

Student Role Model Activities

Below you will find a list of all of the 61 activities the student role models are prepared to offer. If you are interested in activities for higher age groups, please contact us and we'll try to find an activity that suits your needs.

Please contact the PWSE student role model assistant, Nicole Vogl, at rolemodels@iastate.edu, or (515)294-5814 to determine which of these activities best fits your classroom and to schedule a visit to your school.

A few general guidelines for choosing activities:

- All activities should be chosen according to the class's needs.
- Activity times are only estimates, but should represent the maximum time necessary for the activity. Estimates do not include time for wrap-up discussions.
- Recommended grade levels are flexible; many activities can be adapted to fit a range of age groups.

WONDERWISE Activities:

African Plant Explorer

Investigating Starch

Activity Time: Part I – 30 min, Part II – 30 min

Grades: 3 - 6

- Part I: Test for the presence of starch using iodine.
- Part II: Compare chewed cracker with unchewed cracker.

Parasite Sleuth

A Model Parasite

Activity Time: Part I – 60 min, Part II – 30 min

Grades: 7 - 8

- Part I: Construct a male or female ascaris worm.
- Part II: Trade models, predict sex, dissect and label parts, verify prediction.

Classy Parasites

Activity Time: Part I – 30 min w/o video, Part II – 30-60 min

Grades: 9 - 12

- Part I: Explanation of classification process.
- Part II: Classify parasites.

Traveling Tapeworm

Activity Time: Part I – 30 min, Part II – 30 min

Grades: 5 - 8

- Part I: Build a life-size model of the human digestive tract.
- Part II: Learn about the tapeworm life cycle and place appropriate stages in the human digestive tract.

Rainforest Ecologist

Nutty Investigations

Activity Time: Part I – 40 min, Part II – 30 min

Grades: 5 - 8

- Part I: Predict the number of pennies needed to crack the shell of six different kinds of nuts; test predictions.
- Part II: Observe the varying fat content in the nuts, then compare to known data.

Build a Tree

Activity Time: Part I – 45 min, Part II – 30 min

Grades: 2 - 6

- Part I: Build the basic above-ground tree structure from paper bags and tissue paper.
- Part II: Invent a root system to make the tree stand alone; discuss different root types.

Sea Otter Biologist

Fragile Waters

Activity Time: Part I – 10 min, Part II – 10 min, Part III – 20 min, Part IV – 40 min

Grades: 5 - 8

- Part I: Study a map of the Gulf of Alaska and notice the oil spread from the Exxon Valdez oil spill.
- Part II: Compare jars of baby oil and water, water and motor oil to determine the behavior of oil in water.
- Part III: Explore properties of oil using a plastic spoon.
- Part IV: Predict and then test various materials to determine how oil damages natural materials; also try to clean oil off materials and rate effectiveness.

Otter Smorgasbord

Activity Time: Part I – 30 min, Part II – 30 min, Part III – 30 min

Grades: 5 - 8

- Part I: Calculate the kilos of food needed per day for an otter pup at different ages.
- Part II: Graph the kilos of food needed per day vs. age.
- Part III: Formulate a diet for a day for a 12-month-old otter pup using actual otter prey.

Tracking Otters

Activity Time: 60 min

Grades: 3 - 6

- Part I: Look at map of Prince William Sound to understand the directions and landmarks.
- Part II: Role-play as a sea otter (only one per class), receiver or tracker. The sea otter will go to designated areas of the room and click. The blindfolded receiver will listen for the otter clicking and point to the direction of the otter and the tracker records where the receiver points.

Pollen Detective

In Search of Pollen

Activity Time: Part I – 30 min, Part II – 30 min

Grades: 5 - 8

- Part I: Learn the parts of a flower from a drawn diagram.
- Part II: Dissect a real flower and identify parts.

Flower Engineers

Activity Time: Part I – 30-45 min, Part II – 30 min

Grades: 5 - 8

- Part I: Look at a chart and build a flower to attract a particular pollinator.
- Part II: Take a survey to see if students can match your flower to its pollinator.

Pollen Tracks

Activity Time: Part I – 60 min, Part II – 30 min

Grades: 7 - 10

- Part I: Mark the site of the dig, dig for rocks, extract pollen from the rock and identify the pollen.
- Part II: Report the data from the dig.

