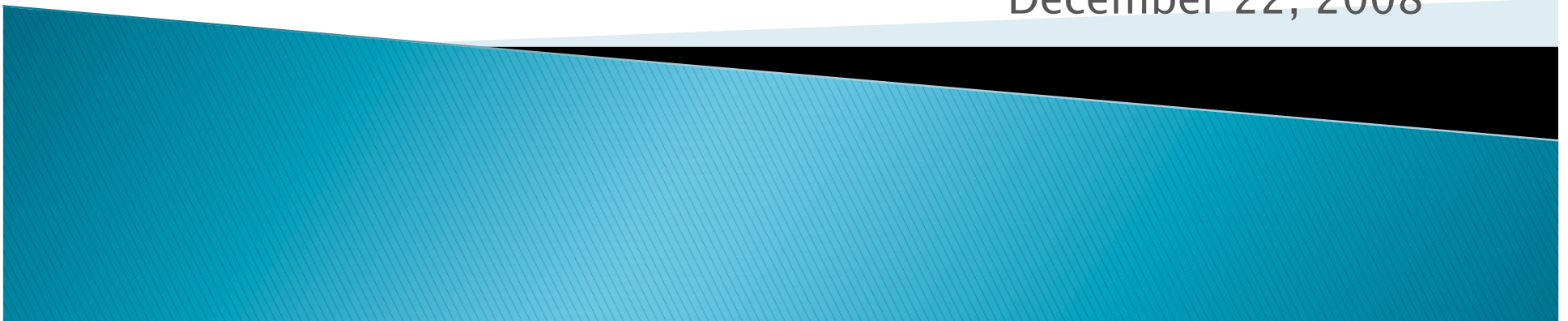


NASA's BEST Students

Beginning Engineering, Science and Technology

Dr. Susan Hoban
Goddard Education/UMBC GEST Center
December 22, 2008



BEST Summary

- ▶ After school engineering clubs
- ▶ Lunar robotics summer bridge
- ▶ STEM Expo
- ▶ Engineering Challenge



Funded by Exploration Systems Education

After school engineering clubs

- ▶ Return to the Moon
- ▶ Pilot in FY08
 - 23 schools
 - > 300 students
- ▶ 12 week curriculum
 - Focus on Engineering Design Process
 - 3 levels: K-2, 3-5, 6-8
 - Currently in product review



Example activity

All activities include:

- Teacher pages
 - Materials list
 - NASA relevance
- Student worksheets
- Fun with Engineering at Home

Activity Title: **Powered by the Sun!**

Activity Objective(s): In this activity, teams will use data and graphs to determine the best components to use for a solar box cooker. They will design and build a box cooker, and test it out to see if it works well enough to make S'mores!

Grade Levels: 3–5

Process Skills: Experimental design, measuring, graphing, and data analysis.

