



**GRU'S**  
**TRAVELING EDUCATION KITS**  
**For Grades 4-8**



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GRU's Education Kits are chock full of resources to help you teach your students about energy, water and renewable energy/sustainability. Each kit contains everything you'll need to teach a particular topic, including lesson plans and hands-on activities, as well as most of the materials you'll need to conduct the activities. All lessons have been correlated to the current Sunshine State Standards

Alachua County teachers may borrow kits for a two week period. We will ship the kits to you through your school's truck mail system, with instructions on how to return them to GRU.

GRU also provides guest speakers and interactive classroom demonstrations on topics related to water, energy and electric safety. We'll send an expert to your classroom on request!

To borrow an education kit or request a speaker, fill out our online request form at:

[www.gru.com/ourcommunity/investinginourcommunity](http://www.gru.com/ourcommunity/investinginourcommunity).

For more information regarding any of GRU's educational resources, contact Robin Baxley at [baxleyrl@gru.com](mailto:baxleyrl@gru.com) or 352-393-1032.



## The Water Cycle Kit

The Water Cycle Kit includes the following:

- Water Cycle Activity Model: Make it rain in your classroom! Students can duplicate the individual processes of the water cycle - evaporation, condensation and precipitation - with this three-dimensional plastic model. Comes with a teacher guide and a lesson plan.
- "Water's Cycle" Video (20 min.) Discover the role of groundwater in the water cycle by going on location to one of the wettest places in the United Kingdom.
- Science Court: Students will learn about the water cycle through experiments, discussion and teamwork with this animated, interactive courtroom drama on CD-Rom. Comes with a teacher guide, a complete set of lesson plans and suggested hands-on activities. Kit includes some of the materials you'll need for the activities.
- Hands-on Lesson: Permeability and Porosity – illustrates how water returns to the aquifer. Includes enough materials for 5 groups of 4.
- Hydrologic Cycle Coloring Sheet: Illustration of water cycle for students to color based on list of water cycle-related vocabulary. 25 copies.

## The Water Quality Kit

The Water Quality Kit includes the following:

- Surface & Subsurface Waters video: Shows the interconnection of surface and subsurface waters. Expert diver/scientists enter a Florida spring, go into a tunnel & follow an underground river for several miles. They find the water filled with debris such as tires, oil barrels, etc. At the same time, another team tracks their movements from above ground through houses, businesses and traffic, showing how we unsuspectingly pollute the very water we drink.
- Restoring Damaged Rivers video: Focuses on the St. Johns River, exploring the damage caused by human activity & proposing best management practice methods of restoration. Emphasis is placed on the importance of keeping our waters clean for the health of the population.
- All Messed Up lesson plan: (For use with the above videos) Teaches students about stormwater runoff and the roles human activity and runoff play in water pollution. Kit includes most equipment needed for the hands-on activity for four groups of students. **Please note:** This lesson plan as written is most suitable for grades 7 & 8.
- Safe Water Science activities: Comes with lesson plans designed to get students thinking about drinking water conditions in developing nations in comparison to our clean water standards. Supplies are provided for four different hands-on activities, with enough for all students in class.

## **Forms of Energy Kit #1**

The Forms of Energy Kit #1 includes the following:

- Videos (23 minutes each)
  - Electromagnetic Energy
  - Heat & Chemical Energy
  - Nuclear Energy
  - The Transfer of Energy
  
- Hands On Lessons (most materials needed are included, for 5 groups of 4)
  - Isolate Infrared Waves - Electromagnetic energy includes invisible high-energy radiation, visible light and invisible lower-energy infrared waves. Sixty percent of energy from the sun arrives in the form of infrared energy. With this experiment, prove that a light bulb radiates both light and infrared waves by separating the two forms of energy.
  
- Energy Transfer Lab (5 groups of 4)
  - Miniature battery-powered winch demonstrates the relationship between gravitational potential energy and electrical energy. By measuring the current and potential of the power source and lifting known masses metrically through a measured distance, it is possible to calculate the electrical energy input, the mechanical work done, and the efficiency of the system.
  
- Investigating Heat & Temp Lab (1 set only, for teacher demonstration)
  - Gain an understanding of heat & heat transfer through this series of hands-on activities. Measure thermal conductivity & thermal expansion of various metals; explore methods of heat transfer, including conduction, convection & radiation. Determine the specific heat of various substances. Using the calorimeter, determine the heat of fusion of ice. Observe a demonstration of heat transfer using a radiometer, & investigate heat & phase changes of matter.

## **Forms of Energy Kit #2**

- Videos (23 minutes each)
  - Energy: Potential & Kinetic
  - Mechanical Energy
  
- Hands On Lessons (most materials needed are included)
  - Physics/Mechanics (17 separate experiments) (materials for 3 groups)

## **Electricity/Electronics Kit**

The Electricity/Electronics Kit includes the following:

- Videos
  - Electricity (23 min.)
  - Science of Disney Imagineering: Electricity (30 min.)
- Hands On Lessons (most materials needed are included)
  - Batteries & Bulbs
  - Buzzers & Batteries
- Electronic Learning Center (4 centers)
  - Teach basic principles of electricity, electronics, physics and magnetism
  - Comes with built-in speaker, 7-segment LED play, two fully integrated circuits and rotary controls.

## **Renewable Energy/Sustainability Kit**

The renewable energy/sustainability kit includes lessons on natural resources, alternative energy, energy efficiency and sustainability. The following is included:

- Videos
  - Energy Resources: Use & Conservation (23 min)
  - Scientific American Frontiers: Hydrogen Hopes (30 min)
  - Nova: Car of the Future – Engineering for the Environment (54 min)
  - Nova: Solar Energy – Saved by the Sun (56 min)
  - When the Water Tap Runs Dry (40 min)
- Watts Up? Watt Meter Device
  - Helps students understand the cost of electricity. Plug appliances & electric equipment into the meter to find the number of watts used. Other modes allow students to determine the voltage & amps of each appliance. Several lessons that may be used alone or with your regular unit on electricity.
- Renewable Energy Kit
  - The components of this kit allow students to explore how the sun, wind and water can supply the power to make things move and work. Through fun, hands-on experiments, students discover the basic principles of energy. The accompanying activity book provides the frameworks for students to record their observation, gathered data, questions and discoveries.
- Sun Power House
  - A working model of a basic passive solar-heated house. Demonstrate principles of collecting, storing, and using solar energy. Conduct experiments in a classroom window or outdoors. (Comes with three houses so multiple experiments can be done simultaneously!)