Urban Ecologist

Seedy Travelers

Activity Time: Part I – 30 min, Part II – 60 min

Grades: 6 - 9

- Part I: Make predictions about how seeds travel (rollers, hitchhikers, or fliers.)
- Part II: Build the tools for testing, then test the way seeds travel and re-categorize them.

Walk on Water Bugs

Activity Time: Part I - 30 min, Part II - 30 min

Grades: 5 - 8

- Part I: Construct a water bug from a paper clip and perform dirt and detergent tests.
- Part II: Use two different filters (filter paper and a sand- gravel mixture) in an attempt to clean polluted water; use the water bugs to test if the filter was effective.

Drain Game

Activity Time: Part I – 30 min

Grades: 4 – 7

- Part I: Make a watershed, then use markers and a spray bottle to observe how a watershed works and how it is affected by pollution.

Vet Detective

Meet Tolani

Activity Time: 30 min

Grades: 3 - 6

- Part I: Do an experiment on human flight zones and discuss their importance when working with animals.

Vital Signs

Activity Time: Part I – 45 min

Grades: 3 - 6

- Part I: Test your temperature, respiration rate, and heart rate and compare them to those of animals.

Disease Detective

Activity Time: Part I – 30-45 min, Part II – 15 min

Grades: 5 - 8

- Part I and Part II: Observe where two herds of elk are located in the Yellowstone Region, then take a sample of each herd to calculate the percent of each herd infected with the brucellosis bacteria.

Space Geologist

Candy Planets

Activity Time: Part I - 10 minutes, Part II – 40 minutes

Grades: 3 - 6

- Part I: Discuss students' weights and ages on different planets.
- Part II: Create a candy solar system while learning about the planets.

Crater Maker

Activity Time: Part I – 45-60 min

Grades: 3 - 6

- Part I: Study the impact made by dropping several marbles from various heights into a tray of flour.

Vanishing Craters

Activity Time: Part I – 40 min

Grades: 3 - 6

- Part I: Make a crater, and then use a spray bottle to observe the effects of rain on a crater.

Big Time Tour

Activity Time: Part I – 20-30 min, Part II – 45 min

Grades: 3 - 6

- Part I: Discussion of the size of a million using common items (phone book, salt, etc.)
- Part II: Predict the geological timeline, and then actually make one using your arm as the scale.

Digging into the Past

Activity Time: Part I – 30 min, Part II – 30 min

Grades: 3 - 6

- Part I: Discuss the layers of the earth, and then create a “geological history” in a cup.
- Part II: Take another team’s cup and take a core sample and determine the history of their cup by recording the layers.

Genetic Counselor**Meet Cathy**

Activity Time: Part I - 30 min

Grades: 3 - 6

- Part I: Role-play as a genetic counselor and patient; learn about some common genetic traits.

Alike and Different

Activity Time: Part I - 10 min, Part II – 30-40 min

Grades: 3 - 6

- Part I: List all the ways that you and a partner are the same.
- Part II: Study the differences between you and your partner based on common genetic traits. Discuss the basic meaning of “dominant trait.”

Mating Game

Activity Time: Part I – 45 min

Grades: 3 - 6

- Part I: Learn about dominant and recessive genes by creating a Smiley Face baby from different Smiley Face creature parents.

What Sort?

Activity Time: Part I - 25 min, Part II – 30 min

Grades: 5 - 8

- Part I: Learn about chromosomes and DNA by creating your own chromosome model.
- Part II: Sort chromosomes using a karyotype chart; discuss features of the human your chromosomes represent.

Inside DNA

Activity Time: Part I - 20 min, Part II – 30 min

Grades: 3 - 6

- Part I: Make a candy model of a DNA strand.
- Part II: Join your model with another team, and then make a copy of the new DNA strand.

FUNTIVITIES - Level One:

Static Electricity

Dancing People

Activity Time: 20 min

Grades: 2 - 6

- Part I: Role-play as a neutron, proton or electron. Interact to illustrate the structure of an atom and the general properties of its components.
- Part II: Inflate a rubber balloon and rub it on someone's clothing or hair. Hold the balloon near some cut-out paper figures. Make observations.
- Expanded Activity: Observe the effect two charged balloons have on each other.

