



Eye Wonder



Arts, A/V Technology & Communications

*Careers in Arts, A/V Technology and Communications are about designing, producing, exhibiting, performing, writing and publishing multimedia content in such fields as visual and performing arts, design, journalism, and entertainment. Follow D.V. behind the scenes in **Eye Wonder**.*



Eye Wonder

About the Series

[Eye Wonder](#) excites students with interesting facts and just plain fun! The series explores science and integrates technology, while focusing on various careers. The videos are less than 10 minutes and are filmed through the eyes of the cameraman, D.V.

Careers in **Arts, A/V Technology and Communications** are about designing, producing, exhibiting, performing, writing and publishing multimedia content in such fields as visual and performing arts, design, journalism, and entertainment. Follow D.V. behind the scenes in **Eye Wonder**.

<http://media.knowitall.org/series/arts-av-technology-communications-0>

Billboards (9:49)

The **Eye Wonder** team learns how billboards are designed and made.

Digital Television (7:32)

The **Eye Wonder** team discovers how digital television works. D.V. speaks with an engineer to learn about the difference between a digital and an analog signal, and the benefits of having a digital signal including high definition, dimensions and multicasting.

Fashion Designer (7:54)

The **Eye Wonder** team discovers what it takes to be a fashion designer. D.V. visits the fashion department at the American Intercontinental University



Eye Wonder

and learns all about the things a fashion designer must learn, from sewing and pattern-making to color theory and figure drawing.

Glass (10:51)

The **Eye Wonder** team discovers how art glass is made. D.V. visits an art glass studio and watches a piece being made in real time. He learns that glass is made from silica, and there are many tools required to make unique shapes, styles and colors.

Magazines (7:34)

The **Eye Wonder** team learns how a magazine is planned, designed and printed.

Marionette (8:49)

The **Eye Wonder** team takes a look at marionettes and puppetry.

Movie Theater (7:56)

The **Eye Wonder** team investigates a movie theater. D.V. goes behind the scenes to see how film is loaded and rolled, and all of the different equipment that brings a movie to the screen.

Radio (9:33)

The **Eye Wonder** team learns how radio works. D.V. goes to a station and learns about the science and technology necessary to making a broadcast work.



Eye Wonder

S.C. Standards & Classroom Activities

Billboards

Non-science lesson.

This video has little to offer a science class, but would be excellent for a middle school journalism class.

Introduction: This activity could be used as a post-video project for students to design billboard advertisements.

Materials: depends upon how involved the instructor wants the lesson to be

Procedure:

1. Have the class discuss different billboards they have seen around the city.
2. Have the students break into groups and design billboards for different products. You can assign the specific products or services to work on, or let the students come up with their own.
3. Use materials to create your billboards. You can have them do this on sheets of paper, poster board, or bulletin board paper.



Eye Wonder

They can use pens, pencils, crayons, markers, colored pencils, or anything you have available to use.

Glass

Grade Level: 6th

Standard: IV.C.3.c.

Design an experiment that reduces the rate at which a substance melts.

Type of Activities: Post-video lab

Introduction- This lab relates to the statement in the video segment where the glass blower says that they add ash to the silica to help reduce the temperature at which the sand melts.

Background: Glass blowers add ash to the silica that is melted in order to make glass. This helps reduce the temperature at which the mixture melts. This means that they do not have to get the kiln as hot in order to work the glass. Other substances also affect the melting or freezing rates of different substances. For example, when it snows or when there is the danger of ice on the roads, road crews will often pour salt over the road in an effort to reduce the amount of ice that forms. The salt lowers the freezing point of the water, making it stay as a liquid at lower temperatures. This is the same reason that in deep underwater, at temperatures near freezing, the water at the bottom of the ocean never freezes. Another application of this



Eye Wonder

is in making homemade ice cream. When you use an ice cream maker, you pack ice around the container with the ice cream mixture in it. You then add water and salt to the ice. A motor on the top of the maker spins the container. If the water with the ice froze too quickly, then the container would not be able to rotate and it could damage the motor. With the added salt, the water will not freeze as quickly, allowing the temperature to get lower to freeze the ice cream mixture without freezing the water on the outside of the container, jamming the motor.

Activity: Liquid Water below 0° C.

This lab shows another example of how something added to a substance can affect the rate at which melting or freezing occurs, like the ash added to the silica to make glass. You may need to have the class involved in some other activity while waiting for the water to reach 0° C.

