



2015-2016 EDUCATOR PROGRAM GUIDE

FIELD TRIPS • NIGHT AT THE WORKS
FAMILY ENGINEERING NIGHTS • WORKSHOPS

Experience engineering at The Works Museum. We make it easy for you and fun for your students!

Follow these simple steps:

1 SELECT YOUR OPTION



- Schedule a **FIELD TRIP** to The Works Museum (*page 3*).
- Add a **WORKSHOP** to your field trip (*pages 4, 6-9*).
- Bring **WORKSHOPS** to your location (*pages 4, 6-9*).
- Host a **FAMILY ENGINEERING NIGHT** or **NIGHT AT THE WORKS** (*page 5*).

2 MAKE YOUR RESERVATION



- Reservations are required. Reserve early to ensure your first choice of dates.
- Call **952-888-4262, ext.215**, email **groups@theworks.org**, or visit our website, **www.theworks.org**.
- Subsidies are available on a first-come, first-served basis for groups demonstrating financial need.

FIELD TRIPS AT THE WORKS

Introduce your students to **Engineering at The Works Museum!**

MUSEUM VISIT

Explore interactive exhibits featuring building, simple machines, optics, sensors, and more! **Exhibits are located on one easy-to-supervise level.** Appropriate for pre-K through grade 6.

Length: One hour. **Museum only.**

Cost: \$4/student (**price does not include a workshop**).



ADD A WORKSHOP TO YOUR VISIT

Experience hands-on engineering activities and complete a take-home project. View workshop options by grade level on pages 6-9.

Workshops support the Minnesota K-12 Academic Standards in Science; see details at www.theworks.org.

Length: 30 minutes, 60 minutes, 90 minutes, or 2 hours. **Workshop only.**

Cost: \$6-12/student (**price does not include Museum visit**).


"We had a fabulous time! My colleagues and I were talking about what a perfect field trip it was for our K-1 children. They had just enough time in the big rooms with so many wonderful hands-on things to explore, and the kaleidoscope project was just right for them."

- K-1 Teacher

WORKSHOPS AT YOUR LOCATION



Skip the bus and bring our expert educators to your location!

Many workshops can be brought to you. See workshop listings on pages 6-9 for options by topic and grade level. Workshops marked with this gear  can be brought to you.

Workshops include an introduction to the Engineering Design Process, hands-on activities, and a take-home project.



Workshops support the Minnesota K-12 Academic Standards in Science; see details at www.theworks.org.

Length: 60 minutes or 90 minutes.

Cost: \$210-\$400, based on number of students and workshop length, plus travel fees.

NEW! Book 2-4 workshops of the same title on the same date, and receive 10% off.

"The kids had a ball! Everything went smoothly...we hope to do more of your workshops in the future, so many of them align perfectly with the science standards."

- 3rd Grade Teacher

FAMILY ENGINEERING NIGHTS

Bring The Works Museum experience to you!

Family Engineering Nights are ideal as stand-alone events or as an addition to a family event, open house, or science fair. The Works provides engineering activities for parents and kids to do together, all the supplies needed for the activities, and volunteer training. You provide the space and the volunteers.

Length: 2 hours, plus set-up and volunteer training.

Cost: \$300-\$2100, based on number of attendees.

Size: Minimum 100 - maximum 600 attendees, adults and children.



NEW! NIGHT AT THE WORKS

Exclusive access to The Works Museum!

Plan a private evening for families from your school or organization at The Works Museum. Your guests will explore hands-on Exhibits and open-ended engineering projects in the Design Lab.

Length: 2 hours.

Cost: \$600-\$1200 based on number of attendees.

Size: Minimum 100 - maximum 300 attendees, adults and children.



Add a Papa John's Pizza order for your event, save 20% on the pizza order.


WORKSHOP TOPICS BY GRADE



Workshops can be added to a field trip or brought to your location (*see pages 3-4*).

All feature hands-on engineering activities and a take-home project.

Workshops support the Minnesota K-12 Academic Standards in Science: see details at www.theworks.org.

Workshops marked with this gear  can be brought to your site.

PRE-K



Start Your Engineers

60 minutes/\$8 per student

Preschoolers will read a story, explore with materials and tools, and create a project. Two topics are available:

WIND Float objects in wind tubes and construct a sail car.

BRIDGES Build with magnetic bridges and engineer a bridge.

"Your leaders did a perfect job (of it), and as a result, all of the children were able to be successful. We will definitely be back."


- K-1 Teacher


30 minutes/\$6 per student


KALEIDOSCOPIES Investigate light reflection with mirrors. Build a unique and colorful kaleidoscope to take home.