Salt and Pepper

Activity Time: 20 min

Grades: 2 - 6

- Part I: Compare what happens when a charged comb or balloon is brought near salt alone and what happens when a charged object is brought near a mixture of salt and pepper.
- Expanded Activity: Observe the effect when two dangling strips of newspaper are pulled between two fingers.

Electric Circuits

Simple Electric Circuits

Activity Time: 25 min

Grades: 2 - 6

- Part I: Observe that a battery is a source of energy (electricity) that can turn on a light bulb. Observe that the electricity must flow in a complete circuit in order for the bulb to light. Test different ways to make a complete circuit.

Insulators and Conductors

Activity Time: 20 min

Grades: 2 - 6

- Part I: Demonstrate how electricity travels through different media.
- Part II: Make a simple electric circuit to test objects to see if they are conductors or insulators. Demonstrate that electricity will only flow through conductors and not through insulators.

Magnets

Magnetic Pickups

Activity Time: 20 min

Grades: 2 - 6

- Part I: Demonstrate the ability of a magnet to extract the iron from breakfast cereal.
- Part II: Predict which objects will be magnetic and test predictions with a magnet
- Expanded Activity: Test objects in the room and identify the magnetic objects.

How Strong is Your Magnet?

Activity Time: 30 min

Grades: 2 - 6

- Part I: Measure the strength of a magnet and graph how the strength changes as the distance from the magnet increases.
- Expanded Activity: Create an all-class graph illustrating the data from each group.

Sticky Nails

Activity Time: 20 min

Grades: 2 - 6

- Part I: Demonstrate the strength of a magnet by causing one magnet to float above another.
- Part II: Make a temporary magnet by magnetizing a nail so that it can pick up paper clips.
- Expanded Activity: Create a homemade compass using a cup of water, a small piece of foam and a magnetized needle.

Build It: Electromagnet

Activity Time: 45 min

Grades: 2 - 6

- Part I: Construct and use an electromagnet.
- Expanded Activity: Demonstrate the right-hand rule or try to construct the electromagnet as a solenoid (coiled without a bolt in the center) and test its strength.

Air Pressure and Surface Tension

Air Pressure Power: Heavy News

Activity Time: 30 min

Grades: 2 - 6

Part I: Demonstrate that air has mass and weight and that it exerts pressure or pushes on objects by experimenting with lifting a newspaper then calculating the surface area and the air pressure on the newspaper.

Book Lift: The Power of Compressed Air

Activity Time: 30 min

Grades: 2 - 6

- Part I: Introduction to air pressure and power of compressed air demonstrated by a beach ball.
- Part II: Show that compressed air can do work by inflating a plastic bag under a stack of books.
- Expanded Activity: Challenge students to see the maximum number of books they can lift with the inflated bag or experiment with inflating two bags at the same time.

Air in Motion

Activity Time: 20 min

Grades: 2 - 6

- Part I: Demonstrate the difference in pressure when air is in motion compared to when air is at rest and to understand Bernoulli's Principle by blowing across the top of a strip of paper and causing it to flutter.
- Expanded Activity: Create paper tents and test what happens when air is blown through the middle of the tent.

Making Bubbles

Activity Time: 40 min

Grades: 2 - 6

- Part I: Introduce the concept of surface tension by floating a paper clip in water.
- Part II: Demonstrate the surface tension in a soap film by making a soap solution, then creating bubbles.
- Expanded Activity: Demonstrate how soap interacts with water molecules by spinning a paper spiral with detergent on an end in a pan of water.

Math

Estimation Contest

Activity Time: 25 min

Grades: 2 - 6

- Part I: Learn how to use estimation by practicing by estimating the number of cereal pieces in a 32 oz. container.
- Expanded Activity: Practice estimation of the length of various objects using only the known distance from the tip of the middle finger to the wrist.

Tangrams

Activity Time: 30 min

Grades: 2 - 6

- Part I: Develop an understanding of spatial relationships by making various shapes using triangles, squares, and rectangles.

What's Your Wingspan?

Activity Time: 45 min

Grades: 2 - 6

- Part I: Practice gathering and analyzing data by determining height and wingspan, calculating the difference between the two, and graphing the class results to look for trends.
- Expanded Activity: Look for a mathematical relationship between the length from the chin to the top of the head and height.

Kalah

Activity Time: 15 min to build and for one round

Grades: 2 - 6

- Part I: Practice problem solving and logical thinking by playing the game Kalah.
- Expanded Activity: Try playing the game with a different starting number of beans per pit and observe the effects on the game.

