

## **Drawing, Scale Models, and Protective Packaging in the Manufacturing Industry**

### **Curriculum/Instructional Strategies**

Grade Level: 7

Content Area: 7<sup>th</sup> grade math and science

Materials:

Fragile items to be protected inside a box

Foam, different thicknesses of paper, etc. to create a protective environment for the fragile item

(I WOULDN'T ALLOW BUBBLEWRAP)

Graph paper

Rulers

Assortment of boxes in differing sizes and with differing designs

Prior Knowledge: students would benefit from prior practice following written directions/procedures and using scale factor. Ideally I would use these activities after my lessons in math and/or science on scale

Grouping: Students should be placed in heterogeneous groups of three or four to complete the activities that support the objectives.

### **Objectives**

1. Construct scale models
2. Create scale drawings and models
3. Practice traits of civility through cooperative groups-teacher selected civility trait(s)

### **Activities**

Day One      ***Measuring boxes and creating a drawing scaled down***

Students will take apart boxes, measure the boxes, and then create a drawing on graph paper scaled down by a teacher determined scale factor. Each box and its' drawing will then be rotated to another group to be checked for accuracy. This can be done several times. By adding more complex box designs you can vary the level of skills needed for this activity

### ***Creating a protective environment for a fragile item***

Students will use boxes they measured in the first activity along with a fragile item of your selection. They will need to put the box back together. Brainstorm with students some basic ideas about how to create a protective environment for fragile items. What are some major concerns about breakage? What materials might be used? Ask for examples of items that are in protective packaging environment. (breakable electronics, eggs, examples in nature such as the environment for an unborn baby, cocoons, etc.) Students will then brainstorm supplies needed and the design needed to create an environment inside their box that will protect their item from damage in their groups. Students should be given time in class to draw their final diagram and to build their model. Students will need to turn in their final drawing and model to you after classroom presentation.

### **Assessment**

Students will present their final drawing and model to the class.

Students will have a selected date to test their protective packaging for durability by intervals of differing height drops.

Students will write a short narrative discussing the process of creating a protective environment for their fragile item based on the use of the civility trait selected by the teacher. In this narrative they will discuss the ways in which the civility trait helped their group be successful in this process

### **Products**

Student created protective environment boxes and drawings will be the end products of this lesson