Materials: 4 Beakers (two large, two small), ice, water, 2 thermometers, timer, salt, insulation (newspaper), aluminum foil

Procedure:

1. Put the smaller beakers in the larger beakers and surround them with ice.
2. Add a small amount of water to the small beakers, enough to cover the thermometers.
3. Add salt to one of the small beakers so that the solution becomes super-saturated (salt will no longer dissolve).



Eye Wonder

4. Surround the larger beakers with insulation. Cover the tops with aluminum foil, leaving a tight-fitting hole for the top of the thermometer to poke through.
5. Begin timer, periodically checking every five minutes to see if the water has begun to freeze yet. Record and graph the temperatures versus time with each check.

Modification: If you have an ice cream maker, you may want to use it as an extra.

Magazines

Non-science lesson.

This video has little to offer a science class, but would be excellent for a middle school journalism class.

Introduction: This activity could be used as a post-video project for students to design a school newspaper. It could also work in conjunction with the Eye Wonder Billboards segments to add advertisement.

Materials: depends upon how involved the instructor wants the lesson to be.

Procedure:



Eye Wonder

1. Have the class discuss how they could create a school newspaper or magazine.
2. Break the class up into different divisions depending upon the types of articles they wish to write or report (sports, fashion, entertainment, news, weather, etc...).
3. Have one group assigned to the layout of the magazine.

You may not have the funds to actually develop a school newspaper, but this could still work to have the class design one to see what it involves.

Eye Wonder: Radio

Grade 8

Standard 8.P.3: The student will demonstrate an understanding of the properties and behaviors of waves.

8.P.3A. Conceptual Understanding: Waves (including sound and seismic waves, waves on water, and light waves) have energy and transfer energy when they interact with matter. Waves are a repeating pattern of motion that transfers energy from place to place without overall displacement of matter. All types of waves have some features in common. When waves interact, they superimpose upon or interfere with each other resulting in changes to the amplitude. Major modern technologies are based on waves and their interactions with matter.



Eye Wonder

8.P.3A.4 - Analyze and interpret data to describe the behavior of mechanical waves as they intersect.

8.P.3A.6 - Obtain and communicate information about how various instruments are used to extend human senses by transmitting and detecting waves (such as radio, television, cell phones, and wireless computer networks) to exemplify how technological advancements and designs meet human needs.

Type of Activities: Post video worksheet.

Introduction- This is a follow up to the video that requires that the students have already studied electromagnetic and mechanical waves.

Background: There are two types of waves: mechanical and electromagnetic.

Mechanical waves are waves of motion. They transfer their energy by vibration, passing their movement from one atom to another by vibrations. In this way, the actual matter does not move with the waves, but the motion is passed from atom to atom, making it seem as if the medium through which the wave travels is actually moving itself. This is best seen in water where waves move from one end of a tank to another, yet a cork in the middle simply bobs up and down as the waves pass under it.

Mechanical waves require matter to travel through, which is why sound cannot be heard in a vacuum such as space (sound is a mechanic wave with vibrations from the vocal cords being passed to air molecules, then to other



Eye Wonder

air molecules until they reach the membrane of the eardrum which translates that vibration into a sound our brain can recognize).

The other type of wave, electromagnetic (EM), is the transfer of EM energy such as light, heat, and radiation. This energy also moves in a wave, but does not need matter to travel through. This is obvious as light and heat from the sun crosses the vacuum of space to reach the Earth. Radio waves, X-rays, and Microwaves are all examples of different types of EM radiation. The type of energy depends upon the length of the EM wave (the space between successive crests of a wave). From short to long: gamma rays, x-rays, ultraviolet, visible light, infrared, microwaves, radio waves, cosmic rays.

Activity: This activity requires that the instructor has already taught the class about mechanical versus EM waves, as well as how to make a flow chart.

Materials: None

Procedures:

1. Using a sheet of paper, have the students make a flow chart diagram showing how the radio signal goes from a provider, to a satellite, to a radio station, to a tower, to a person's radio, through the speakers, and to a person's ears.



Eye Wonder

2. Students will need to label the type of waves in each stage, as well as if it is mechanical or EM.

Modifications: None

Credits

An instructional television series produced by Instructional Television, South Carolina Department of Education and ETV in SC (*Equal Opportunity Employers*)

Original user guide written by:

Arlayne Ashe
Dianne Gregory
Catherine Taylor

Original user guide developed/edited by:

Dianne Gregory and Rhonda Raven, ITV

Series production by:

Renee Layson, Managing Producer
Dave Adams, Producer/Director/Host



Eye Wonder

Funding for Knowitall.org was provided by the S. C. General Assembly through the K-12 Technology Initiative.

Visit scetv.org/education for more educational resources.