GLOW-IN-THE-DARK SLIME Explore chemical reactions while mixing a batch of gooey, colorful polymer slime to bring home!


60 minutes/\$8 per student

LIGHT AND KALEIDOSCOPIES  Bend light and break it apart with special lenses. Experiment with mirrors. Build and engineer a colorful kaleidoscope to take home.

CIRCUIT EXPLORE  Learn about the flow of electricity and hook up different circuits to create a nightlight to take home. Great fit with first grade standards.

CHEMICAL CHANGES  Experiment with chemical changes to solve a problem. Make a tub of slimy polymer that glows in the dark. Great fit with first grade standards.

WHAT FLOATS YOUR BOAT? Explore buoyancy with different materials, then build your own boat. Evaluate and improve your design, just like a real engineer! Great fit with second grade standards.

MINI-CATAPULTS  Learn about levers and fulcrums and construct a small catapult. Find out how far you can fling a pom-pom. Great fit with second grade standards.



GRADES 3-6

30 minutes/\$6 per student

KALEIDOSCOPIES Investigate light reflection with mirrors. Build a unique and colorful kaleidoscope to take home.

GLOW-IN-THE-DARK SLIME Explore chemical reactions while mixing a batch of gooeey, colorful polymer slime to bring home!

60 minutes/\$8 per student

LIGHT AND KALEIDOSCOPIES ✨ Examine how light travels, changes direction, and is refracted. Build and engineer a colorful kaleidoscope to take home. Great fit with third and sixth grade standards.



MIXING MOLECULES ✨ Identify mystery chemicals by experimenting with chemical changes. Review the states of matter and make a tub of slimy polymer that glows in the dark. Great fit with fourth and sixth grade standards.

FEEL THE NOISE Start with vibrations and the science of sound. Explore how instruments change pitch. Construct an ear harp to take home. Great fit with third grade standards.


MOTOR POWER What's inside a motor and how does it work? Use magnets and electricity as you build and experiment with "The World's Simplest Motor." Make a crazy robotic bug to take home. Great fit with fourth grade standards.


SUPER CIRCUITS ✨ Experiment with the components of simple circuits: power, loads, and switches. Construct and wire a motor-powered fan to take home. Great fit with fourth grade standards.

"Your workshop was amazing! Our workshop teacher was very good at getting the students to complete the task within the time frame and keep the students' attention!"

- 5th Grade Teacher

90 minutes/\$10 per student

PASTA BRIDGES  Work in teams using pasta, hot glue, and the Engineering Design Process to build the strongest bridge you can. Test how much weight it can hold before it breaks. Great fit with fourth and sixth grade standards.

MAZE ENGINEERING  Use the Engineering Design Process to design and construct your own maze, pinball, or pachinko game. Experiment with changes in speed and direction and the effects of gravity and friction. Great fit with fifth and sixth grade standards.



2 hours/\$12 per student

CATAPULTS Learn about levers and fulcrums. Use hammers, drills, and saws to build your own catapult. Find out how far you can fling a pom-pom. Great fit with fifth grade standards.



"It was amazing! The students said it was the best field trip they have ever been on. It fits so well into what we are learning in sixth grade, and other grades could get so much out of it!"

- 6th Grade Teacher

TEACHER WORKSHOPS

Professional development programs for elementary teachers in engineering education.



- Introduce teachers to the engineering requirements in Minnesota STEM standards.
- Give teachers experience with hands-on engineering design challenges to use in their classrooms.
- Provide engaging ways to facilitate collaboration, creative problem solving, spatial thinking, and other engineering habits of mind with students.



Workshops take place at The Works Museum or a location of your choice.

For more information, call Kit Whilhite at 952-888-4262 ext. 211, or email kit@theworks.org.

Tuesday, November 3, 2015
8 a.m. to 3 p.m.

University of Minnesota Continuing
Education and Conference Center,
1890 Buford Avenue, St. Paul

Join hundreds of educators for our
annual conference on the why,
what, and how of elementary
engineering education:

- Gain practical knowledge and share ideas with colleagues.
- Get ideas for your classroom.
- Bring engineering fun to your students.
- Earn 6 CEUs.



CONFERENCE FEE:

\$100 EARLY BIRD REGISTRATION THROUGH SEPTEMBER 30;

\$125 AFTER SEPTEMBER 30. Fee includes CEUs, lunch, and parking!

To register visit www.theworks.org/e4-conference

Thank you to our partners, 3M and the Minnesota Department of Education **3M**





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BLOOMINGTON, MN 55420

952-888-4262 | www.theworks.org

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