#### Integrating Engineering and Literacy

David Hammer and Jessica Watkins
Tufts University
June 23, 2013



Supported by the National Science Foundation, obviously! It doesn't necessarily endorse these ideas.

# Engineering is...

Applying understanding of the environment in the pursuit of solutions to problems,

solutions in the forms of new objects, systems, or processes.

# Engineering involves...

- Identifying and scoping problems,
- Formulating ideas for possible solutions,
- Realizing, testing, evaluating and refining those ideas.

### Integrating Engineering and Literacy

- Identify an engineering problem for characters in children's literature
- Come up with ideas for solving the problem, and choose one to build
- Make a prototype to test, evaluate, and refine.

### Examples of books and problems

Mixed-Up Files of Mrs. Basil E. Frankweiler Seeing a museum statue above the tall crowds

Shiloh

Building a pen to keep a dog safe

Hatchet

Making a shelter that will stay warm at night

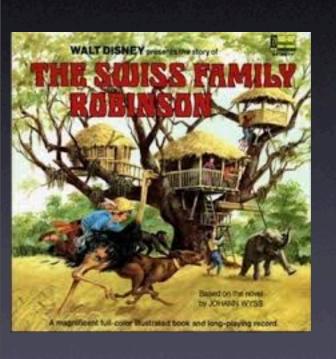
City of Ember

Catching the mayor stealing food

Mouse and the Motorcycle

Helping the mouse escape from the garbage pail

# Fifth-grade students' introduction to engineering in a rural MA school



#### **Problem:**

Prototype a shelter that will keep the family cool on a deserted island

#### **Design Requirements for class:**

They'd be testing their design with a cup of water and a heat lamp.

Engineering: Applying understanding of the environment in the pursuit of solutions to problems, solutions in the form of new objects, systems, or processes.

- Identifying and scoping problems
- Formulating ideas for possible solutions
- Realizing, testing, evaluating and refining those ideas