

Concept Development

Inventing with Bubble-Wrap®!

Are You as Smart as a 5th (or 6th or 7th or 8th) Grader?

Targeted Teaching Topic

Teachers Guide

Entrepreneurial Skills	
The Processes and Traits/Behaviors associated with entrepreneurial success.	
A	Entrepreneurial Processes
	Understands concepts and processes associated with successful entrepreneurial performance
Concept Development	
A.06	Describe idea-generation methods
A.07	Generate venture ideas
A.08	Determine feasibility of ideas

Classroom Activity

- Distribute copies of the Targeted Teaching Topic (Nebraska Entrepreneurship News-January 2008) and allow time for students to read. Encourage them to highlight or underline key ideas and phrases in the Topic.
- Explain that this is a classroom activity only, not actual creation of entries for the annual competition.
- You may want to pique the students’ interest in future competitions by mentioning that the three finalists this year won a three-day trip to New York City, where the Grand Prize Winner will be announced on Bubble Wrap® Appreciation Day, January 28, 2008. The Grand Prize Winner will receive a \$10,000 savings bond, while the 2nd and 3rd place winners will receive \$5,000 and \$3,000 respectively in savings bonds.* The teacher/mentor of each finalist will receive a \$500 gift card.
- Although each student is creating an invention individually, they **can** work seek feedback from parents, friends, and teachers. As the contest guidelines state, “No great inventor works alone. While the main concept and the bulk of the work associated with dreaming up and putting together your invention should be your own, we understand that bouncing ideas off of parents, friends and teachers is normal and often necessary. We just ask that you let us know who worked with you throughout the process and that you make sure to let your own ideas shine.

- Giving a historical perspective is of value. In the contest “Frequently Asked Questions” they provide the following information:

Bubble Wrap® cushioning, just like the great inventions that you will bring to this competition, was the brainchild of two ambitious inventors working in their garage. The story begins in Hawthorne, NJ with two engineers, Marc Chavannes and Al Fielding. Marc and Al were trying to make a plastic wallpaper with a paper backing. Surprisingly, this product didn’t take off. They quickly realized, however, that their invention could be used as a cushioning material for packaging. At that time, only abrasive paper products were used for packaging, which did not suffice for cushioning heavy or delicate items. They founded Sealed Air Corporation in 1960; and today, Sealed Air is a leading global manufacturer of a wide range of food and protective packaging materials and systems.

- Explaining the science behind Bubble Wrap® brand cushioning connects science to the real-world.

Bubble Wrap® brand cushioning starts as polyethylene (plastic) resin, in the form of beads about the size of small peas. The beads go into an extruder - a long cylinder with a screw inside that runs its entire length. As the screw is turned, heat builds up and the resin melts into a liquid that is squeezed out of the cylinder into two stacked sheets of clear plastic film. One layer of the film is wrapped around a drum with holes punched in it, and suction is applied drawing one web of film into the holes that form the bubbles. The second layer of film is then laminated over the first so that when the two films are joined, they stick together and trap the air in the bubbles.

This may sound easy, but polyethylene is a porous material like a sponge. Air can easily leak out through the pores, which tends to limit the cushioning ability of the packaging. Realizing this, Sealed Air started using a barrier coating to seal the air in the bubbles. Eventually, a method of encapsulating an air retention barrier in the polyethylene during the extrusion process was developed. This process is a trade secret of Sealed Air Corporation.



Discussion Questions



Possible thought-provoking questions that you might pose include:

- Why do you think the Sealed Air Corporation, the creator of Bubble Wrap® cushioning, sponsors this competition?
- Do you think there may be a rationale (reason) that they limit the competition to 5th-8th grade students?
- Other questions....

Source: For official Bubble Wrap® contest guidelines, press releases and FAQs:
National Museum of Education, <http://www.nmoe.org/bubblewrap/index.html>.



Judging/Feedback Criteria

In creating your invention, think about how the actual Bubble-Wrap Competition judges evaluate the many entries they receive. Those entries are judged on the following basis:

- 35% Creativity
- 35% Practicality or Usefulness
- 15% Benefit to Society (How will it help people?)
- 10% Cost Effectiveness (Would the invention have a market?)
- 5% Clarity of essay, including spelling and grammar.

INVENTION FEEDBACK			
Inventor			
Invention Name			
Short Description			
Criteria	Points Possible	Comments	Points
Creativity	35 points		
Practicality or Usefulness	35 points		
Benefit to Society (How will it help people?)	15 points		
Cost Effectiveness (Is there a market for it?)	10 points		
Clarity of essay (including spelling & grammar)	5 points		
Total			