Lesson Duration: One 60 min session

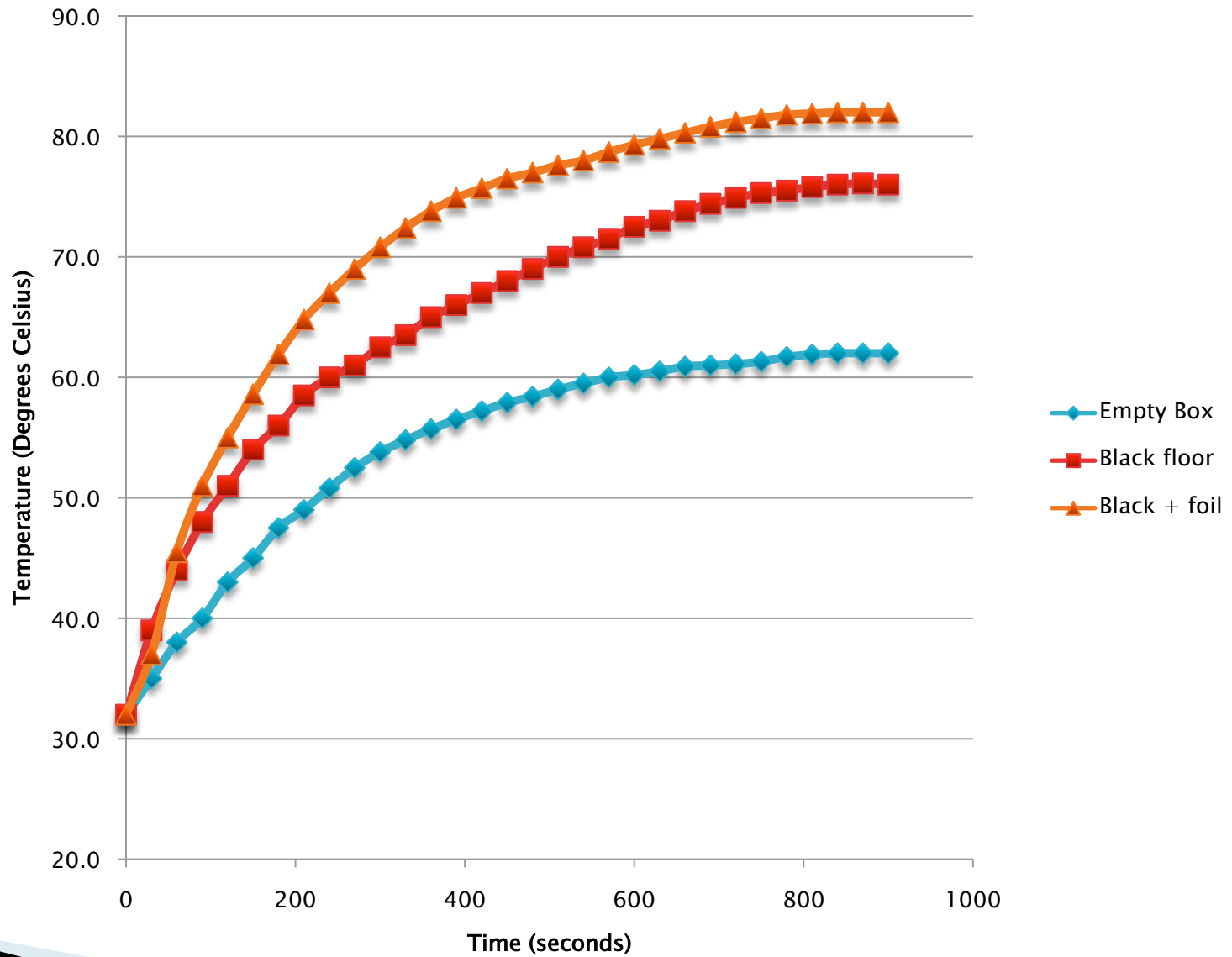


A solar cooker heats up in the Sun!

Materials and Tools (per group of three students):

- Thermometer
- Timers
- Cardboard box
- Aluminum pans
- Aluminum foil
- Black construction paper
- One piece of plexiglass big enough to cover the box
- Sunshine, OR gooseneck lamp with 100 W bulb
- S'mores fixin's (graham crackers, marshmallows and chocolate)

Effect of Design on Efficiency of Solar Oven



Professional development

Face-to-face
during pilot

ePD for
future

<<music, sound effects>>

After school clubs, wrap

- ▶ Follow-on FY09–FY11
 - 12 additional activities
 - How-to videos for difficult activities
 - Dissemination
 - Evaluation
- ▶ What does a school get?
 - Curriculum, will be online in PDF
 - Multi-media recruitment package (more on this soon)
 - Electronic professional development
 - Four 1-hour sessions
 - One optional session on accessing NASA resources





Lunar Robotics Summer Bridge

Two week course, 8th and 9th graders

Used Lego Mindstorms

Robotics challenge:

Build a robot to search for Lunar Ice

STEM Expo

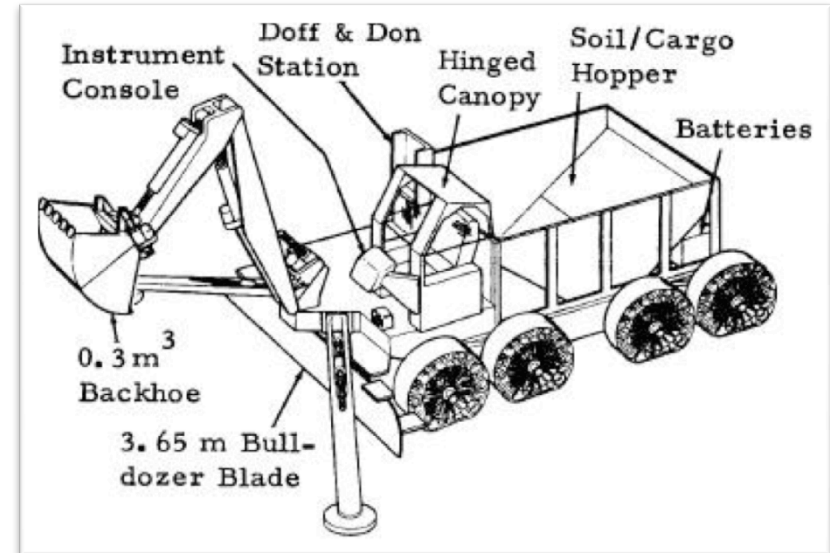
- ▶ In celebration of NASA's 50th Anniversary
- ▶ NASA-UMBC STEM Expo at local middle school
- ▶ Astronaut Don Thomas
- ▶ 12 booths with hands-on activities
- ▶ Rockets, rockets, rockets
- ▶ Will produce How-To booklet





Engineering challenge: Working on the Moon

- ▶ Under construction
- ▶ Likely test in 3 schools
 - Maryland
 - Darby, England
 - Bonn, Germany
- ▶ BEST Project will provide ePD and online content delivery (e.g. Search for Lunar Ice)



BEST Contact Information

- ▶ Always looking for collaboration!
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