

SLED Perspectives is published semi-annually with research updates, design activities, and upcoming events.

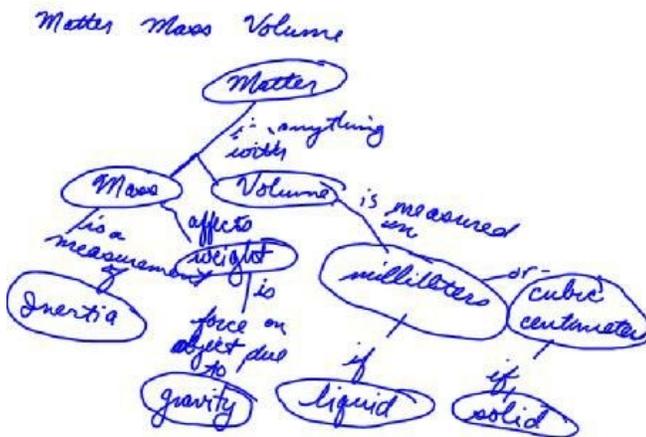
We want to hear from you! If your class is doing a project that we could highlight, student writing that we could publish, or pictures that show students using science learning in engineering design please email us at wkim@purdue.edu

CAREFUL CARRIER DESIGN AT TAYLOR

by: Heidi Vance

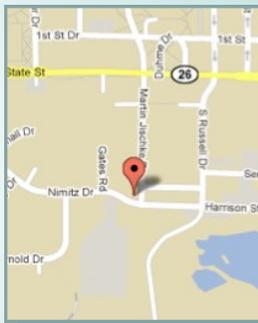
I am currently teaching 6th grade science at Taylor Middle School. So far this year my students have completed the Careful Carrier, and we are getting ready to start the Roller Coaster. My students really enjoyed making the carriers. The activity included identifying the problem, client, end user, materials and constraints of the design task, also defining and applying scientific concepts of weight and volume.

They were very interested in making them environmentally friendly using their creativity. We were able to tie the carriers in with recycling while also introducing the design process. Through the activity, my students learned about the hazards of a six-ring plastic carrier and about being more aware of simple ways they could make a difference with the environment. They were also able to relate the carriers to mass and volume. The design process was introduced with this activity, so the students learned about clients, users, constraints, and just the process itself. The classroom activity was very successful, because the task was well written and easy to follow so that my students are able to handle.



We're looking forward to seeing everyone at the SLED fall follow-up session!

Saturday, Nov. 10
 9:00–11:30 a.m.
 Room 228C
 Discovery Learning Research Center
 207 South Martin Jischke Drive
 West Lafayette, IN 47907-1791



Use your Smartphone and scan the QR code to go the SLEDhub



DESIGN & CONSTRUCT A BETTER CANDY BAG

by: Brian Hall

I have taught 4th or 5th grade since 2003 at Mintonye Elementary School. The SLED implementation that my students and I participated in was the candy bag activity.



My students really got into the redesign once they saw what worked well and what did not work well in their first design. The students did a great job learning how to fill out their science journals properly and what to write down and sketch out. My students also learned how to calculate volume and surface area. To improve the classroom activity, my only suggestions would be to have a formal list of the materials the students had to use to construct the candy bags. There was a big difference between what my students were able to construct and what another teacher's students were able to construct, and I believe that was because I restricted the amount of duct tape the students could use on their bag.

ON THE HUB

SLEDhub is the place to go for information on the SLED project! Here you can find updates about the project, new follow-up materials, access to fellow teachers' reflections, and a growing resource folder that links you to lesson plans, assessments, and worksheets related to the SLED design challenges.

When you log in to the SLEDhub, you'll start on your personal dashboard page. You can always return to that page by clicking on your name at the top of the screen. To access the main SLED site, click on SLED under My Groups. To quickly access design team created lessons and other key resources, click on the Design Resources link from the left-hand menu. If you need to search for something specific, click on the Resources link on the left-hand menu and enter keywords in the search box.

If you need to upload or view reflections, click on SLEDteach under My Groups on your dashboard page.

Note: SLEDhub does not always work well with IE 9. The HUB staff recommends using Firefox to access the SLEDhub.

TECH TIPS



Remember: when uploading your reflections to the HUB, be sure to go to the SLEDteach group.



These new materials are available on the HUB:

1. [SLED Teacher Reflection Template 2012-13](#)
2. [Reflection Upload Guide \(PDF\)](#)
3. [Teacher Reflection Upload Video](#)
4. [Model Ecosystem Video](#)

SLED
Science Learning through Engineering Design

Uploading a Reflection to SLEDhub

Jim Lehman
College of Education
Purdue University

Science Learning through Engineering Design (SLED) video resource
<http://sledhub.org>

This project is supported by the National Science Foundation, Grant #0962840

SOLAR TRACKER: STUDENT FAVORITE

by: Laura O'Shaughnessey

This fall, I have started my 4th year of teaching grades 6-8 at Lafayette Christian School. The 6th grade this year consists of 29 students split into two classes which are about 50 minutes each. We have been very blessed this year to have a brand new junior high wing, which includes a large science lab. This has made it much easier to implement the SLED activities!

