

Pictou County Forest School - Grade 7 Lesson Plans **Engineering Structures**

Activity: Mission Marshmallow (suggested time 120+ minutes)

Overall Curriculum Outcome: *Learners will construct a structure in response to a design challenge*

Specific Curriculum connections:

Forces affecting structures

- How can a structure be built to withstand forces? ▪ Which forces need to be considered in construction?

Construction materials

- How can the features of construction materials be determined? ▪ How can the efficient use of resources be incorporated in construction?

Stability

- How can the stability of a structure be affected by various factors?
- How can the structure's stability be tested?

Materials:

- Loose parts: rope, dowels, wedges, pulleys
- Tools: saws, hammers, nails, drills, screws, scissors
- Glue, paper,
- Found natural materials
- simple/compound machine infographic

Intro/Activation:

Activity:

This is an inquiry activity, focussing on the idea of learning as a process. Students learn new skills and ideas in real time in response to real, meaningful necessity (intrinsic motivation).¹

Scenario:

Take the group of students over to the little brook that runs between the two fields near Base Camp 2.0.

Students are on one side of the brook. Place marshmallows on the other side of the brook.

- In groups students need to build a machine to get the marshmallows over the brook. If successful, marshmallow buffet ensues.

Instructions

- Provide students with relevant materials (with a focus on found natural materials)
- Support students' inquiry with 'just in time' teaching, helping kids safely use saws, drills etc.

¹ The Limits of Instruction: "Constructionist research has demonstrated the benefits to students engaged in active learning by doing. The existing literature stresses the importance of a project approach as a precursor to instructional practices or as an ancillary activity to instruction. My work suggests that the project should be an educator's smallest unit of concern and may replace instruction entirely, with better results. This research may also seek to define the limited efficacy of instruction."
<http://professorgarystager.com/research-interests>