

SLED Perspectives is published quarterly 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 [druggier@purdue.edu](mailto:druggier@purdue.edu)

## Meet the SLED Leadership Team (pictured below from left to right)

Alyssa Panitch,  
PI and project co-leader  
Brenda Capobianco,  
Co-PI and project co-leader  
Gabriela Weaver, Co-PI  
Todd Kelley, senior personnel  
Johannes Strobel, senior personnel  
James Lehman, senior personnel  
Chell Nyquist, project manager

## ADVISORY BOARD VISITS PURDUE

On October 23rd and 24th the External Advisory Board for the SLED project visited Purdue. The purpose of the external board is to review what has been done to make progress on the grant and provide suggestions and recommendations to give the project a focused direction to stay on track. The group is made up of people not affiliated with the project but who are knowledgeable about different aspects of SLED such as educators and engineers all in academia and industry positions. "They play devil's advocate, help us maintain the vision and provide insight and feedback," said project manager Chell Nyquist. Each design team presented about their activities over the past year and gave insight on the process of creating design activities for elementary and middle school student. After the design teams presented the in-service teacher team presented their component focusing on SLEDhub and teacher engagement. The third session focused on the pre-service teacher component where a group of students spoke about their experiences both in the summer institute and the new methods class. Interestingly the advisory board probed the pre-service students on the differences between scientific inquiry and engineering design to test their knowledge. The fourth component presented was on the research being conducted. This included the pre and post tests, context maps, think aloud protocols, and the transfer problems. Each component received suggestions for the following year that will be incorporated into the research protocols by modifying and adapting them to account for the questions and concerns that were posed.



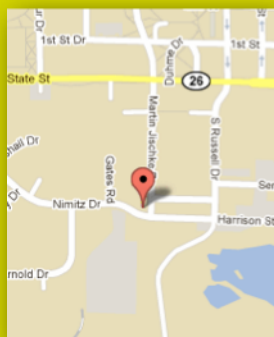
## Mark your calendars for the Summer Institute!

June 11th - June 22nd 2012

June 10th - June 21st 2013

June 9th - June 20th 2014

Discovery Learning Research Center  
207 South Martin Jischke Drive  
West Lafayette, IN 47907-1791



SLED  
Science Learning through  
Engineering Design



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

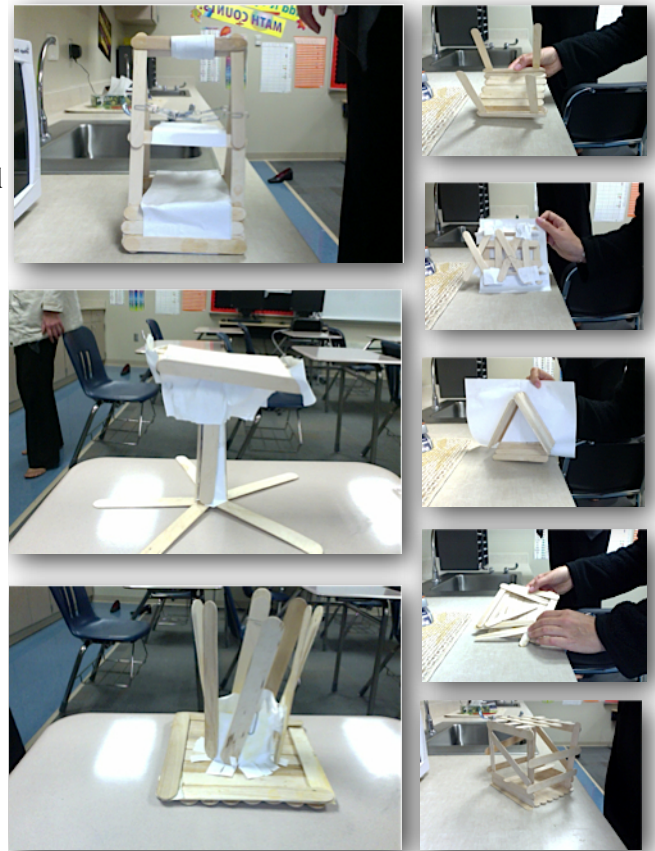


# DESIGN IN PROGRESS

This fall Mrs. Tyrie's 5<sup>th</sup> grade class started their SLED activities by completing the sticky engineering challenge. This challenge focuses on scientific inquiry to decide which glue is the best. Students were given sticky glue, Elmer's glue and wood glue. The design challenge was to design a display for a shot put and baseball and had to fit both. The baseball weighs 145 grams or .31lbs and the shot put 8lbs. All the students were able to design a structure that held the baseball and two were able to hold shot puts. One of the interesting things that they learned is that there is 4-gram difference between a 'cheap' one and a regulation baseball.

