



# EDUCATOR'S GUIDE



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# TEACHER'S CHOICE PROGRAM

ECHO, Vermont's innovative science and nature museum, welcomes school groups year round. With our incredible location on the historic Burlington waterfront, ECHO serves as the perfect destination for your half-day or full-day adventure, no matter what the season.

## 3 Easy Steps to Booking Your Echo Adventure

**Step 1:** Choose between our 3 field trip options

**Step 2:** Check out our changing exhibits, calendar of events, and theater schedule at [echovt.org](http://echovt.org)

**Step 3:** Book your trip by completing our online reservation form at [echovt.org/schoolfieldtrips](http://echovt.org/schoolfieldtrips).

## Group Rates

**\$7.00** PreK - 12th grade student admission

**FREE** One adult admission for every five youth (including teachers)

**\$9.00** Each additional adult admission

**\$3.00** Student and adult Northfield Savings Bank 3D film ticket (additional to admission)



Teachers can purchase an **ECHO Classroom Membership** that gives unlimited admission to ECHO for 1 year. Sign up at [echovt.org](http://echovt.org).

## Field Trip Option 1: Self-Guided Group Experiences

Self-guided tours give your group access to more than 100 hands-on exhibits, 70 species of live animals, daily activities, student scavenger hunts, and discussion guides. Groups receive a personalized welcome by ECHO staff.

## Field Trip Option 2: Teacher's Choice Program (additional \$75/program)

Our most popular option. Designed for students grades K-12, each 50-min, educator-led program builds off of the VT State Standards. Offerings include Engineering in Action programs that encourage hands-on problem solving and other STEM-focused programs. Includes everything listed in the self-guided program option.

## Field Trip Option 3: 3D Science & Nature Film (additional \$3/person)

Add this to your visit and experience stunning 3D educational films. Check out current film offerings at [echovt.org](http://echovt.org)



For more information visit [echovt.org](http://echovt.org)

50-minute ECHO educator-led programs based on the Vermont Common Core and the Next Generation Science Standards

Available September 13, 2021 - May 20, 2022



## Wetland Wonders (K - 3)

It's a sponge, it's a filter, it's a nursery...it's a wetland! Explore the living and nonliving elements of this important habitat as we bring a wetland to life by evoking its unique sight and sounds.

## Native American Games (K - 3)

Experience the games played by the indigenous people of the Lake Champlain Basin. Students will get a hands-on lesson on pre-1800s Native American culture and the important role games played in their lives.

## Rock and Roll Geology (3 - 6)

Explore 20,000 years of geologic history in the Lake Champlain Basin. Students will discover the forces that shaped the land we see today and identify local rock types during a hands-on geology lab.

## Native American Artifact Inquiry (3 - 6)

Explore Native American artifacts to illuminate the sophistication of pre-1800s Abenaki life. Students will learn how to interpret historical objects in order to better understand traditional ways of life.

## Basin Biodiversity (6 - 12)

Explore the variety and importance of species in the Lake Champlain Basin. Students will discover the local threats to native biodiversity and how they can become stewards of the Lake Champlain Basin.

## Engineering in Action: Zipcarts (K - 6)

Students will use the Engineering Design Process to transport model turtles to safety as they plan, build, and evaluate solutions to ECHO's zipline challenge.

## Engineering in Action: Launch, Fling, Fly (K - 6)

Students will learn about the ecology of Vermont butterflies and practice engineering design skills as they plan, build, and test a solution to an engineering challenge.

## Engineering in Action: Fish Assist (K - 6)

Students will learn about Lake Champlain's elusive, endangered lake sturgeon as they use the Engineering Design Process to plan, build and test a solution to an engineering challenge.

## Featured Program Available May 23 - June 10, 2022

*This is the only program offered during this period.*

## Engineering in Action: Climate Challenge (K - 6)

Climate change is bringing new and unexpected challenges to our communities. Students will explore the probable drivers and impacts of climate change. They will then use the Engineering Design Process to prototype solutions to a climate-inspired design challenge.



