



**SCIENTISTS  
IN SCHOOL**

# 2017-2018 PROGRAM CATALOGUE

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

**Avon Maitland DSB,  
Huron-Perth Catholic DSB,  
Bluewater DSB, and  
Bruce-Grey Catholic DSB**



## 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.

### ~ THE BENEFITS OF HAVING A ~ *Scientists in School* WORKSHOP IN YOUR CLASSROOM

- 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



Critical Thinking



Collaboration

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.



Communication



Creativity

## 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



Activities shown may not be available in all regions.

# KINDERGARTEN WORKSHOPS

To book, please email:  
amy.vanderputten@scientistsinschool.ca

Booking terms, conditions and cancellation  
policy: [scientistsinschool.ca](http://scientistsinschool.ca)

Maximum 30 students/workshop

## Backyard Bugs

R V

"Bee" an entomologist. Meet the insect family and their relatives. Develop a new appreciation for bugs by investigating how they behave, eat, see and hear. Camouflage as a butterfly and see the world through the eyes of a dragonfly. Identify interesting backyard bugs and make an insect to take home.

## Simply Marvellous Machines

R V

Discover how simple machines help you every day. Find simple machines at an imaginary playground as you experiment with inclined planes, dig with wedges and make a lever to test at home. Investigate how pulleys make work easier and explore how to make bubbles using gears.

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!"

# GRADE ONE WORKSHOPS

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Maximum 30 students/workshop

## Animal Coverings And Adaptations

ESS C1-2 R V

How does beaver fur feel compared to raccoon fur? What does a butterfly wing really look like? Explore some of nature's most unusual coverings including quills, shells, scales, feathers and fur. Investigate the insulating properties of animal coverings and discover some of the amazing adaptations animals use to survive their environment and seasonal changes.

## Energy Makes It Happen

ME R V

Investigate the sun's power by exploring the impact energy has on our lives. Make a bubble grow using heat from thermal energy. Discover the energy needed to power different devices and learn about energy conservation. Build a sun chain to learn that the sun is the earth's primary energy source. Create paintings using solar power.

## Kitchen Chemistry For Curious Kids

SI C1-2 R V

As a food scientist, investigate what yeast needs to grow and how to blow up a balloon by mixing a solid with a liquid. Challenge your powers of observation while making a surprise drink and make a mystery substance that could be both a liquid and a solid.

## Never Say Ugh To A Bug

LS C1-2 V

Develop a new appreciation for bugs as an entomologist. Examine a variety of living and preserved specimens on a scavenger hunt in the classroom. Explore insect life cycles. Discover the benefit and beauty of pollinators and how critical their role is to life on earth.

## Structures: Under Construction

SM R V

Join our engineering team and build a structure capable of supporting your teacher. Discover the concepts you need to make this happen. Explore the role of fasteners and the properties of materials using real tools. Test 3-D shapes for structural strength. Build a framework and test for strength and stability.

**C:** Combined Grade Content  
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**LS:** Life Systems  
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**V:** Volunteers Required



# GRADE TWO WORKSHOPS

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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.

## Animal Coverings And Adaptations

ESS C1-2 R V

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## Looking At Liquids

ME R V

Marvel as you explore the three states of matter. Change a liquid to a solid and then eat it! Compare the flow rate of different liquids and test their ability to absorb into a solid. Investigate buoyancy through manipulation of materials. Discover how liquids and solids interact. Accept the challenge to produce the world's biggest bubble.

## Get Moving With Toys

SM V

As masters of all things that move, discover how simple machines make work easier for us. Learn about movement on inclined planes. Send a secret message using a pulley system. Discover the importance of wheels and axles as you build your own car. Investigate the power of levers and make a screw to take home.

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



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# GRADE FOUR WORKSHOPS

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Maximum 30 students/workshop

## Force, Of Course!

ME R

Step into the physics lab to investigate friction, elastic, magnetic and gravitational forces. Use a catapult to measure the impact of force on a projectile. Discover the science behind removing a tablecloth from underneath dishes without any breaking. Learn how to defy gravity!

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

ESS R V

Become a pedologist and get dirty with a variety of soil types. Discover that soil is composed of earth materials and decaying organisms. Test soil samples for essential nutrients and learn how soil supports plant growth. Investigate erosion and learn about decomposers by studying earthy creatures.

## Structures: Stable And Strong

SM R V

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.

## Battles In The Tropical Rainforest

LS V

Join our research team, travel around the world and explore tropical rainforest habitats. Make a rubber ball and discover the benefits of using renewable rainforest resources. Learn about special adaptations of rainforest plants by constructing a tree from the roots up. Build a rainforest food web and learn the impact of species extinction.

