

Putting STEM into Action: Six Quick Activities to Inspire STEM Learning

The title page appears on screen. Bright, colorful shapes overlap and shift. Upbeat music plays in the background throughout the video.

Text on screen: Ontario Science Centre; An Agency of the Government of Ontario

Animated graphics swipe away the title page and are replaced with small, colourful shapes on a light background. The shapes twist and pulse in place.

Text on screen: Putting STEM into Action: Six Quick Activities to Inspire STEM Learning

Animated graphics sweep away again to reveal Adam. He is sitting in a craft room. There is a whiteboard on an easel beside him. On the whiteboard is a drawing of a plant, showing it both above and below ground, with the sun shining in one corner and a bee flying towards the plant. On a table in front of Adam are books, coloured beads, popsicle sticks, craft paper and markers.

Overlaid text on screen: Adam (he/him); Science Educator, Ontario Science Centre.

Adam: Hello, I'm Adam, a Science Educator with the Ontario Science Centre.

Throughout this series of videos, we've looked at ways to make your Kindergarten students excited and confident STEM learners. In this final video, we're sharing inspirational activities you can do with your students. These activities are designed to use materials you probably already have and can be easily adapted to meet the unique needs of your classroom.

Animated graphics swipe away to reveal a title card with playful geometric shapes.

Text on screen: Activity #1: We All Scream for Ice Cream

Animated graphics swipe away to reveal Adam in the craft room. There is now a sign on the wall behind Adam that reads "Ice Cream Menu" that has three choices: Vanilla, Strawberry, and Chocolate.

On the craft table in front of him, Adam has play money; crumpled white, brown, and pink tissue paper; circles cut from white, brown, and pink craft paper; cones and triangles made from light brown craft paper.

Adam: Let's start in the dramatic play centre, where students are running their own shop – in this case, an ice cream parlour. Creating a shop provides many authentic opportunities to integrate both math and literacy.

Adam keeps a tally on a whiteboard of which of the flavours the children prefer.

Adam: One way to start this activity is by having students use tally charts to discover the class's favourite ice cream flavours.

Overlaid text on screen:

A8.2 collect and record data to answer questions of interest and display it in concrete graphs or picture graphs

A8.3 respond to data in concrete graphs and picture graphs by interpreting it and drawing conclusions

Adam: They can turn their research into graphs to communicate their findings and use the data to select flavours for their shop.

The Ice Cream Menu appears full screen. It offers 1 scoop of vanilla, strawberry, or chocolate for \$2 each.

Adam: Next, create a menu and set prices for the offerings.

Adam assembles 3D ice cream cones from the craft supplies he has prepared.

Overlaid text on screen:

A9.3 in structures they have made, identify three-dimensional objects and two-dimensional shapes

Adam: The ice cream shop is a building opportunity, too: Students can construct both the shop itself and the “ice cream” they will sell.

You might create ice cream cones using 2D shapes, like these triangles and circles, or 3D materials, like paper cones and pom poms. Have students pick which materials and colours should be used for each flavour.

A person hands Adam \$2 of play money and Adam hands over the ice cream cone.

Overlaid text on screen:

A6.13 identify and explore the value of Canadian coins to 25c and coins and bills to \$10

Adam: This activity can be extended by giving students pretend money to use when they visit the shop. Have them calculate how much their order will be—this is a great opportunity to practice skip counting and, of course, it doesn’t have to be ice cream!

Adam appears full screen.

Adam: This activity can be easily adapted to any type of shop or restaurant – recreate a business from *your* community to add relevance!

Animated graphics swipe away to reveal a title card with playful geometric shapes.

Text on screen: Activity #2: Walk like an Animal

Animated graphics swipe away to reveal Adam in the craft room. There are various examples of stamps of animal footprints on the wall behind him and pictures of real animal footprints on the table in front of him.

Adam: This activity gives students a chance to practice a variety of motor skills while learning about locomotion: Invite your students to walk like an animal.

An educator holds up a picture book for her students seated on the floor in front of her. She shows them a cow, a snake and a bird.

Adam: One great way to start this activity is by reading a book about animals. Ask students to think about why an animal needs to move, about the environments they might move through and about all the different forms of movement that they have seen animals do—from crawling spiders to swimming fish and running dogs.

An educator asks the children to move like a variety of different animals.

Adam: Next, give students a chance to try it out!

Overlaid text on screen:

C18.1 demonstrate spatial awareness in activities that require the use of large muscles

Adam: You could challenge them to move like a specific animal. Or, have one student pick an animal to mimic and have the rest of the class try to guess what animal they are.

