating speakers that have cups on both ends of the paper towel roll, and prop your cellphone upright in the middle of the roll. Is the sound louder?
- Look up ways to make a DIY tripod or selfie-stick for your cellphone.
- Explore how your cellphone or computer speakers work.

QUESTIONS FOR DISCUSSION

- What did you learn from this activity? Did anything surprise you?
- What modifications could you make to these speakers to improve how they work?
- Would the sound be different if you used a shorter tube like a toilet paper roll instead of a paper towel roll? Why or why not?
- Would the sound be different if you used glass or wooden bowls instead of paper cups? Why or why not?

CREDITS

- Activity inspiration from https://www.thecrafttrain.com/diy-iphone-speaker/

Wind-Powered Vehicle

ACTIVITY DESCRIPTION

In this STEM activity, teens will use design and create a wind-powered vehicle using household objects. As part of the 'Invention & Imagination' unit, this activity supports the development of analyzing situations, solving problems, creativity, design thinking, and critical thinking.

SUPPLIES

- Any materials found around the home, such as tape, paper, pens, string, glue, clips, scissors, rubber bands, cardboard, popsicle sticks, skewers, straws, etc.
- Fan or hairdryer (optional)

STEPS

- In this activity, you will design and create a wind-powered vehicle that can move on its own.
- Collect all the materials that you will need to build your vehicle.
- Design and build a vehicle that is powered by only the wind.
    - Your vehicle can be any size or shape, as long as it has 4 wheels and can move without be touched, pushed, or rolled downhill.
- Once your vehicle is ready, place it on a flat, smooth surface and see how far it travels.
    - To create "wind" you can blow on your vehicle, or use a fan or hairdryer.
    - If your wind-powered vehicle does not move, reassess your design and make any necessary modifications to ensure it works.
- Take a photo or video of your vehicle in action to share with others!

ADAPTATIONS

- If facilitating virtually, create a time for teens to share their vehicle designs with one another and show off how their vehicle moves.
- If teens need inspiration, have them look up videos of other wind-powered vehicles.

CREDITS

- Image from CT After School Network STEM Mini-Conference

EXTENSIONS

- Decorate your vehicle with a fun design.
- Create a vehicle using another form of sustainable energy, such as solar power.
- Research famous alternative energy scientists or companies famous for using alternative energy, such as Gerald Pearson, Lewis Howard Latimer, or Tesla. What were their inventions? How have they influenced today's society?

QUESTIONS FOR DISCUSSION

- What did you learn from this activity? What was challenging about it?
- What did your vehicle look like? What were the main features of your design?
- Was your overall vehicle design successful? What worked? What didn't work?
- Would it have been helpful to have different materials? If so, what?
- How did the design of your vehicle compare to your peers' vehicles? What were the differences/similarities?

Design for My Community

ACTIVITY DESCRIPTION

In this STEM activity, teens will create an invention that helps to solve a problem they have identified in their community. This activity also builds on themes discussed in the 'Passion & Purpose' unit. As part of the 'Invention & Imagination' unit, this activity supports the development of analyzing situations, solving problems, perspective taking, and creativity.

SUPPLIES

- Any materials found around the home, such as tape, paper, pens, string, glue, clips, scissors, rubber bands, garbage bags, etc.

STEPS

- In this activity, you will think of a challenge or issue in your community. Think back to the community issue you identified in the 'Passion & Purpose' unit.
- Once you have your issue in mind, think of an invention that could help fix that problem. For example:
    - If you notice an issue with the environment, you could design something to keep your community clean such as a recycling center or robot trash collector.
    - If you notice an issue with accessibility for individuals with disabilities, you could design ramps to help people with wheelchairs navigate your community, or a system to communicate with people with vision or hearing impairments.
- Once you have decided upon your invention, write down what specific qualities the invention should have and what it should be able to do.
- Collect materials from around your home and build a prototype of your invention.
- Test your invention. Does it work how you wanted? Make any necessary improvements or changes.

ADAPTATIONS

- If teens do not have the necessary materials to build a prototype, they can draw a detailed image of their invention with a description or labeled parts instead.

CREDITS

- Image from unsplash

EXTENSIONS

- Create a 'pitch' for your invention. Come up with a 2-minute presentation about what issue your invention addresses, how it works, and why it will make a difference. Record your pitch or present it for your peers.
- What are the next steps you would need to take in order to get this invention funded and developed? Create a plan to make this creation a reality.

QUESTIONS FOR DISCUSSION

- What did you learn from this activity? Did anything surprise you?
- What was the community issue you were trying to address? How did you come up with the idea for your invention?
- Was your invention successful? Why or why not?
- How can you continue working to address your selected community issue?
- Have you ever considered a career as an engineer or designer? Why or why not?

The 50 State Afterschool Network

The Summer Activity Guide has been developed for the 50 State Afterschool Network with leadership from the Georgia Statewide Afterschool Network to engage and support children and youth nationwide.

In each state, the afterschool network is broadening opportunities for youth. Seeking equitable outcomes for underserved children to succeed in school and future jobs, a statewide afterschool network brings together cross-sector leaders with a common vision and coordinated strategy to advance quality afterschool and summer learning programs

Alabama Afterschool Community Network
Alaska Afterschool Network
Arizona Center for Afterschool Excellence
Arkansas Out of School Network
California AfterSchool Network
Colorado Afterschool Partnership
Connecticut After School Network
Delaware Afterschool Network
Florida Afterschool Network
Georgia Statewide Afterschool Network
Hawai'i Afterschool Alliance
Idaho Afterschool Network
Afterschool for Children and Teens Now (ACT Now) Coalition (IL)
Indiana Afterschool Network
Iowa Afterschool Alliance
Kansas Enrichment Network
Kentucky Out-of-School Alliance
Louisiana Center for Afterschool Learning
Maine Afterschool Network
Maryland Out of School Time Network
Massachusetts Afterschool Partnership
Michigan After-School Partnership
Ignite Afterschool (MN)
Missouri AfterSchool Network
Mississippi Statewide Afterschool Network
Montana Afterschool Alliance
Beyond School Bells (NE)

Nevada Afterschool Network
New Hampshire Afterschool Network
New Jersey School- Age Care Coalition
NMOST (New Mexico Out of School Time) Network
New York State Network for Youth Success
North Carolina Center for Afterschool Programs
North Dakota Afterschool Network
Ohio Afterschool Network
Oklahoma Partnership for Expanded Learning Opportunities
OregonASK
Pennsylvania Statewide Afterschool/Youth Development Network
Rhode Island Afterschool Network
South Carolina Afterschool Alliance
South Dakota Afterschool Network
Tennessee Afterschool Network
Texas Partnership for Out of School Time
Utah Afterschool Network
Vermont Afterschool, Inc.
Virginia Partnership for Out-of-School Time
Washington Expanded Learning Opportunities Network
West Virginia Statewide Afterschool Network
Wisconsin Afterschool Network
Wyoming Afterschool Alliance