

# Think like a **STEM**ist



*This guide* has the tools and knowledge you need to inspire learners to think like **STEMists!** Refer back to discover valuable insights into each activity, including tips to support and challenge your learners. Plus, you'll find ideas for extending lessons and other resources that keep the curiosity alive.

Use these quick-think challenges during downtime, as warm-ups or as concept brainstorming exercises. With PCS Edventures, it's simple to engage learners with exciting and thought-provoking STEAM activities.

## **S**CIENCE in the Kitchen — Potato Salad with Eggs

**About this activity:** Learners identify an ingredient in their favorite meal and describe its transformation. They may choose to focus on how an ingredient changes from its raw to its cooked state or explore the changes that occur when it is combined with other ingredients (for instance, the interaction between tea leaves and boiling water).

**Level up this activity by** asking learners to draw out a *process diagram*, or a visual representation that shows the sequential order of steps learners described for their chosen food product. Process diagrams are commonly used in many fields, so use this as a starting point for discussing STEAM careers (i.e. manufacturing, software development, project management, and scientific research) in your learning environment!

## **S**CIENCE in the Environment — Our Environmental Impact

**About this activity:** Learners reflect on how human interactions with the environment affect the health of our planet. Encourage them to consider both positive and negative actions, as both will significantly influence Earth's future in the coming years.

Try suggesting these environmentally beneficial actions:

- Reforestation
- Sustainable agriculture
- Wildlife protection
- Recycling
- Conservation efforts

OR try suggesting these environmentally harmful actions:

- Pollution
- Overfishing
- Wildfires
- Landfills
- Poaching

## TECHNOLOGY Through the Years — *The Evolution of Devices*

**About this activity:** Through the lens of technological devices, learners will explore how inventions evolve. The goal is to think like innovators. Which features stood the test of time? Which were replaced or modified and why?

Try suggesting these devices to help get learners started:

- Gaming consoles
- Personal computers
- Wristwatches
- Music players
- Televisions
- Video cameras
- Appliances like refrigerators, washing machines and vacuum cleaners (many of which now have touch screens or can be controlled remotely)

**Level up this activity by** asking learners to elaborate on whether or not they think changes made to their chosen device were an improvement or challenge them to think about how it can be improved.

## TECHNOLOGY and Automation — *Robot Takeover!*

**About this activity:** Learners practice their persuasive writing skills to convince their audience to use a robot to complete a task. Ask them to imagine they're writing an ad script for an infomercial like the ones they may have seen on television. An example is provided as well to help them get started.

Try suggesting these familiar robots to help get learners started:

- Kiosks for ordering food in restaurants
- Self-checkout machines
- Customer service robots (online chat features)
- Agricultural robots that can plant seeds in predetermined patterns
- Autonomous vehicles
- Sensors and cameras that monitor traffic flow, detect accidents and optimize traffic signal timings
- Surgical robots
- Robo-call telemarketers

**Level up this activity by** delving into the effects of transitioning to automation and exploring the ethical considerations involved in doing so. How can society adjust to ensure displaced workers are supported? Create a pros and cons list to weigh the benefits and drawbacks of automating tasks.

**Extend this activity by** having learners record and share their infomercial using a video camera or podcasting microphone!

## **E**NGINEERING on the Streets — *Roadway Redesign*

**About this activity:** Hit the road and check out how engineers have gone the extra mile to make our roads safe. Learners consider the design choices behind road signs, tech gadgets, structures and other safety features they've observed while riding their bikes or traveling in their family car.

**Extend this activity by** turning it into a STEAM challenge! Encourage learners to adopt an engineering mindset. Have them brainstorm a design solution to a road-related problem they have observed. Some examples include:

- Bumpy rides
- Icy/snow-covered streets
- Excessive roadkill
- Traffic jams
- Potholes

Can they sketch or build a model of their design?  
There's no limit to how far you can take this activity!

## **E**NGINEERING with Alternative Energy — *Transforming Energy into Power*

**About this activity:** With this journal prompt, learners think about how power can be created. Don't worry if they're not experts in alternative energy. The activity asks that they THINK about the process. It's not about getting it right. Instead, encourage learners to use prior knowledge and deductive reasoning skills to think like an engineer.

Try these suggestions to help get learners started:

- Wind power
- Solar power
- Geothermal power
- Biomass energy
- Tidal or wave power

**Level up this activity by** having learners sketch a labeled diagram that shows how they think power is generated in their chosen example.

## **RT in the Wild** — *Wildlife Shelters*

**About this activity:** What resources are available in different habitats? Learners can think about this as they use their observation skills to describe and notice the different materials animals use to construct their shelters.

**Level up this activity by** connecting animals' designs to those of humans. Check out the hydropower example from the Activity 6 journal prompt. Discuss how nature inspires people to create art, both for function and beauty.

**Extend this lesson:** Many animals build shelters to help camouflage themselves or their food supply. Explore how colors and textures play a role in distinguishing prey from predators.

## **RT in Our Emotions** — *Changes in Mood and Emotion*

**About this activity:** Art is transformative. Whether it's in a fancy museum, street art or something we've created ourselves, art has the power to make a mark on our hearts. In this activity, learners think about how art impacts moods and emotional mindsets. They will craft a journal entry illustrating how art affected them personally.

Remind learners that journal entries are typically written as a first-person narrative (*Dear journal, Last summer I was...*). They should include details that help convey the emotional shift they experienced.

Try suggesting these art forms to help get learners started:

- Paintings/drawings
- Sculptures
- Street art/murals/graffiti
- Photography
- Poetry or Literature
- Fashion design
- Films
- Video games

## **M**ATHEMATICS in Nature — *Identifying Exponential Growth in Nature*

**About this activity:** Expand learners' understanding of exponential growth by asking them to identify examples of the phenomena in nature. After reading the example provided, let them come up with their own examples or try suggesting the following to help get learners started:

- Spider webs
- Fungal growth
- Ant colony expansion
- Cell growth and division
- Climbing vines
- Flowers that drop seeds

**Extend this activity** with a connection to social emotional learning (SEL). As a person learns and experiences new things, neurons in the brain continually build new connections. The nervous system's exponential growth is a great tie to developing growth mindsets. With resilience, we can always learn more!

## **M**ATHEMATICS in Architecture — *Identifying Patterns and Shapes*

**About this activity:** Build up learners' critical thinking skills with this glimpse into the world of architectural design. This exercise asks learners to explore the pivotal role shapes and patterns play in creating functional and visually appealing structures.

If learners are stuck, try suggesting these common architectural designs:

- Mosaics
- Columns
- Beams
- Arches
- Materials and textures (bricks, wood, tiles, metals)

**Extend this activity** Learners can apply their observations to design their own structure or bridge. They can incorporate specific shapes and patterns to achieve a goal (i.e.: stability, efficiency or artistic expression).

Download our Catalogs to View our entire **STEAM** Collection





Experts in Hands-On **STEM** Education

PCS Edventures 11915 W Executive Drive, Suite #101, Boise, ID 83713

Email: [sales@edventures.com](mailto:sales@edventures.com)

Phone: (800) 429-3110

Web: [edventures.com](http://edventures.com)

© 2023 PCS Edventures. All rights reserved.