

# BECOME AN ENGINEER: BUILD YOUR OWN BOAT!



*In this activity, boats aren't just for water! Children use a limited selection of materials and their creativity to become an engineer and build a land boat that sails across different surfaces.*

*At Idaho National Laboratory, there are numerous types of engineers, such as power, nuclear, mechanical, and electrical. For example, an electrical engineer designs electrical systems for new projects and facilities at INL. This includes power systems design and modeling, creating construction drawings and specifications, producing technical evaluations and concepts for new projects and modifications, and working with customers and shareholders to ensure project and facility requirements are met.*

## GRADE LEVELS: K-5

### VOCABULARY

**Engineer-** a person who designs, builds, or maintains engines, machines, or public works.

**Creativity-** the use of the imagination or original ideas, especially in the production of an artistic work.

### MATERIALS

- Tape
- Straws
- Paper



---

# PROCEDURE

1. Using only tape, straws, and paper, have children design land boats that they can sail across a table or floor surface. Challenge them to think about the boat's body shape.

**Will it have sails? If so, how many? Ask what materials will help it sail smoothly. How will they keep it from tipping over?**

2. Designate an area as the "pond" and have children race their land boats across the pond. After testing their boats, have them make changes based on their discoveries and then retest them. Encourage children to think creatively and critically by asking them what is working well, what needs problem solving and what other imaginative ideas they have for making changes. To keep the fun going, select a new "pond," changing the surface material the boats must sail on. Consider any readily available surface: tabletops, tile flooring, carpeting, tin foil, plastic or even grass!

---

# THE SCIENCE BEHIND IT

In this activity, children are challenged to learn the importance of accepting failure as an obstacle and the value of making modifications and retesting. Creative problem solving comes into play as children determine what is working well and what could be improved upon in their designs. Introducing new challenges with the "pond" surface encourages children to think creatively and be innovative to overcome obstacles!



Children are also introduced to engineering concepts. They are building and designing a boat that they think works. This develops engineering and creativity skills.

---

# EXTENSIONS

- Consider using recycled paper, such as old homework.
- Try different design techniques and see which one makes the boat the fastest and sturdiest.
- Decorate your boat with anything you want! Maybe pom poms, glitter, etc.

---

# RESOURCES

- <https://www.easypeasyandfun.com/how-to-make-a-paper-boat/>
- [Invent.org/blog](http://Invent.org/blog)

---

# LEARN MORE ABOUT INL

**STUDENTS + PARENTS + EDUCATORS**

*For information on grants, training and student opportunities; curriculum ideas and resources, please visit us at: **[stem.inl.gov](https://stem.inl.gov)**.*

