Project SOS
the Science of Sustainability
operates through the
Palouse Discovery Science Center in Pullman, WA.

The goals of the project are that youth gain a basic understanding of the physics of heat transfer, learn to work collaboratively on team challenges, bring their interest and information home to their families, and begin to think about the future and how their families can save energy.

Youth learn the basic concepts of physics through demonstrations and several simple hands-on exhibit activities and then work together to conserve energy in a model house using energy-saving measures they learned from the exhibits. They also learn how to use simple tools to become “heat science detectives” to test their own home by performing an energy audit to find areas where heat energy can escape in the winter or enter in the summer.

Through Project SOS, youth and their families have learned how to apply their new skills and knowledge to find ways to make their own homes more energy efficient.

For more information about Project SOS and future plans, contact Kathy Dawes at outreachpdsc@gmail.com or call 208-310-2922

See more at www.palousescience.net/#!sos-introduction/c1mws
Project SOS
the Science of Sustainability

make a difference

Science of Sustainability

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Why are we doing Project SOS?

SOS – The Science of Sustainability

What does sustainability mean?

to “aim for low or zero net energy use”
is a goal for sustainable housing
Different forms of energy ...
Did you know???

Home energy use

- Space Heating: 45%
- Water Heating: 18%
- Space Cooling: 9%
- Computers and Electronics: 6%
- Lighting: 6%
- Other: 5%
- Cooking: 4%
- Refrigeration: 4%
- Wet Cleaning: 3%
Home energy use that’s related to Heat =

- Space heating
- Water heating
- Wet cleaning
- Refrigeration
- Cooking
- Other
- Lighting
- Computers/Electronics
- Space cooling

80%
That’s why we’re Exploring Heat Energy
Temperature

The measure of the average motion of atoms in a substance
All objects have thermal energy due to motion of their particles!
Heat Energy

flows from hotter to colder areas when there is a temperature difference across an object or between two objects
Heat flows three ways:

Heat flows due to:
- Conduction
- Convection
- Radiation
How and when does heat energy flow???

Only when there is a temperature difference…

Always from hotter to colder …

The greater the temperature difference, the faster it flows…

And it flows until everything reaches the same temperature!
Let’s do an experiment...
We “feel cold” when...

...our surroundings are colder than we are, so heat moves from our body to our surroundings!

We “feel hot” when...

...our surroundings are hotter than we are, so heat moves from our surroundings to us!
Forms of Heat Transfer…

- Radiation
- Conduction
- Convection
Conduction

When heat moves between materials that are touching

Animation Link:
https://youtu.be/_6LlkgRciak
Convection

When *heat moves as hot gases*, or *liquids rise*

Animation Link: https://youtu.be/teEiou_sj-o

Full of Hot Air Demo link: https://youtu.be/E4ViB2wCeCo
Radiation

When heat moves in all directions as invisible infrared light

Animation Link:
https://youtu.be/RtFq07ORWP8
What’s the smartest invention ever made?

THE THERMOS BOTTLE!

How does it ‘know’???
Let’s do another experiment…

Your team challenge: Keep the hot cocoa HOT!
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