This was a co-teaching opportunity between Mrs. Tyrie and Mr. Martin (5<sup>th</sup> challenge STEM). Moreover, this activity lasted over 8 class periods of 45 minutes, a total of four days. Day 1 was scientific inquiry of the glue, Day 2 was sharing results of what glue worked and students began to design, Day 3 was spent constructing the design, and Day 4 was testing and group reflection. During reflection the students talked about redesign. An interesting fact was found during the design process- the glue makes no difference- it's the design. Students were given a set of materials that included two sheets of paper, 30 popsicle sticks and ten paperclips, plus they had to choose one glue. "These activities are natural to put in and easy to introduce into the classroom. It is easy to get multiple subjects into the activities such as math and writing," said Mrs. Tyrie. She goes on to say that, "for next year, Mr. Martin knows the athletic director at high school so the students can display them. Giving them the client scenario is authentic enough for the students to be involved. The client makes it authentic for them. We had been talking about scientific inquiry and that led to this activity- our big focus was the use of the scientific inquiry and the design process."

Mrs. Tyrie hopes that the biggest lesson learned for the students is that this is problem solving and that they are not afraid to try new things. For herself, Mrs. Tyrie learned that these challenges can be done successfully with a large group; putting two classes together can work.



Mrs. Tyrie's 5th grade class and Mr. Martin's 5th grade Challenge STEM class worked together to create displays that could hold both an 8lb shot-put and a .31lb baseball.

## ON THE HUB

Why should you access the SLEDhub? SLEDhub is the place to go for information on the SLED project! Here you can find updates to the project, a link to the calendar and a growing resource folder that links you to lesson plans, assessments, and worksheets related to the SLED design challenges.

On the SLEDhub you can find other teachers through the discussion and blog tools, forming learning communities that work together to implement SLED. This is also the place that you can post your own resources as well. If you have created your own design challenge and want to share it with the group simply load it to the resource folder. Interested in learning more about the SLEDhub? Weekly articles on the SLEDhub wiki detail ways in which you can make SLEDhub an integrated part of your SLED experience. Go to [sledhub.org](http://sledhub.org) and explore the hub!

*Important Note: SLEDhub does not work well with IE 9. We recommend using Firefox to access the SLEDhub.*

## TECH TIPS



Did you know that the SLEDhub has a weekly wiki article featuring how the hub works plus tips and tricks for navigating the resource folder?

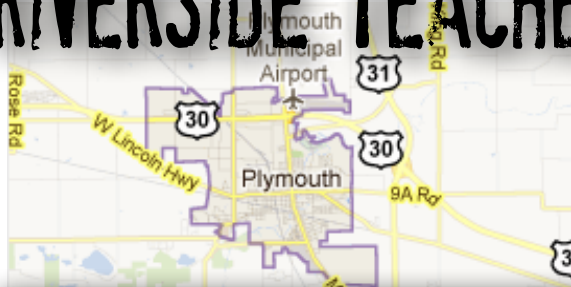
## Science Learning through Engineering Design (SLED)

SLED, Science Learning through Engineering Design, is a National Science Foundation Math Science Partnership project of Purdue University's Colleges of Education, Engineering, Science, and Technology; the Discovery Learning Research Center; regional industries; and the Lafayette, Tippecanoe, Plymouth, and Taylor Community schools.



