

**SCIENCE AND ENGINEERING
PROJECTS ARE FOR ELEMENTARY
TOO!**

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YOUR PRESENTER

1st Grade Teacher at Central Elementary, Wamego KS

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**BS in Elementary Education from Fort Hays State
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TRY THIS!

Challenge:

Working in a group and using only gumdrops and toothpicks, design and build a “person” who can independently sit on the edge of a desk without falling off.

Criteria:

Your “person must

- Be made using only gumdrops and toothpicks
- Sit independently on the edge of a desk
- Not fall of the desk

Materials:

- Gumdrops
- Toothpicks

Tools:

- none



THOUGHTS?

How did this activity make you feel?

How do you think this would work for your students?

What kinds of 21st Century skills do you see your students gaining through this type of activity?



3 BILLY GOATS GRUFF

K-2 Engineering Design

K-2.Engineering Design

Students who demonstrate understanding can:

- K-2-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.**
- K-2-ETS1-2. Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.**
- K-2-ETS1-3. Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.**

The performance expectations above were developed using the following elements from the NRC document *A Framework for K-12 Science Education*.

DESIGN BRIEFS

Design briefs provide structure for your students in an engineering project.

- You must find a balance between too much structure, and not enough structure.
- To much structure limits student creativity
- For example, consider a teacher who uses an "Egg Drop" activity. Consider the following challenge statements:
 1. Build a parachute to keep an egg from breaking when it is dropped from 20' onto a concrete floor.
 2. Design and build a cushioning device to keep a raw egg from breaking when dropped from 20' onto a concrete floor.
 3. A raw egg will be dropped from 20' onto a concrete floor. Design a way to prevent it from breaking.

DESIGN BRIEFS

Background

- Link to learning/What is the problem that needs a solution?

Challenge

- What do you want them to accomplish?

Materials

- What will be available for students to use in their project?

Tools

- What classroom tools can be used?

Time

- How long do they have to complete the task?



THINGS TO CONSIDER

-Project Materials:

- Where will you get them? Where will they be stored?

Project Tools:

- Tools should be easy to access without the help of the teacher

-Cleanup

-Storage of Projects

-Following the activity



BRAIN STORMING

Think about your current curriculum. Are there any units currently in place that you could implement an engineering activity.

Remember- Start Small

It won't be perfect the first time!