Engineering

Gumdrop Towers

Activity Time: Part I – 30 min

Grades: 3 - 8

- Part I: Learn basic construction engineering principles by building a tower out of just dry spaghetti noodles and gumdrops.

FUNTIVITIES - Level Two:

Electricity and Magnetism

Lights, Sound, Action!

Activity Time: 45 min

Grades: 7 - 8

- Part I: Show that circuits can be wired in series or in parallel. Compare and contrast the two circuit types. Show that a battery is a source of electrical energy that can be used to produce light sound and motion by creating circuits that light a bulb, make a buzzer sound and power a fan blade.
- Expanded Activity: Create a circuit to meet a specified challenge (e.g. light the most bulbs with the fewest pieces of wire)

Magnificent Magnetic Maps

Activity Time: 30 min

Grades: 7 - 8

Part I: Discover the effect magnets have on iron filings and other magnets by mapping the magnetic field.

Build it: Electric Motor

Activity Time: 50 min

Grades: 7 - 8

Part I: Build a simple electric motor. Learn how magnetism and electricity work together to produce motion in motors.

Chemistry

pHact Finder pHun

Activity Time: 30 min

Grades: 7 - 8

Part I: Become acquainted with acids and bases. Use an indicator which allows you to find out which household substances are acids and which are bases.

Expanded Activity: Challenge students to change the indicators back to the original color.

Testing: One, Two, Three

Activity Time: 45 min

Grades: 7 - 8

Part I: Investigate the physical and chemical properties of common powders (e.g. salt, laundry detergent, non-dairy coffee creamer, etc.) through observation and sugar, water, vinegar, baking soda, and/or acid/base tests.

Biology

Extracting DNA

Activity Time: 45 min

Grades: 6 - 9

Part I: Discuss properties of DNA. Using a sample of wheat germ, extract visible quantities of DNA.

Friction

Marble Race

Activity Time: 50 min

Grades: 7 - 8

- Part I: Test the effects of variables on the speed and distance of objects rolling down an inclined plane. Variables include object type, ramp height, ramp covering.
- Part II: Calculate the speed for individual trials and compare.

Slippery Situation

Activity Time: 40 min

Grades: 7 - 8

- Part I: Explore the properties of lubricants and distinguish between the effectiveness of various lubricants by performing an experiment in which variably lubricated gelatin cubes are transferred from one bowl to another.

Density and Surface Tension

Density Layers

Activity Time: 45 min

Grades: 7 - 8

- Part I: Prove that liquids can float on other liquids and demonstrate that solids may sink in some liquids but float in others using various liquids and solids.

Ship Shape

Activity Time: 25 min

Grades: 7 - 8

- Part I: Experiment with different designs that affect density and change the ability of an object to float. The designs are for a foil “floating object” that should be able to carry “cargo.”

Classifying Plastics

Activity Time: 40 min

Grades: 7 - 8

- Part I: Explore a practical application of density concepts by testing a variety of plastics, gathering and analyzing the data.

Bubble Bonanza

Activity Time: 40 min

Grades: 7 - 8

- Part I: Investigate some physical properties of liquids, especially surface tension in a soap film and plain water.

Math**Spread Your Wings**

Activity Time: 45 min

Grades: 7 - 8

- Part I: Practice gathering and analyzing data by determining height and wingspan, calculating the difference between the two, graphing the class results to look for trends, and finding the mode, median, and mean of the data set.
- Expanded Activity: Look for a mathematical relationship between the length from the chin to the top of the head and height.

Guess What?

Activity Time: 25 min

Grades: 7 - 8

- Part I: Practice making predictions based on probability by attempting to guess the combination of colored objects in a brown bag. Objects are drawn from the bag for eight rounds, then a guess is made.

Calculator Kalah

Activity Time: 20-35 min

Grades: 7 - 8

- Part I: Become familiar with the operation of a calculator and develop thinking skills while adding and subtracting by playing several rounds of Calculator Kalah (players enter digits 1-9 and the + sign and try to be the player that reaches exactly 73).
- Expanded Activity: Play the traditional version of Kalah.

Tangrams

Activity Time: 30 min

Grades: 7 - 8

- Part I: Develop an understanding of spatial relationships by making various shapes using triangles, squares, and rectangles.