



**SCIENTISTS  
IN SCHOOL**

# 2017-2018 PROGRAM CATALOGUE

**Inquiry-Based STEM Workshops  
for Kindergarten to Grade 8**

**Peterborough and the Kawarthas,  
Northumberland, Victoria, Clarington  
and Simcoe County**



## WE OFFER

# EXPERIENTIAL SCIENCE, TECHNOLOGY, ENGINEERING, MATH (STEM) AND ENVIRONMENTAL WORKSHOPS FOR YOUR INQUISITIVE STUDENTS.

Under the guidance of STEM experts, your K-8 students become scientists, engineers and environmental stewards while developing the 21<sup>st</sup> century competencies needed for tomorrow's highly skilled workforce. Since 1989, 8 million students have discovered through our workshops that science, engineering and math are fun and relevant.



- An inquiry-based, curriculum-enriching experience with plentiful scientific materials
- Local presenters who are scientists, engineers, technologists and more
- Opportunity to highlight STEM career pathways
- Post-workshop extension package to support your lessons
- As a charity, every workshop is subsidized by our donors

## WORKING TOGETHER TO PREPARE CANADIAN YOUTH FOR THEIR FUTURE



Like you, our goal is to inspire all children, regardless of their future aspirations. We want to work with you to help shape the confidence, interest and skills your students need to realize their dreams. Critical thinking, collaboration, communication, creativity and problem-solving are purposefully incorporated in our workshops and suggested extension activities.

## MAKING SURE OUR WORKSHOPS MEET YOUR NEEDS

We use an evidence-based approach to provide high-impact workshops that enhance curriculum and provide real-world experiences for your students. A recent post-workshop survey\* of first-time users (teachers) of our workshops showed:

**73%** leveraged the ideas in our workshops to enhance their science lessons/teaching

**83%** felt Scientists in School encouraged their students to use critical-thinking skills, evidence-based reasoning and argumentation

**86%** felt our workshops helped their students better understand the work done in class

**94%** discovered new ideas to use in their science program

\*Survey was conducted across 140 schools by Western University researchers

## BE AN EARLY BIRD FOR A CHANCE TO WIN A FREE WORKSHOP!

Book your workshop by October 15, 2017 and have it by January 31, 2018 to be entered into a draw to win one of 10 complimentary workshops (to take place between February and June 2018). Winners will be notified by February 16.



Activities shown may not be available in all regions.



# KINDERGARTEN WORKSHOPS

Book online and find our booking terms, conditions and cancellation policy at [scientistsinschool.ca](http://scientistsinschool.ca)

\$199/workshop  
Maximum 30 students/workshop

## Backyard Bugs

R V

Experience a hands-on encounter with live and preserved bugs! Discover how to be an entomologist and identify an insect. Investigate how bugs behave, eat and see. Enact the life cycle of a butterfly. Create an insect to take home. Learn concepts of camouflage and symmetry with play-based activities.

## I Can Be A Scientist

R V

Become a working scientist. Dig for dinosaur bones and make a fossil as a paleontologist. Explore the weather as a meteorologist. Enter our tent to become an astronomer and create your own constellation. Use a lab coat and safety goggles while being a chemist. Make a fish print and examine ocean specimens as a marine biologist.

## Sensational Science

R V

Investigate your senses! Explore interconnections between taste and smell; light and sight. Investigate objects using your sense of touch, discover how you see and feel sound waves, and learn how smell helps us evaluate items. After this, your interactions with the world will just make SENSE!

## Simply Marvellous Machines

R V

Have fun with physics at the playground. Figure out how gears work and have a bubble-making race. Make your own lever and solve a teeter-totter problem. Investigate wedges. Compare different shapes, weights and heights using inclined planes – then create your own experiments. Explore with our special wheel and axle machines. Measure the difference a machine makes!

## There's No Place Like Home!

R V

Develop a lifelong respect for the environment by discovering the plants and animals that make up a variety of habitats. Become a bird and build a nest using just your beak. Slither like a snake or dig like a mole through your underground tunnel.

## Water Fun For Kindergarten Scientists

R V

Investigate which materials absorb water in our 'soak it up challenge'! Explore buoyancy, experimenting with floating and sinking objects. Marvel at water's properties and elusive shape. Puzzle out uses for water. Discover how a lock system works while you row your boat up our classroom stream.