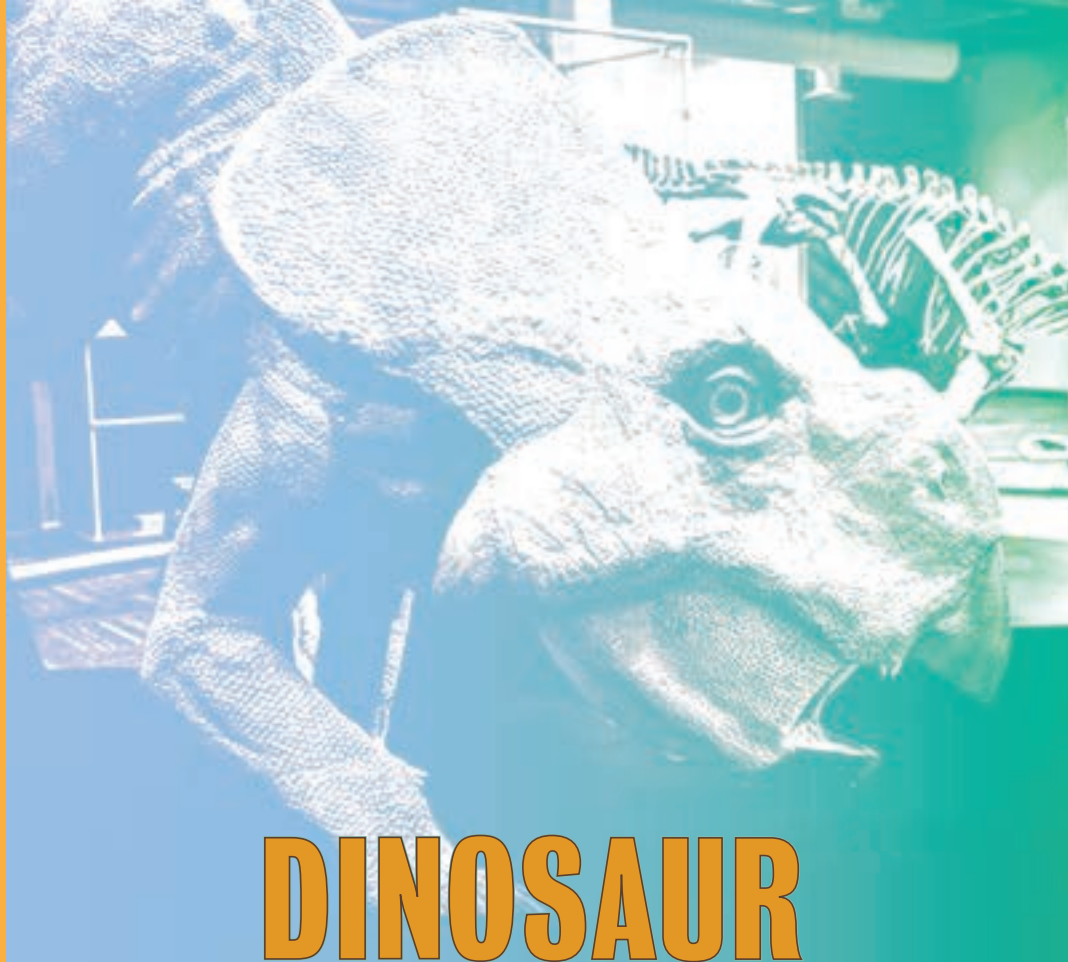


### SPECIAL EXHIBIT

October 2, 2021 - January 2, 2022

Explore the science of how things move by land, sea, and air in the *From Here to There* exhibit! Lift, launch, and levitate as you experiment with hands-on exhibits that make learning about gravity, friction, and the laws of motion fun. Turn up the heat to launch a colorful hot air balloon, operate an authentic canal lock system to move a boat from one water level to the next, and experiment with pneumatics, pulleys, hydraulics and levers to see what kind of mechanical advantage works best.

*Funded by National Science Foundation. Created by Sciencenter and Rochester Museum & Science Center.*



## DINOSAUR DISCOVERIES

### SPECIAL EXHIBIT

January 15 - May 15, 2022

This exciting exhibition showcases the world of modern paleontology, introducing a dynamic vision of dinosaurs and the scientists who study them. New discoveries and technologies reveal how dinosaurs lived, moved, and behaved. Find out how advanced technologies allow scientists to look at fossils in fresh ways. Examine realistic models and casts, and see dinosaurs walk, run, and move their long necks in fantastic computer simulations.

