

Western Engineering Outreach

Clapper Trapper Toys

Grade Sk-2

Meet Today's ENG HERO!



Daniel Langohr - Assistant Professor at Western University

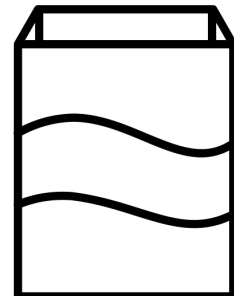
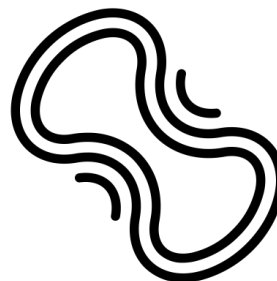
Dr. Langohr is an Assistant Professor in the Department of Mechanical and Materials Engineering at Western University. He received his BSc and MSc. degrees in Mechanical Engineering from the University of Waterloo, and his PhD from Western University in Biomedical Engineering. He specialized in the tribology, design, and assessment of orthopaedic implants. He also has experience in the industry in process engineering, manufacturing engineering, and predictive maintenance. To learn more about Dr. Langohr visit: www.eng.uwo.ca/mechanical/faculty/Langohr_D/index.html

Learning Goal:

- Students will consider what energy is and how it is conserved while create a toy.
- Curriculum Connections: Grade 1- Energy in Our Lives; Grade 2 - Movement

Materials Needed:

- 1 Elastic
- Cardboard from a cereal box



Engineering and Science Connections:

Today we will become mechanical engineers. Mechanical engineers solve problems to design and create things that move.

One thing Mechanical Engineers have to consider when designing something that moves is energy.

What is energy?

Energy is the ability to do work. Energy is how things change and move. It's everywhere around us and takes all sorts of forms.

There are many forms of energy, here is a list of some of them!

Gravitational - Large objects such as the Earth and the Sun create gravity and gravitational energy.

Motion- Anything that is moving has energy. This is also called kinetic energy.

Potential - Potential energy is energy that is stored. One example of this is a spring that is pressed all the way down. Another example is a clothes pin held open that wants to close.

Energy can transform from one form to another form. For example, we can compare potential and kinetic energy by considering a car on the top of a hill. When the car is at the top of the hill it has the most potential energy. If it is sitting still (no motion), it has no kinetic energy. As the car begins to roll down the hill, it loses potential energy, but gains kinetic energy. This topic of converting energy will be used to explain our activity today!



Video Recommendation: What is Energy? / Types of Energy: Light, Heat, Water, Electrical and Wind /

Kids Academy <https://www.youtube.com/watch?v=4HdxOhBRDUI>

Activity:

Before beginning, think about the following questions:

- Where do we see energy?
- What is energy used for?
- Can you spot anything around your house that is using energy?

Time to begin

In today's activity we will be learning how energy is transferred from your hand from potential energy into kinetic energy

1. Cut out two 1.5" squares out of cereal box cardboard.



2. Cut out two small slits on opposite sides of your cardboard squares. They should be in the middle of each side.



3. Grab a small rubber band and use it to wrap around your two cardboard squares. Secure the rubber band in place by sliding it into your slits. The cardboard pieces should be on top of each other. (If the slits are too small, you can always cut out small triangles instead. This will make it easier to slip the rubber bands in.)



4. Open the two pieces of cardboard by flipping each side over. We're creating some potential energy here when we stretch the rubber bands.
5. Keep stretching the rubber bands all the way by pulling the cardboard pieces together. Now let go! The potential energy is being converted to kinetic energy and creating sound energy.

What Did You Learn?



- What is Energy?
- What are the different forms of Energy?
- How does potential energy turn into kinetic energy?

Future Learning



- Discover other forms of energy such as nuclear and thermal.
- Watch some YouTube videos on how Newton's cradles work.

Share your creations!

We would love to see what you made. Email us at discover@uwo.ca or tag us on social media.

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Twitter: @westernueng

Facebook: @westernueng

Thanks for discovering with us!