



MISD Energy: Feel the power!

Resource Guide

The aim of Little Inventors workshops is to allow students to express the far reaches of their imagination. We want to inspire students to think up and draw original, ingenious, funny, fantastical or perfectly practical invention ideas. There are no limits!

Students will be able to draw and submit their own inventions to appear on misd.littleinventors.org, where they will be reviewed by the Little Inventors team and MISD. Their idea might be chosen as a Little Inventors Team Favorite, turned into an animation, or even made into a real object by one of our Magnificent Makers.

Key Project Dates

| | |
|--------------------------------------|------------------|
| Teacher training session & kick off | January 15, 2025 |
| Challenge close | March 21, 2025 * |
| Winner selection & making process | From April 2025 |
| Exhibition and Challenge celebration | May 29, 2025 |

* All invention submissions must to be uploaded by March 21. All details for submissions can be found in this guide.

The 'Teacher Guide to Activities' video can be found here:
<https://youtu.be/bMI8NqAexIs>

This will guide you through all of the activities found in the Inventors Log

The Project at a Glance

MISD Energy offers a creative approach to learning using invention. It is a learning program designed for Macomb County Intermediate School District in partnership with Little Inventors. Hearing about your experience using these resources in your school is really important to us so we ask that you complete an evaluation at the end of the project.

| Part | Pack name | Timings |
|------|----------------------------|---------------|
| 0 | Challenge Launch Video | 2 mins |
| 1 | Introduction to inventing | 40 - 90 mins* |
| 2 | Energy and the Environment | 60 - 120 mins |
| 3 | On the move | 40 - 90 mins |
| 4 | The challenge | 60 - 180 mins |
| 5 | Take your ideas further | 10 - 120 mins |

*All of the timings are approximate and lessons and activities can be adapted to suit your specific learning environment and students' needs.

MISD Energy: Feel the power! Pack Overview

Challenge Brief

The way we produce and use energy is the biggest reason for pollution on Earth.

It impacts all living things on the planet; humans, animals, and plants.

Small changes to the way we use energy everyday can make a big difference and are necessary in improving the health of our planet.

Your challenge is to invent something that generates energy, saves energy, or uses energy better!

How about harnessing the energy from a live orchestra or from bouncing on a pogo stick?
How about inventing a way to fly without using a plane or any fuel? Or something that turns off all of the light switches when we're not in the room?

Time to turn on that inventing switch and feel the power!

Watch the challenge launch video here:

<https://misd.littleinventors.org/challenges/misd-energy-feel-the-power>

Learning and Exploration Content

Students will explore topics around inventing and energy through a creative lens, delving into all aspects of inventing. Your students will get to think about the importance of energy and how it affects the environment. Explain that to take care of our planet, scientists agree that it is really important that humans change the way we do things and that energy is one of the most important things we can think about to really make a difference. In this challenge, they will explore what energy is, why it matters, find out about our human history with energy before thinking about better ways to make, use, store or stop wasting energy.

Using the PowerPoint presentations provided in the resource pack you will introduce them to creative thinking techniques and teach them the content they need to know to come up with their own brilliant inventions.

Students will think about what the future holds and get creative about how they can reinvent everyday life.

Using their Inventor's Log, students will gather information and creative ideas to develop some unique and exciting sparks of inspiration that will guide them on to designing their final invention!

The challenge PowerPoint is also available as narrated videos which can be played directly to your students to speed things up or used for yourself to revise the content. Find them all on the challenge page at
<https://misd.littleinventors.org/challenges/misd-energy-feel-the-power>

The Challenge

Once your students have learned all about the importance of energy they will be challenged to come up with an invention. This is the challenge questions we want them to respond to:

Invent something that generates energy, saves energy, or uses energy better!

Using their invention drawing sheets, your class will have the opportunity to respond to this challenge question with their own invention solutions. They can come up with more than one idea!

The 5 best invention ideas from your class will be selected by you (their teacher) and uploaded to misd.littleinventors.org for a chance to be made real.

Take your ideas further

For students who really enjoy the Energy challenge and want to do more they can use the 'Take your ideas further pack' included in the resources to expand their invention ideas. They can create badges, draw a comic strip, and get thinking in 3D! We strongly encourage you as their teacher to make them aware of these additional resources and use them to push your class's learning to the next level!



This project has been designed to be totally supportive and flexible to suit the needs of your students. You are best placed to select the activities and slides that will work best in line with your schedule. To support in-class delivery, each slide contains accompanying notes to ensure the main learning points are clear.

