

Lesson: Design Thinking – Good and Bad Design

Big Picture

The purpose of this lesson is to discuss the importance of good design and the consequences of bad design, then explore producing a good design through trial and error and rapid prototyping.

Objectives

Students will be able to:

- Realize the importance of good design
- Understand the consequences of bad design.

Alabama Standards Alignment

N/A

Links to Resources

<https://www.youtube.com/watch?v=y6FmrOS72EA>: Optional video, viewed by teacher only

Preparation

The following file will be needed:

- lesson-1_slides.pptx: PowerPoint found on lesson page

Materials Required

50 toothpicks and 50 miniature marshmallows per group (5 sheets of white paper if marshmallows are not available).

Vocabulary and Concepts

- Design - a plan for the construction of an object
- Testing - experimenting to find out how well something works
- Prototyping - to create an experiential model

Agenda

Getting started (15 mins)

The teacher will go over the **lesson-1_slides.pptx** presentation. To prepare for the upcoming marshmallow tower activity, students must be put into groups of 3-5.

Activity (25 mins)

The teacher will ask each group of students to create the highest possible free-standing multistory structure constructed of only toothpicks and miniature marshmallows (or toothpicks and pieces of paper if marshmallows are not available). Explain that the structure needs to be as high as possible and be able to withstand a simulated earthquake (shaking the table for 30 seconds). Mention that no glue, tape, or other materials will be allowed. Encourage students to create a sketch or discuss before creating your prototype. Recommend students test their towers on their own before the final test. The group with the highest structure that is able to survive the 30-second

earthquake wins the challenge. If enough time is available groups will be allowed to modify their designs and try again.

Wrap up (5 mins)

The teacher will ask students about their experiences with the activity. Reinforce the three terms featured in the PowerPoint; design, testing, and prototyping. Ask students how they designed before creating their tower. Discuss the students' experiences creating their prototype. Finally, ask students about their experience testing their tower on their own and how their tower held up in the final test.