## Don't Take Rocks For Granite

ESS V

Become a junior geologist and dig into the rock cycle. Test the hardness of minerals and examine igneous, sedimentary and metamorphic rocks. Identify mystery minerals all around us and mine some edible ore. Experience the life of a paleontologist in the field and unearth real fossils!

## Gearing Up: Fun With Pulleys And Gears

SM R V

Become a physicist and discover how pulleys and gears can make work easier. Construct gear trains and identify gears used in our daily lives. Build and design pulley systems to change an applied force. Be part of a human pulley and devise how to move something bigger than you!



“With the rich resources and multitude of activities, Scientists in School takes science to another level. They transform the classroom environment into a science wonderland which excites even the most unmotivated student.”

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# GRADE FIVE WORKSHOPS

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Maximum 30 students/workshop

# GRADE SIX WORKSHOPS

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Maximum 30 students/workshop

## Classy Critters

LS

Become a taxonomist, classify and create order from the vast diversity of living things. Examine real preserved specimens for adaptations that help them survive and discover wildlife on a smaller scale. Explore important connections between humans, ecosystems invaders and other impacts on biodiversity.

## Body Works

LS R

Join us on a journey around the human body to explore its many complexities. Assemble a urinary system to filter simulated plasma. Build a model of the respiratory system. Test your reflexes and measure your vital capacity. Follow a cell as it travels through a large-scale model of the heart.

## Air And Flight

SM R

Discover the properties of air and the principles of flight by levitating a ping pong ball. Find the best wing design and angle of attack for liftoff. Discover the correct mechanics of propeller construction. Build your own plane and investigate factors affecting the direction and speed of flight.

## Electricity: Get Charged

ME R

Explore the nature of electricity, its generation and use. Investigate static electricity through the use of an electroscope. 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.

## May The Force Be With You

SM R

Join our engineering team to discover how structures resist the internal and external forces acting upon them. Investigate centre of gravity and its effect on structural stability. Learn about the importance of a foundation and other design features necessary for stable structures. Design, build and test a freestanding structure.

## Celestial Sleuths

ESS R

Explore the solar system and the bodies within it to finally understand the real definition of "space". Orbit through the phases of the moon and reflect on the changes we see from Earth. Discover the challenges astronauts face in space and build your own working model of the Canadarm End Effector.

## What In The World Is Matter?

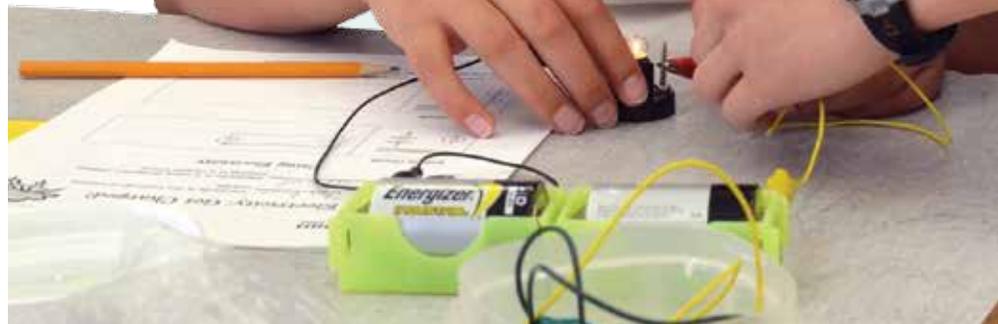
ME R

Explore solids, liquids, gases and changes in state as detectives seeking clues to the mysteries of matter. Discover physical and chemical changes by carrying out some cool chemistry. Determine the identity of a mystery compound using your chemical intuition, some crafty experimentation and clues from this chemical adventure.



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

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# GRADE SEVEN WORKSHOPS

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Maximum 30 students/workshop

## Battles In The Tropical Rainforest **LS**

Travel around the world and explore the tropical rainforest. Make a rubber ball, experiment with adaptations of rainforest plants and discover the importance of each creature while building a rainforest food web.

## 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**

Discover the secret workings behind a candle-powered putt-putt boat. Investigate if heat is generated by moving molecules and how heat moves through space, solids and liquids. Use this information to analyze how conduction, convection and radiation work together to propel the putt-putt boats.

# GRADE EIGHT WORKSHOPS

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Maximum 30 students/workshop

## Fluid Power

**ME**

Explore fluids and their application in mechanical systems. Study density to determine the composition of mystery cubes. Investigate the relative density of a variety of liquids. Move loads with dump trucks to compare hydraulic and pneumatic systems. Build and operate models of hydraulic equipment including a robotic arm.