**"In my 39 years of teaching, I have never had such a worthwhile experience brought to my students directly in the classroom!"**

SCIENTISTS IN SCHOOL

# factoid

Introducing science careers starts in Kindergarten, leading many students to exclaim "I'm going to be a scientist when I grow up."

**R:** Follow-up Teacher Resources  
**V:** Volunteers Required



# GRADE ONE WORKSHOPS

Book online and find our booking terms, conditions and cancellation policy at [scientistsinschool.ca](http://scientistsinschool.ca)

\$199/workshop  
Maximum 30 students/workshop

## Never Say Ugh To A Bug LS C1-2 V

Engage in a true hands-on experience with an exciting variety of bugs! Compare and contrast physical characteristics of live and preserved invertebrate specimens. Become an entomologist and learn how to identify insects. Explore the life cycle of silkworms and observe the behaviour of mealworms in different environments.

# GRADE TWO WORKSHOPS

Book online and find our booking terms, conditions and cancellation policy at [scientistsinschool.ca](http://scientistsinschool.ca)

\$199/workshop  
Maximum 30 students/workshop

## Let It Flow: Air And Water ESS R V

Discover the properties of air and water. Learn that air has weight, takes up space and can be used to save an accident victim. Explore the water cycle, uncover the hidden power of a water wheel and race your own yacht to experiment with sail size.

## Move It! SM R V

Discover how simple machines make work easier. Explore wheels and axles by constructing your own car. Experiment with different levers. Raise a flag using a pulley. Uncover what inclined planes and wedges have in common. Make your own screw and crush a can to see a screw in action.

## Animal Coverings And Adaptations C1-2 R V

Transform the classroom into discovery stations bursting with unique animal-covering specimens including shells, scales, feathers, furs, quills and skin. Investigate, feel, microscopically examine and experiment with coverings to discover how their characteristics help animals adapt and survive environmental challenges.

## Structures: Under Construction SM R V

Join our engineering team and build a structure capable of supporting yourself. Use real tools while learning about fasteners. Discover the purpose of building structures. Examine the properties of a variety of materials. Build a framework and test it for strength and stability.

## Animal Coverings And Adaptations LS C1-2 R V

Transform the classroom into discovery stations bursting with unique animal-covering specimens including shells, scales, feathers, furs, quills and skin. Investigate, feel, microscopically examine and experiment with coverings to discover how their characteristics help animals adapt and survive environmental challenges.

## Looking At Liquids ME R

Run your own chemistry experiments and explore what happens when solids and liquids get together. Use a real thermometer to investigate the conditions necessary to change a solid to a liquid. Create a way to change a liquid into a solid. Take up the challenge to produce the world's biggest bubble. Explore buoyancy to rise to the top of the class!

## Never Say Ugh To A Bug C1-2 V

Engage in a true hands-on experience with an exciting variety of bugs! Compare and contrast physical characteristics of live and preserved invertebrate specimens. Become an entomologist and learn how to identify insects. Explore the life cycle of silkworms and observe the behaviour of mealworms in different environments.

## Energy Makes It Happen ME R V

Explore the impact energy has on our daily lives; energy conservation; and use thermometers in heat absorption and colour experiments. Harness light energy with solar panels to create a painting. Fish for energy needed to power devices. Determine if you need sunscreen with a UV bead.

**C:** Combined Grade Content  
**ESS:** Earth and Space Systems  
**LS:** Life Systems  
**M:** Mathematics  
**ME:** Matter and Energy  
**R:** Follow-up Teacher Resources  
**SM:** Structures and Mechanisms  
**V:** Volunteers Required



**“I said to one of my parent volunteers: ‘One of these children will go on in life to become a biologist or paleontologist’”.**



# GRADE THREE WORKSHOPS

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\$199/workshop  
Maximum 30 students/workshop

## Force, Of Course!

ME R

Step into the physics lab to investigate friction, gravity, magnetic and electrostatic force. Use a catapult to measure the impact of force on a projectile, and experiment with marbles and magnets to see if they can defy gravity. Engineer a crash to test the effectiveness of seat belts.

## Plants Do Amazing Things

LS R V

Join this botanical adventure to explore the secret life of plants. Develop investigative skills to identify leaves and their parent trees and plant parts used to make everyday products. Recycle old paper to make new paper and be amazed by the adaptations plants make to survive.

## Soil: It's Too Important To Be Treated Like Dirt!

ESS R V

Become a pedologist and get down and dirty with soil. Learn what soil is made of, race water through different soil types and investigate why plants need soil. Explore erosion, build a soil profile and learn about decomposers by making friends with some earthy creatures.