Adam demonstrates pictures of different footprints: human; bird; and dog.

Adam: Take the learning a *step* further by having students study animal footprints. Look for the shapes in the prints and think about what those shapes might tell you about the animal. Practice counting the number of feet and toes or the total number of steps taken.

Adam has made a stamp of an animal footprint from cardboard. He dips the stamp in craft paint and imprints the animal footprint onto a piece of paper. Adam then uses two different toy dinosaurs in the same way to create dinosaur footprints on the page.

Overlaid text on screen:

D25.2 experiment with different materials, techniques, and processes used in a variety of art forms

Adam: You can also extend this into an art activity! Students can create feet using paper or foam cut-outs of different shapes and sizes or even use the feet on plastic animals! Dip whichever feet you choose into paint then imprint a footprint trail across a sheet of paper.

Animated graphics swipe away to reveal a title card with playful geometric shapes.

Text on screen: Activity #3: Ice Spheres

Animated graphics swipe away to reveal Adam in the craft room. There are two globes of ice in shallow dishes in front of him, along with squeeze containers of food colouring.

Adam: Ice spheres are a great way to give students an opportunity to practice their observation skills. This activity uses water, balloons, saltshakers and food colouring, along with tools to make and record observations.

Adam removes his ice sphere from the balloon.

Adam: To create the spheres, simply freeze water inside of a balloon, then remove the balloon. We recommend putting the frozen spheres in a bowl to help contain the mess.

Adam appears full screen.

Overlaid text on screen:

B12.2 make predictions and observations while exploring, investigating, and designing

Adam: Before you start experimenting, ask students to predict what will happen to the ice as it sits in the classroom. What will happen when salt is added? Coloured water? Will adding even more make a difference? Being able to predict, or create a hypothesis, is an important skill for every young scientist!

Adam sprinkles salt over one of the ice spheres. We see that it is melting more quickly. He adds drops of different colours of food colouring to the other ice sphere; the colours run and blend through the ice.

Adam: Hypotheses formed, invite students to conduct their experiments. Sprinkle salt on top of the sphere and observe. Add coloured water using an eye dropper, squeeze bottle or spoon. Note the results. Students can continue adding salt and coloured water, observing the ice as it melts.

An educator examines the coloured ice sphere with a magnifying glass. First, she uses it close to her eye, then slowly moves it close to the ice sphere and we see the image getting blurry.

Adam: This is a great activity for introducing magnifying glasses, too! First, help students understand how to use this tool. Most tend to hold the glass close to their eyes to start, making things blurry. Demonstrate putting the magnifying glass above the target object then slowly lifting it up. As they try this, they'll notice the object appearing bigger through the lens. When it starts to get blurry, they'll know they've moved the magnifying glass too far.

We see a magnifying glass on a bright green tabletop, then a set of measuring cups on a wood table.

Overlaid text on screen:

B12.3 select materials and tools to carry out investigations and to construct models and structures

Adam: When you add more layers to this activity by providing tools like magnifying glasses, or others like measuring cups and flashlights, you expand students' observation skills.

Adam shines a flashlight on the coloured ice sphere, then he holds a magnifying glass over it. Coloured water collects in the bowl under the ice sphere.

Adam: What happens if you shine light on the ice? What can be seen when you magnify it? How much water was in the sphere? More tools make for more questions to explore!

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Text on screen: Activity #4: Super Sliders

Animated graphics swipe away to reveal Adam in the craft room. There are two ramps, at different angles, made of cardboard and books in front of him. At the bottom of each ramp are mini soccer and basket balls, and a toy race car.

Overlaid text on screen:

B12.5 design, build and test models and structures

Adam: Have your students build ramps of different shapes and sizes using objects found in your classroom. (Books and cardboard are classic materials for this challenge!) Challenge students to build a range of lengths and heights—this is a great way to incorporate engineering skills as they solve the building challenges.

He places a ball at the top of the steeper ramp and the toy car on the other ramp and lets them roll down the ramps. He repeats the experiment with two identical balls.

Adam: Once the ramps are built, start your experimentation with something you know will roll, like a ball or toy car.

Overlaid text on screen:

B12.2 make predictions and observations while exploring, investigating, and designing

Adam: Have your students *predict* which ramp will cause the items to roll the fastest. Ask them what is informing their prediction.

He tries it again with tape dispensers, and miniature chairs. The chair on the shallower ramp does not slide down at all.