## Groundwater Investigations

**ESS R**

Discover nature's filtration system while exploring groundwater processes. Test for pollutants such as salt, petroleum and fertilizers and discover their possible sources. Examine local watersheds to choose the best site for your next home. Learn hands-on how to become stewards of our water systems and the importance of maintaining our water supply.

## Systems At Work

**SM**

Discover the work done by simple machines, how they create mechanical advantage, and how they can be used to overcome obstacles. Explore inclined planes, wheels, levers and pulleys. Analyze how friction affects mechanical advantage. Investigate how simple machines can be combined to create complex systems used in building communities and disaster relief.



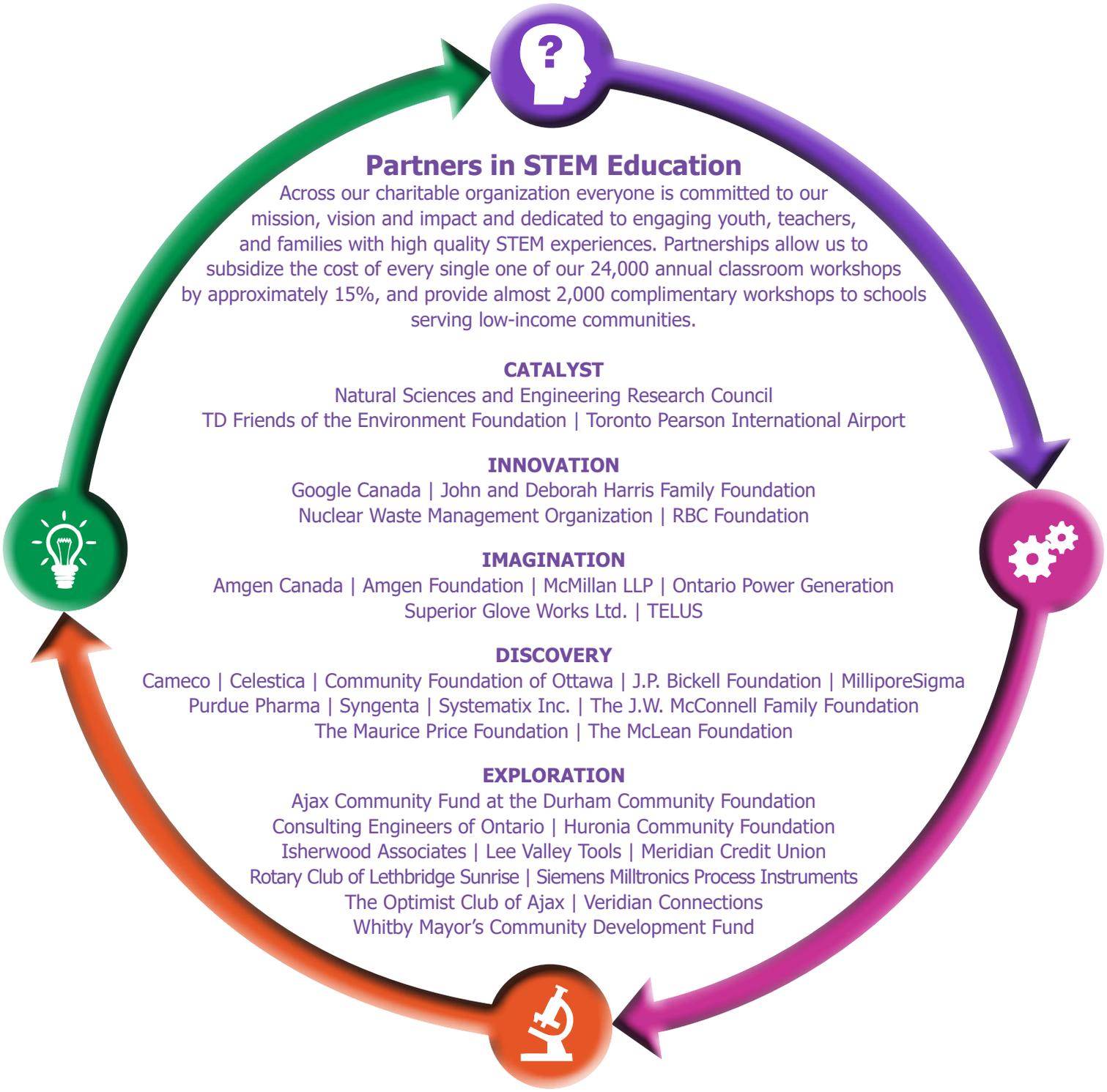
**“I suggested a career in engineering to one student and he had already considered it during the workshop!”**

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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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