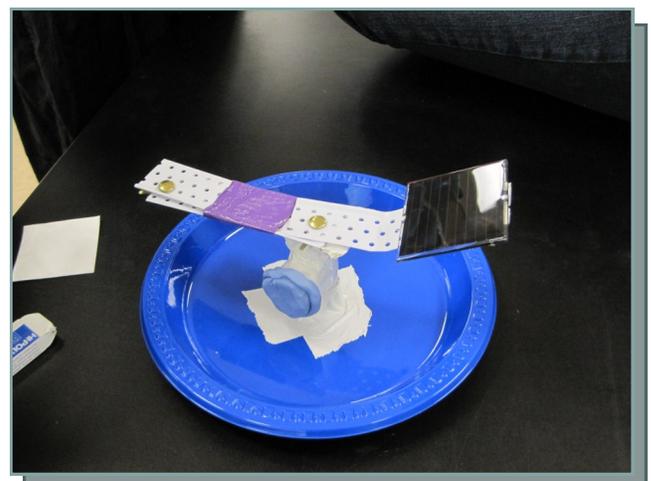
Though we have only completed the Candy Bag and Solar Tracker tasks, I believe the Solar Tracker will be a student favorite! The task followed the unit in the curriculum beautifully. Throughout the chapter, we had discussed concepts that involved the seasons as well as earth's tilt, rotation and revolution. I had the students work with flashlights and hold them at different angles to observe how the different positions can affect the light's intensity—just like the sun's angles throughout the year affect our temperatures!

To start the design activity, the task was introduced to the students. After figuring out the problem, we discussed together what concepts were important to figuring out a solution. The students considered how the sun moves throughout the day, and then we moved on to what happens during the different seasons.

To help the students plan out their designs, I showed them two engineering techniques: ball bearings and four-bar linkage. I believe demonstrating these techniques was helpful to some of their designs, although more hands-on interaction with these techniques may have influenced their designs further—especially with the four-bar linkage. I did allow the students to have all the materials in front of them when they were sketching their individual designs. It was great to see students trying to put different materials together in order to figure out how materials could move.

The teams worked well together and some came up with very unique designs! We had the privilege of Dr. Bryan Hubbard coming in to help us test the designs. A flashlight was set up at different angles and we connected a multimeter to the solar panels for another visual on how well their solar trackers would collect the sun. The students had to help set the different angles of the “sun” depending on what season we said it was. This helped solidify concepts we had discussed about the sun's light!

Overall, students enjoyed this task thoroughly. If I had more time, I would have loved to dedicate an additional class period to redesigning their trackers. Many students thought of ways to improve movement of their tracker, or ways to make it more cost effective. By the end of the task, the students seemed to truly understand the difficult concepts of seasons and angles of sunlight!



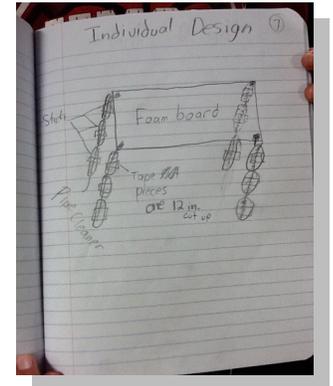
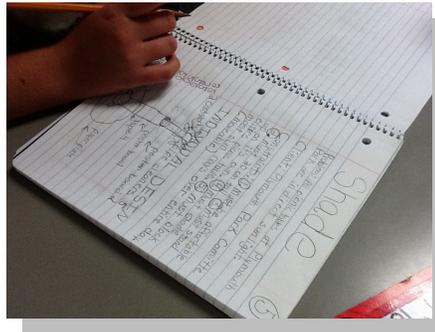
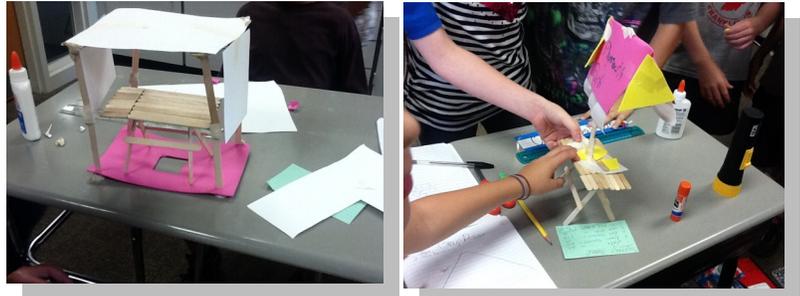
RIVERSIDE INTERMEDIATE CREATES SHADED PICNIC TABLES

by: Amy Lewis

I am currently teaching 5th grade at Riverside Intermediate School. I implemented the Sun and Shadows design task in my classroom. Students did a great job designing prototypes that shaded the picnic tables at all times throughout the day. This demonstrates that the students truly understand the sun's position in the sky throughout the day as well as shadows. I was impressed with their notebooking skills as well. I think the foldable we created to compare rotation and revolution really helped the students to differentiate between those two vocabulary terms.

When I introduced this SLED task, I told the students that I had entered them into a competition. Our town, Plymouth, had just purchased new picnic tables for the park. The park spent a lot of money on these new tables and the park committee was upset to see that nobody was using the picnic tables. I explained that nobody was using the tables because the picnic tables were sitting in the direct sunlight. I told them that the park committee had asked Riverside students to come up with a cost-efficient design to fix the problem. The students were VERY excited about the competition part of the project. I enjoyed seeing them get excited about their designs and wanting to help solve the problem. It was so nice to see them use the information that we had learned in class to solve the problem. I am looking forward to the next design task!

In the future, I am going to make "task cards" for each group to refer to while creating their designs. These task cards are going to display the client, user, and list the constraints of the design. I think it would be nice for each group to have a copy of this task card to refer to while working. Since the design process is spread out over several days, the students sometimes forget the criteria and do not go back in their notebooks to look at the specific details of the project.



Upcoming Events

1. The Science of Nutrition zipTrip

When: 15 Nov, 2012 10:00 AM - 11:00 AM

Where: Online

Website: <http://www.agriculture.purdue.edu/zipTrips/Programs/nutrition.html>

2. 2013 SLED Summer Institute

When: June 10-14, and 17-21, 2013

Where: DLRC, Purdue campus

Open to: 3rd and 4th grade teachers in participating schools

Check our hub site
for more details.