## Structures: Stable And Strong

SM R

Build your knowledge of structural strength and stability as a junior engineer. Investigate how the strength of a material can be altered by its shape. Create structures and learn the impact of forces acting upon them. Take up the challenge to design, build and test a bridge.



“My class has been talking and writing about the workshop for two weeks. They keep making connections with things they worked on at the workshop stations.”



# GRADE FOUR WORKSHOPS

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\$199/workshop  
Maximum 30 students/workshop

## Gearing Up: Fun With Pulleys And Gears

SM R V

Discover how gears and pulleys make tasks easier by changing the direction, speed, and/or magnitude of an applied force. Investigate how we choose gear systems to ride a bike efficiently. Solve the challenge of how to move something much bigger than yourself.

## Light Up Your Life

ME R

Join us on this optical adventure and discover natural and artificial sources of light. Turn your classroom into a colourful disco while learning about the visible spectrum. Bounce and bend light to investigate reflection, refraction, and fibre optics. Demonstrate how light travels and explore optical devices.

## Don't Take Rocks For Granite

ESS V

Become a geologist and dig into the concepts of mineral formation, the rock cycle and fossilization. Examine igneous, sedimentary and metamorphic rocks. Learn about mining in Ontario and mine some edible ore. Experience the life of a paleontologist as you cast your own fossil to take home.

## Habitats And Communities

LS

Explore the interdependence of plants and animals within ecosystems as an ecologist. Closely examine habitat specimens and identify the adaptations that aid in their survival. Study the impact of natural and manmade alterations on an ecosystem as you witness it fall.

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# GRADE FIVE WORKSHOPS

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\$199/workshop  
Maximum 30 students/workshop

## Watt's Up? Energy And Electricity **C5-6**

Discover the different forms of energy and how they can be transferred or transformed. Explore electrical energy and see how static electricity makes objects move. Design and build circuits to learn how a house is wired. Use these circuits to test conductors, insulators and switches.

# GRADE SIX WORKSHOPS

Book online and find our booking terms, conditions and cancellation policy at [scientistsinschool.ca](http://scientistsinschool.ca)

\$199/workshop  
Maximum 30 students/workshop

## Classy Critters

**LS**

Work as a taxonomist to create order from the vast diversity of living things. Investigate preserved specimens and identify important connections between species. Examine the microscopic world of protists and monerans, see how small life on earth can be, while studying the similarities and differences between them.

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## Body Works

**LS R**

Test your reaction rate and measure your lung vital capacity. Use stethoscopes to measure heart rate. Build a filtering urinary system and working lungs. Identify bones using X-rays and locate and manipulate joints on a skeleton. Explore how healthy blood connects all your organ systems together.

## What In The World Is Matter? **ME R**

Explore solids, liquids, gases and changes in state as detectives seeking clues to the mysteries of matter. Experiment with physical properties and changes to discover what hair gel, diapers and food science have in common. Run an amazing evaporation race and create a cool chemical reaction. Determine the identity of a mystery compound using your chemical intuition, some crafty experimentation and clues gathered during this chemical adventure.

## Air And Flight

**SM R**

Discover the properties of air that are manipulated to achieve flight. Investigate dense air, sticky air and Newtonian laws. Design flight control surfaces to accomplish lift and thrust. Build propellers and paper planes to test your avionics expertise.

## Electricity: Get Charged

**ME R**

Explore the nature of electricity, its generation and use. See how static electricity makes objects move. Design and build circuits to learn how a house is wired. Test conductors, insulators and switches. Explore electromagnets, simple motors and use your own energy to power a generator.

## Watt's Up? Energy And Electricity **C5-6**

Discover the different forms of energy and how they can be transferred or transformed. Explore electrical energy and see how static electricity makes objects move. Design and build circuits to learn how a house is wired. Use these circuits to test conductors, insulators and switches.

## Energy: The Power To Change

**ESS R**

Discover how energy can be transferred or transformed. Investigate how to launch a ping pong ball into space and use the energy in your body to power wind-up toys. Explore how changing light bulbs and adding insulation can save energy. Play a tune using solar panels.

## May The Force Be With You

**SM R**

Join our engineering team to learn how structures resist the external and internal forces acting upon them. Use everyday objects to learn about design features, investigate centre of gravity and learn its importance in stability. Take on the challenge of designing, building and testing a freestanding structure.



