



Lesson Plan for Social Studies

(Grades 7-12)



Topic: Insulators

Suggested units: Inventors/inventions, history of the railroad, communication

Objective: Students will understand the role of insulators in history

Introduction: If possible, show the class a variety of insulators of different shapes/materials/colors. Invite discussion about what the class thinks these might be. If you do not have access to actual insulators, show them pictures. If using pictures you may want to show them a picture of an insulator by itself before showing pictures of them actually on poles.

Lesson: Teachers will need to adapt the lesson itself to the unit of study as well as to the age group. Additional information can be found from sources on the resource list.

Basic information:

Since railroad companies had done the hard work of clearing pathways between cities, early communication companies installed their long lines of wooden telegraph poles beside railroad tracks. Wires were strung between these poles from city to city and electric signals traveling through the wires allowed communication as long as the electricity could safely flow.

Rain hindered communications because water in a rain-soaked pole would allow the electric signal to travel down through the wood into the ground. The electricity was “grounded” and the message was lost. Any material that allows electricity to travel through it is a conductor. Any material that will not conduct electricity is called an “insulator.”

To solve the problem of wet wood, telegraph companies installed “glass insulators” to hold the wires safely. A special groove encircles the middle of insulators. A communications wire was held in this “wire groove” by having a short “tie wire” twisted around the glass and communications wire.

Drip points – small bumps around the bottom, outer edge (petticoat) of the insulator – were sometimes used to help water drip off of the glass quicker, thereby making it more unlikely the electricity would travel to ground.

Many colors were used for insulators. If more than one company had wires on the same poles, different colors could be used to identify which wires belonged to which company.

Insulators made it possible for news to travel from coast to coast in a matter of minutes instead of months. All important information, such as President Lincoln’s assassination, The Wright Brother’s first flight, news of World War’s I and II, and even man’s first steps on the moon in 1969 were carried through the communications wires safely because of insulators. Most communication lines were moved to underground cables in the 1970’s so almost all insulators a person sees nowadays are being used only to carry electricity from one place to another. Glass cannot handle insulating the higher voltage power companies require so most modern insulators are made from porcelain or rubber-like man-made materials.

Wrap up: Encourage students to look for insulators on their way home from school. Tomorrow they can share where they saw them, what colors they were, what shape, etc.

Age-related worksheets can be done at this time.

K-2nd – coloring page of an insulator or of lines along a track.

3rd -6th – word search of vocabulary terms

7th-12th – crossword puzzle of vocabulary terms