Adam: What makes something go fast or slow? Which objects roll the best? Then, have them test their theories. Build on this activity by asking your students to find an object in the room that they think *won't* roll down the ramps. Once again, have them share their thought processes.

Adam appears full screen.

Adam: Don't forget to encourage them to test their predictions!

Animated graphics swipe away to reveal a title card with playful geometric shapes.

Text on screen: Activity #5: Out in the Shadows

Animated graphics swipe away to reveal Adam in the craft room. There is a piece of black construction paper, a toy dinosaur, a flashlight, a roll of tape, and several pieces of chalk on the table in front of him.

Adam: Bring your students outside on a sunny day to talk about shadows.

Overlaid text on screen:

B13.1 ask questions about and describe some natural occurrences

Adam: What is a shadow? How are they made? Look around: What can you see that has a shadow...or doesn't?

We see shadows of children dancing.

Adam: Talk to your students how a shadow is created when an object blocks a light source. (In this case, that light source is the Sun and your students are the objects!) Have your students play while making—and watching—their shadows move.

An educator marks a line on the pavement of the playground with chalk, then we see shadows of children and their educators as they are observed at different times of the day.

Adam: Ask your class to guess about the time of day when their shadows will be biggest. Mark a starting point (you could use tape or chalk) and then, at different times over the course of a few days, have students come back outside to see how the shape and size of their shadows change. Have them explain their discoveries and theories for what happened.

Adam places the toy dinosaur on top of the black construction paper and shines the flashlight on it from different angles.

Adam: Encourage using STEM language: longer; shorter; wider; behind; angle.

You can further illuminate the lesson with additional activities: trace each other's shadows with chalk,

Adam creates the shadow of a bird with his hands onto the black paper.

Overlaid text on screen:

D25.3 use problem-solving skills and imagination to create forms of art

Adam: build structures to see their shadows or even create stories told in shadows. Bring the experience indoors with flashlights, too!

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Text on screen: Activity #6: Estimation Station

Animated graphics swipe away to reveal Adam in the craft room. There are different sizes of empty containers, containers of coloured beads, pom-poms, popsicle sticks, and toy chairs on the table in front of him.

Adam: During circle time, present a container to the students.

Different empty containers of various shapes and sizes are shown on the craft table.

Adam: That could be a bowl, a paper cup, a tissue box, a hat, or anything at all! Pass the item around the circle so students can examine it.

Objects like sticks of chalk, coloured beads, pom-poms, popsicle sticks, toy chairs and toy dinosaurs are placed on the craft table.

Adam: Introduce a second set of items and pass these around the circle too. Maybe they're poker chips, marbles, LEGO pieces, stuffed toys—whatever you have handy.

Adam adds a small plastic container to the table of objects. He starts placing pom-poms in the container.

Adam: Now ask your students to predict how many of this second item fit inside your container. When you introduce this activity, we recommend starting with a smaller vessel and larger items to place inside to make the estimation easier. As students get more experience, adjust the containers and items to make things more challenging.

An educator leans in to observe a student printing on a whiteboard.

Adam: Record your students' predictions where they can be seen then put them to the test.

Adam adds sticks of chalk to a slightly larger box.

Overlaid text on screen:

A6.2 understand when counting forward, the quantity gets bigger and when counting backward, the quantity gets smaller

Adam: Place your items inside the container, with everyone counting aloud as you go. How many fit? How close were your estimates?

Adam adds toy chairs to a shallow bowl.

Adam: This activity is endlessly flexible, using almost any materials and as many (or as few!) days as you like over the school year. As you repeat this activity, notice how students' predictions evolve.

Animated graphics swipe away to reveal a title card with playful geometric shapes.

Text on screen: Conclusion

Animated graphics swipe away to reveal Adam in the craft room.

Adam: These are just six simple activities we love but there are countless ways you can bring science, technology, engineering and math to your classroom. Activities like these build foundational STEM skills that students will need for their futures. We encourage you, if you haven't, to check out all the videos in this series for more activities and tips to help you support STEM learning.

Whether you joined us for one video, or all of them, thank you! We're proud to support teachers as you empower students to succeed, today and in the future.

Animated graphics sweep away to reveal text.

Text on screen: We hope you enjoyed this video, which is part of a series developed to support Ontario's kindergarten teachers in STEM education.

Be sure to check out other videos in this series along with additional classroom-ready resources and professional learning resources at OntarioScienceCentre.ca.

Animated graphics sweep away to reveal text.

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