*Dinosaur Discoveries: Ancient Fossils, New Ideas is organized by the American Museum of Natural History, New York (amnh.org), in collaboration with the California Academy of Sciences, San Francisco; The Field Museum, Chicago; the Houston Museum of Natural Science; and the North Carolina Museum of Natural Sciences, Raleigh.*

## GIANTS DRAGONS & UNICORNS

*The World of Mythic Creatures*

### SPECIAL EXHIBIT

May 28, 2022 - September 5, 2022

For thousands of years, humans around the world have brought mythic creatures to life in stories, music, and works of art. Uncover the origins and significance of legendary creatures of the air, land, and water such as sea monsters, mermaids, unicorns, griffins, dragons, and more. This exhibition combines dramatic models, cast fossils, cultural objects, and absorbing multimedia and interactive technology to tell the stories behind the alluring mythic creatures that continue to fascinate visitors of all ages.

*Giants, Dragons, & Unicorns: The World of Mythical Creatures is organized by the American Museum of Natural History, New York (amnh.org).*



### Virtual Engineering in Action Outreach

An ECHO Educator meets with students live over Zoom to present an engineering design challenge along with an introduction that establishes the context and provides inspiration for the activity. Students build a tool to solve a problem, test their designs, and then gather again for a brief discussion led by the ECHO STEM educator. Materials are provided. To learn more and schedule your virtual outreach program today go to [echovt.org](http://echovt.org).





Kelvin Doe



**Kelvin designed and built his own radio and radio station out of discarded objects.**

Also known as DJ Focus in his home country of Sierra Leone, Kelvin began to engineer at the age of 11 using discarded pieces of scrap to build transmitters, generators, and batteries and is now famous for his inventions. Using his global recognition as a platform, Kelvin is spreading the message of clean energy and the importance of equitable access to clean energy technologies.

**Miranda received the Young Champions of the Earth award for her engineering teamwork.**

She was part of a team who created a new system that breaks down unrecyclable plastic and turns it into something useful. She is the co-founder and CEO of a company called Novoloop, an innovative plastic transformation company that transforms plastic waste into shoes, cars, homes, and more.

Miranda Wang



Greta Thunberg



**Greta is a nationally recognized environmental activist.**

Greta won a climate change essay competition in a local newspaper at the age of 15. Greta has since called for governments around the world to do more to cut global emissions and has spoken at international meetings, including the UN Climate Change Conference and the World Economic Forum. Greta has Asperger's/Autism Spectrum Disorder and has said being different is a gift and a "superpower."

**Tiera is helping to engineer the biggest and most powerful rockets that NASA has ever made.**

She majored in aerospace engineering at MIT and works for Boeing as a Rocket Structural Design and Analysis Engineer for the NASA Space Launch System. "You have to look forward to your dream, and you can't let anybody get in the way of it," she said. "And you have to understand that nothing comes easy. Keep your eyes on the prize, you can succeed."

Tiera Guinn



## WHO CAN BE A STEM CHAMPION? YOU CAN BE A STEM CHAMPION!



Fionn Fierreira



**Fionn won 1st prize at the Google Science Fair for his innovative idea for removing microplastic from the water.**

Fionn came up with a way to remove tiny pieces of plastic from water using ferrofluid. Ferrofluid is made up of oil and magnetite, which is magnetic. The ferrofluid sticks to plastic and allows it to be removed from the water using magnets. The goal is to remove the microplastics from wastewater before it enters a lake, river, or ocean.

**Alexander engineered a device to assist blind people cross the road.**

Alexander created a handheld navigation device called the iAid after assisting a blind woman cross the street and realising there was nothing to help her walk independently. Alexander equipped the iAid with a GPS and compass to allow it to successfully detect obstacles. It has since become a well-received innovation widely used today.

Alexander Dean



Macinley Butson



**Macinley engineered a tool to help cancer patients receive the correct dose of life saving medicine.**

Thanks to her problem-solving smarts, eye for innovation, and desire to make a difference, she has won several of her high school STEM competitions. She most recently won the BHP Foundation Science and Engineering Awards (2019) where she entered a SMART system which works to reduce excess dosage of radiotherapy delivered to the body during cancer treatment.

**Xóchitl engineered a tool to bring warm water to her community.**

In the town where Xóchitl grew up in Mexico, residents often find themselves without hot water. The lack of hot water leads to an increase in illness and forces the community to cut down trees for firewood. At only eight years old, Xóchitl developed a solar-powered water heater that can be made from recycled objects. This innovation is environmentally friendly and has brought warm water to residents of her community and beyond.

Xóchitl Guadalupe Cruz López