Resource Pack Checklist

All activities will be found in the printed Inventors Log and all teaching materials in the Challenge PowerPoint.

| Part | Name | Overview of resources | Resources included | Page/slide numbers |
|------|-----------------------------------|--|---|--------------------|
| 1 | Introduction to inventing | <ul style="list-style-type: none"> • An introduction to the history of inventing • Inventors that changed the world • A history of inventing in Michigan • Who is Louis Braille? | 1. Challenge PowerPoint 2. Activated PowerPoint - Part 1 3. Activity 1. Office of odd 4. Activity 2. Braille investigator 5. Activity 3. Problem detection comic 6. Activity 4. Helping hand | Slide 1 - 20 |
| 2 | Energy and the Environment | <ul style="list-style-type: none"> • Types of energy • How energy is transferred • Rube Goldberg • Impact on the environment • Fossil fuels and renewable energy | 1. Challenge PowerPoint 2. Activated PowerPoint - Part 2 3. Activity 5. My energy day 4. Activity 6. Rube Goldberg 5. Activity 7. Dream green | Slide 21 - 38 |
| 3 | On the move | <ul style="list-style-type: none"> • Types of transport and its impact • Capturing energy from movement • The power of wind • Biomimicry, taking inspiration from nature | 1. Challenge PowerPoint 2. Activated PowerPoint - Part 3 3. Activity 8. Let's move 4. Activity 9. Shape up 5. Activity 10. Fly like a bird | Slide 39 - 50 |
| 4 | The challenge | <ul style="list-style-type: none"> • Invention challenge question • Genius ideas from other Little Inventors • Top tips for inventing | 1. Challenge PowerPoint 2. Activated PowerPoint - Part 4 3. Invention drawing sheets | Slide 51 - 58 |
| 5 | Take your ideas further | <p>This is an additional activity pack for students looking to expand on their invention ideas independently. It includes activities such as writing a story about an invention idea or planning a prototype.</p> | 1. Take your ideas further pack | |

How to use the Resources

The resources are designed to be worked through from top to bottom intersected with hands-on activities along the way to keep the students engaged and developing their inventing skills.

Before running this project with your students, explore the resources and watch through the [Teacher Guide to Activities](#) video which will give you an explanation of what is expected from each activity.

Your students will have all of the required worksheets in the printed student copy of the Inventor's Log.

Each student will need -

- Inventor's Log* (containing all activities)
- Take Your Ideas Further (additional activity pack for students wanting to expand further on their idea independently)
- Invention drawing sheets (these will be included in the Inventor's Log but if you are welcome to print more if your students have more ideas)

***MISD will provide 1 printed Inventor's Log per student participant**

Materials required (in addition to worksheets) -

- Scissors
- Pens and pencils for sketching activities
- Junk materials for students that prefer to think with their hands rather than sketching - this could simply be cardboard boxes, plastic soda bottles, pipe cleaners...anything destined for trash that can be re-used to make a model
- Voice recorder for students that prefer to record their ideas over voice messages

Submitting your students best invention ideas (required)

Each classroom is permitted to submit their top 5 ideas. If you are a specials teacher with 3 classrooms, you can submit 5 ideas per class.

All invention submissions must be uploaded by teachers prior to March 21, 2025.

Invention drawings should be scanned (rather than photographed) and uploaded as either JPEG or PNG file at <https://misd.littleinventors.org/challenges/misd-energy-feel-the-power>

The judging panel comprising the Little Inventors Team, MISD and professional makers will select the final winning ideas to be brought to life in some form.

Here's our criteria recommendations for selecting your five submissions (but feel free to create your own criteria):

- Most fun
- Most detailed
- Most innovative
- Most likely to really work
- Most focused on the end user
- Wild card - this could be an invention from a student that rarely gets picked in school or a student that is a little shy/needs a little confidence boost!

Take Your Ideas Further (optional)

There is a whole host of extension activities included for students who have really enjoyed the challenge and want to take their invention ideas further. These activities can take between 10 mins - 2 hours depending on how many of the activities they engage with. You can do these extra activities in class time or give to your students to complete at home.

Celebrate all of the hard work completed by the whole class. You may want to explore ideas of how you can showcase all of the inventions at your school. How about an invention exhibition? You could invite the school community to come and explore all of the fantastic ideas!

Top Tip: Give students extra invention sheets to come up with more invention ideas at home. These can be found in the resource pack and downloaded for free on misd.littleinventors.org

Help and Contact Details

If you have any questions or need any help please get in touch at hello@littleinventors.org

We wish you and your students the best of luck with the challenge and can't wait to see the inventions!

misd.littleinventors.org