**“I suggested a career in engineering to one student and he had already considered it during the workshop!”**



# GRADE SEVEN WORKSHOPS

Book online and find our booking terms, conditions and cancellation policy at [scientistsinschool.ca](http://scientistsinschool.ca)

\$199/workshop  
Maximum 30 students/workshop

## Close Encounters Of A Chemical Kind **ME R**

Become a chemist and discover the differences between pure substances and mixtures. Create solubility fireworks and make your own lava lamp to observe particles in motion. Use cool chemistry to analyze vitamins. Compete in a race to dissolve. Use concentration to determine how to get your daily dose of vitamins and run a titration experiment to check what's in your juice box!

## Engineering Challenges **SM R**

Discover the secrets of structural strength and stability. Design and build a functioning cantilever able to withstand a substantial load. Investigate how to fortify bridges. Join a class-wide challenge to build a newspaper and tape truss bridge resistant to static and dynamic loads and internal forces.

## Hot Stuff! **ESS R**

Join our Research and Development team at the 'Scientists in School Toy Company'. Challenge yourself to discover the secret workings behind a candle-powered putt-putt boat. Analyze how conduction, convection and radiation work together to propel these boats. Investigate how the particle theory links energy and temperature and how energy transformations keep things moving.



**“A number of times throughout the morning, I drew back just to enjoy watching how engaged the students were.”**



# GRADE EIGHT WORKSHOPS

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\$199/workshop  
Maximum 30 students/workshop

## Fluid Power **ME R**

Explore fluids and their application in mechanical systems. Use hydrometers to determine relative density, race liquids to investigate viscosity, and find a boat while exploring buoyancy. Move a load with dump trucks to compare hydraulic and pneumatic systems and analyze the compressibility of fluids.

## Math Is My Business! **M C7-8**

Money is the name of this game. Create your own bank account and earn cash as you play games to build fraction, decimal, percent and more math skills. Select a team for the playoffs based on theoretical probability data, then watch it perform on game day. Invest your hard-earned money on the stock market and calculate your portfolio performance.

## Cell Explorers: Investigating Cell Structure And Function **LS R**

Become a cell biologist learning slide preparation and compound microscope use. Compare and contrast plant and animal cells along with cheek cells and other human body cells to determine their structure. Get absorbed in the study of osmosis. Explore pond water samples to identify living organisms.

## Groundwater Investigations **ESS R**

Become a hydrogeologist and explore the properties of aquifers as viable water sources. Perform a variety of experiments to investigate salinity, chlorine content, and examine contaminants in different water samples. Build your own water filtration system and examine its effectiveness in producing potable water.

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# Book Your Scientists in School Workshop Today!

Our goal in every community is to become part of the educational fabric, where children become scientists in school in Kindergarten and experience workshops throughout their elementary years. We work with teachers, educators and school boards to ensure that our program aligns with curriculum, student and educator needs. With over two million face time hours of investigation each year, we know our program makes a lasting impression. Often, young adults who had the program as kids will share details of their favourite workshops and proclaim that "the days the scientists came were the best days of the whole year!"



## Partners in STEM Education

Across our charitable organization everyone is committed to our mission, vision and impact and dedicated to engaging youth, teachers, and families with high quality STEM experiences. Partnerships allow us to subsidize the cost of every single one of our 24,000 annual classroom workshops by approximately 15%, and provide almost 2,000 complimentary workshops to schools serving low-income communities.

### CATALYST

Natural Sciences and Engineering Research Council  
TD Friends of the Environment Foundation | Toronto Pearson International Airport

### INNOVATION

Google Canada | John and Deborah Harris Family Foundation  
Nuclear Waste Management Organization | RBC Foundation

### IMAGINATION

Amgen Canada | Amgen Foundation | McMillan LLP | Ontario Power Generation  
Superior Glove Works Ltd. | TELUS

### DISCOVERY

Cameco | Celestica | Community Foundation of Ottawa | J.P. Bickell Foundation | MilliporeSigma  
Purdue Pharma | Syngenta | Systematix Inc. | The J.W. McConnell Family Foundation  
The Maurice Price Foundation | The McLean Foundation

### EXPLORATION

Ajax Community Fund at the Durham Community Foundation  
Consulting Engineers of Ontario | Huronia Community Foundation  
Isherwood Associates | Lee Valley Tools | Meridian Credit Union  
Rotary Club of Lethbridge Sunrise | Siemens Milltronics Process Instruments  
The Optimist Club of Ajax | Veridian Connections  
Whitby Mayor's Community Development Fund

## Scientists in School™

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