

Invention Adventures

Grade level: 3rd-5th

Summary of lessons:

Invention Adventures is a hands-on invention education curriculum designed to introduce elementary-aged students to the mindset, skills, and processes used by real inventors. Through engaging activities, students learn that invention begins with identifying problems and developing creative solutions. The curriculum guides learners through the complete invention cycle—finding and defining problems, researching users and needs, brainstorming solutions, designing prototypes, testing ideas, gathering feedback, and refining their inventions. Students explore concepts such as innovation, entrepreneurship, branding, empathy, and the engineering design process while working collaboratively and building confidence as problem-solvers.

A central theme of Invention Adventures is that anyone can be an inventor. Students learn about diverse inventors from different backgrounds and discover how creativity, perseverance, empathy, and collaboration contribute to successful innovation. Through real-world challenges, recycled-material prototyping, research activities, surveys, presentations, and reflection exercises, participants develop critical thinking, communication, and teamwork skills while addressing problems that matter to them and their communities. By the end of the program, students have not only created and tested their own invention ideas but have also developed a deeper understanding of how invention can be used to improve lives and create positive change in the world.

Time/Duration: 10 weeks, 20 class meetings designed to be ** minutes each

Learning Outcomes:

- Identify meaningful problems in their lives, communities, or the world.
- Conduct research and gather data to better understand those problems.
- Demonstrate empathy for users and beneficiaries of their inventions.
- Generate, evaluate, and select innovative solutions.
- Design, build, test, and improve prototypes using the invention cycle.
- Communicate their ideas effectively through writing, visuals, and presentations.
- Understand that invention is a collaborative, iterative process open to everyone.
- See themselves as capable inventors, innovators, and changemakers.

Subject areas/Standards:

Invention Adventures Standards

Breakdown of lessons:

Week 1: Introduction to Inventing

Meetings 1 & 2: Catalog Combo

Week 2: Inventors all Around US

Meeting 3: What is Invention and Who Becomes Inventors?

Meeting 4: Everyone Can Invent

Week 3: Innovation Leads the Way

Meeting 5: Why is Innovation Important?

Meeting 6: When the Band Cancels

Week 4: Identifying and Defining Problems

Meeting 7: Problems, Problems Everywhere

Meeting 8: My Hobbies, Interest, Problems

Week 5: Problem Finding

Meeting 9: What Problem Will You Solve?

Meeting 10: Surveys and Collecting Data on Your Problem

Week 6: Understanding Problems

Meeting 11: Rescue 911

Meeting 12 & 13: Solution time

Week 7: Designing Solutions

Meeting 14: Drawing Your Solution

Week 8: Prototyping

Meeting 15 & 16: Building and Testing Your Solution

Week 9: Branding

Meeting 17: Branding Your Invention

<https://lemelson.mit.edu/resources/curricula>

For more information, contact info-lemelson@mit.edu

Meeting 18 & 19: Presentation Prep

Week 10: Invention Fair

Meeting 20: Getting the Invention Fair Ready!

Materials:

■ **Laptops or tablets with Internet access**

Pencils, paper, access to a printer for certain lessons

■ **Printed or cut out pictures of everyday items for each student**

■ **Bag/box to put items in for distribution**

■ **Blank paper**

■ **Markers/crayons**

■ **Simple prototyping materials for each pair:**

- **Recycled cardboard (i.e, cereal boxes)**
- **Recycled cardboard paper towel or toilet paper tubes**
- **Egg carton**
- **Newspaper**
- **Paper clips or binder clips**
- **Tin foil or plastic wrap**
- **Duct tape or masking tape**
- **Newspaper**
- **Paper towel or toilet paper tubes**
- **Paper plates, cups, and plastic utensils**
- **Paper clips or binder clips**
- **Tinfoil or plastic wrap**
- **Index cards**
- **Rubber bands**
- **Duct tape or masking tape**

- Scissors
- Hat or envelope for problem strips
- Tin foil or plastic wrap
- Index cards
- Rubber bands
- Tissue boxes
- String
- Bottle caps
- Empty cans/bottles

■ Scissors

■ Hot glue sticks/hot glue (optional)

Large post-it paper (optional)

■ Ping pong balls

■ Pipe cleaners

■ Straws

■ Craft sticks

■ Small paper cups

Grid paper

Felt

Cloth

Poster board