

How's That Work: Food Processor, Personal GPS, Duct Tape

About *How's That Work*

A microwave, a hair dryer, a remote control, a dishwasher--simple, everyday conveniences that most of us take for granted. Behind every celebrated home invention is a great story. For instance, did you know that a weary socialite created the first dishwasher? *How's That Work?* uncovers the entertaining origins of our favorite household items and how they actually work.

About this Episode

In the early 1970s, an American named Carl Sundheimer saw the food processor at a trade show in France. Seeing its potential, he developed his own version and started selling it in the United States. It was a smash hit. Next, navigating through this world with maps was common until explorers set out across the oceans. Without points of reference, they turned to the heavens for directions. Using a compass, a timepiece and a device called a sextant, sailors determined their location by looking at the stars. They became so good at this celestial navigating, that they were accurate to within 30 nautical miles. Finally, duct tape unwound from experiments in the 1920s by a scientist named Richard Drew. He was given the task of formulating a better tape to cover car windows while they were painted. It wasn't until World War II that the tape we know today took off. That's when a New Brunswick, NJ company perfected a durable, water-repelling tape for the military. In the 1950s the military's secret weapon made it to the home--and people found it had thousands of uses. Most notably, they found it worked just as good as screws and bolts at holding together heating systems or ducts.

Vocabulary

- Puree
- Pulse
- Sextant
- Navigation
- Horsepower
- Dimensions
- Satellite
- Transmitter
- Polyethylene
- Adhesion
- Cohesion

Discussion Questions

1. List the inventions in the episode and ask students which ones they are familiar with. How many of them own one or more of the inventions?
2. What do they see as the benefits of these inventions?
3. Have students share predictions for how one or more of these inventions works.
4. Have students predict the following answers before watching the episode:
 - a. From which country does the food processor hail?
 - b. On how many different satellites does the typical personal GPS system rely?
 - c. In what war was duct tape perfected?
5. Most inventions are born out of need. Have students list household inventions they have used in the past two days. What need do they fulfill? Do students need them or want them? Could they live without them? What do they know about how these inventions work?

Suggested Activities

Teach Me! (Science, Language Arts)

Some inventions are easier to “break down” than others. The explanation for how a personal GPS system is somewhat complicated. Have students recall what they can about how this invention works and then replay that segment to add to their notes. Then have student groups imagine that they have been asked to teach a first grade class about how this invention works. They must consider what would be important for this age group to understand about how the GPS system works and what they would be able to understand. Have them develop a 5-10 minute presentation for first graders on the invention. They can use photographs, illustrations, props or Power Point slides in their presentation. Have students test out their presentations on the first graders in their school, if appropriate, or the local elementary school. Finally, have the first graders share feedback on which presentations were easiest to understand.

Do I Need This? (Social Studies, Language Arts)

Have students create two lists: one with common household items that are needed by the average American family and one that includes items that the average American family would want but not necessarily need. Talk about the difference between the two lists and if there are any items that were classified differently by different students. Ask students if they would place the inventions from the episode on the “need” list or the “want” list. If students could have any of the three items in the episode, which would they choose? Which do they think the different members in their family would choose? On what do they base their answers? How might the needs and wants of the average American family be different now than 25 years ago? How might they be different 25 years from now? Have students pretend that they are selling one of the inventions in the episode. In order to make a sale, they must convince an average American family why they “need” this invention. They must include at least three reasons in their sales pitch!

Inventions from War (Social Studies, Language Arts, Technology)

In the episode, students learn that duct tape really “took off” during World War II in 1942 as a waterproof sealing tape for ammunition cases. It was also used to quickly repair military equipment, including jeeps, guns and aircraft. Much of our modern-day technology was developed during wartime. Have student groups select a war in which America participated. Make sure that different historical time periods are represented in the selections. Then have each group research the inventions, technologies and innovations that were “born” during the war they’ve selected. They could use research from the library or use Internet search engines to help them. Have students present their findings and draw conclusions about the relationship between wars and advances in technology and innovation.

Extensions

Have student groups time and break down a segment of “How’s That Work.” What is typically included in each segment? Then have them select an item or invention in their classroom or school for which they’d like to write and produce a “How’s That Work” segment. They must research and break down how their item works, create drawings or diagrams and write a segment that easily explains their invention. Finally, using the school’s video equipment, have students perform and record their segment.