# SCHOOL PARTNERS

## RIVERSIDE TEACHERS



(left to right): Kim Burns, Sue Turpin, Tillie Kain, Stephanie Beiswenger, Nikki Rumppler

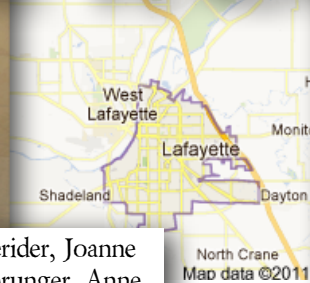


## SUNNYSIDE TEACHERS



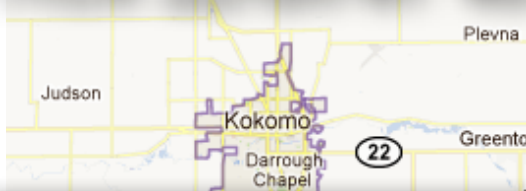
5th Grade- (front row, left to right): Karen Cooperider, Joanne Jones, Anna Matthys, Mary Sturgeon, Jennifer Sprunger, Anne Brickler

(back row, left to right): Jenny Dickensheets, Colleen Keefe Warren, Gerry Watkins, Elizabeth Hittle, Nancy Tyrie



6th Grade- (left to right): Shanna Bradford, Erin Doherty, Casey Davenport, Cheryl Alcock

## TAYLOR ELEMENTARY AND INTERMEDIATE TEACHERS

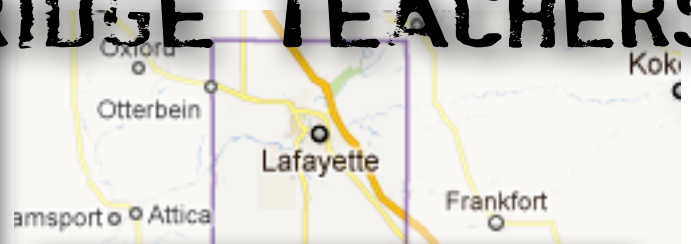


(front row, left to right): Carol Fitzgerald, Melinda Thompson, Barb Easton, Fran Benham

(back row, left to right): Heidi Vance, Pamela Stamm, Jo Goodrich, Judy Weirauch



## WEA RIDGE TEACHERS



(left to right): Ashley Clayton, Sarah Roth, Kelly Myers, Sara Wright, Rand Webber, Linda Clark, Bobbi Knobloch (not pictured)



# THE 2011 SLED SUMMER INSTITUTE



The 2011 SLED summer institute was held at the Discovery Learning Research Center (DLRC) from June 13th to June 24th. Over the course of two weeks teachers from the four partner sites around Indiana came to Purdue University to participate in a variety of workshops and design challenges. Teachers working in grades 5 and 6 participated in six different design challenges working through the problems as students. After completing these design challenges groups were given the task of constructing their own design tasks as well as creating implementation plans for using these design tasks in their classrooms. In addition to learning about the design tasks teachers took field trips to Subaru of Indiana as a large group and site specific trips as school groups. Mini workshops were held the second week on topics ranging from the SLEDhub to using foldables in the science classroom. Teachers were also introduced to using tools such as temperature probes in a lab setting. Two weeks of collaboration, interacting with experts in the field, and creating plans for using tools in the classroom prepared teachers to use SLED in their classrooms this year.

## PRE SERVICE TEACHERS IN THE SLED CLASSROOM

This fall eighteen preservice elementary teachers participated in Indiana's first engineering designed-based science methods course. Methods students studied principles associated with learning and teaching science through inquiry and engineering design. Students were paired with SLED teachers at Sunnyside Middle School where they interviewed grade 5 and 6 students to learn about students' beliefs, attitudes and interest in science and engineering. Students also developed their own design-based lessons implemented in SLED classrooms. The preservice elementary teachers got first-hand experience at planning and implementing design-based lessons for fifth and sixth grade students.



*Preservice teachers in Professor Capobianco's Science Methods class practice SLED design tasks. Students spend time planning lessons, participating in activities, and evaluating themselves and each other.*

The SLED methods class is unique from the standpoint that the course activities are built around an interactive model for engineering design. Preservice teachers learn about science by designing and testing structures, constructing UV light sensors, and making hot-cold packs. Preservice teachers then apply what they learned through hands on experiences to generate their own design-based science tasks and share with the SLED teachers.



*What are some of the highlights from having a methods student in your classroom?*

"Well, fresh ideas are always great. The Sunnyside students enjoy the extra attention and help with activities in the classroom. With class sizes of 30 this year, it's a challenge to get around to all of them. I appreciated seeing different approaches to presenting the activities as well."

-Karen Beasley, Sunnyside