

SLED PERSPECTIVES

SLED Partnership Newsletter

Volume 4, Issue 1

Fall 2014

2015 Summer Institute Enrollment

The SLED project is seeking applications for the 2015 Summer Institute from interested teachers who teach science (including in self-contained classrooms) in grades 3-6 in Indiana. The 2015 SLED Summer Institute will be a one-week teacher professional development experience (not two weeks as in previous years) held on the campus of Purdue University in West Lafayette. The week you attend will be based on the grade level that you will teach during the 2015-16 school year:

- Grade 3-4: June 8-12, 2015
- Grade 5-6: June 15-19, 2015

Applications will be accepted from teams of teachers; at least two teachers from the same school must agree to participate. All past SLED participants are welcome to apply for the 2015 Summer Institute, but you should be aware that returning teachers will be involved in different activities (including helping with the institute) from first-time SLED participants.

To Apply

Complete the online form at:

<http://tinyurl.com/sled2015>

The first priority application deadline was November 15, 2014, but spaces remain available, and applications will continue to be accepted through March 2, 2015.

2015-16 Expectations

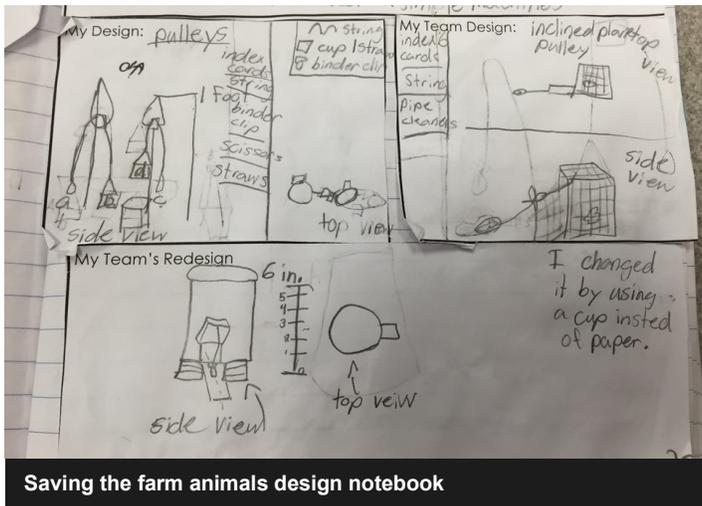
- attend the one-week Summer Institute for your grade level;
- implement at least two SLED engineering design-based science units in your classroom during the academic year;
- participate in SLEDhub; and
- participate in research and evaluation of the project and its implementation.



Keeping It Cool at the 2014 SLED Summer Institute

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Saving the farm animals design notebook

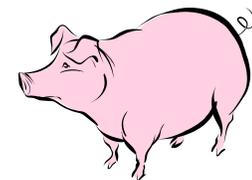
Saving Farm Animals

Kara Fletcher, Madeena Coates, Laurie Camp, and Jill Parker

We changed the third grade Save the Wolf task to Save the Farm Animals task. We did this so that our task would complement our field trip to Fair Oaks Farm.

We thought this task was more challenging than previous tasks. So to help students, we provided each team with a small bag of materials and let them explore the materials first. We thought this task did a good job of helping students understand the principles behind different simple machines.

Our students could create one simple machine. Students created lots of pulleys, wheels and axles, and levers. However, they had a little trouble with combining one simple machine with another to create a fully functional trap. We thought their ideas and sketches were great; but it was very challenging from them to translate their ideas into an operating trap.



Wea Musical Instruments

Kara Fletcher, Madeena Coates, Laurie Camp, and Jill Parker

This year is our second year with SLED and our students are loving it! We implemented the Musical Instrument and Save the Wolf tasks. Musical Instrument is a familiar one for us. We did this with our students last year and it was very successful. This year we decided to limit the number and type of materials available. We also spent additional instructional time on reinforcing key science concepts, such as the properties of materials. We examined the thickness of rubber bands and the length of rubber bands as a way of determining what kind of impact these properties made on the volume or pitch of an instrument. We also noticed that our students' drawings were much better this year. Todd Kelley from the SLED Leadership Team worked with our students. He compared drawings completed by students who received a lot of instruction on sketching to those drawings completed by students without instruction. Our students responded well to his ideas and were able to create great drawings. Their drawings included a side view, top view, labels and materials (see picture above). Interestingly, our students now label everything!! We noticed that in our literacy lessons students add labels to their drawings as well!! So we think our students' understanding of the importance of sketching is now transferring into other lessons and activities.

This year the instruments our students created were more accurate representations of instruments. You could hear the difference in pitch. Students also loved the tuning forks activities. They also enjoyed measuring volume using the iPhone. We also integrated some great books including The Louds Moved In, Walter the Baker (design process), and Be Quiet Mike! We look forward to implementing this again next year.

What we really love about the SLED design tasks is that they allow students to explore ideas that are authentic, accessible, and fun. The materials do not require a lot of equipment or tools. Many of the materials are right in our classroom. Our textbooks tend to limit the types of activities we can do with our students and so the SLED design tasks are a great extension for students to explore and apply their own ideas about science, create a solution, and share their product with other students.



A musical instrument design

Door Alarm

Arielle Mucha

I implemented the Door Alarm design task with my fourth graders this fall. I was impressed by the electricity content knowledge and vocabulary that students displayed, as well as their eagerness to work with their design teams. Listening to nine and ten year olds use science vocabulary (insulator/conductor, open/closed circuit, switch) to communicate ideas with one another in small group demonstrates to me the impact these design-based activities can have. They are authentically using this knowledge and are excited to share it!

This activity, like the other design-based tasks, requires students to work collaboratively and cooperatively, which are life skills that need to be practiced purposefully and frequently in the classroom. They had to overcome differences of opinions and find ways to share the work being done in a fair way. It is neat to see how students of all languages and abilities are engaged in these design-tasks. All students expressed how much they enjoyed the door alarm task, but were most importantly able to explain findings with an understanding of simple circuitry.

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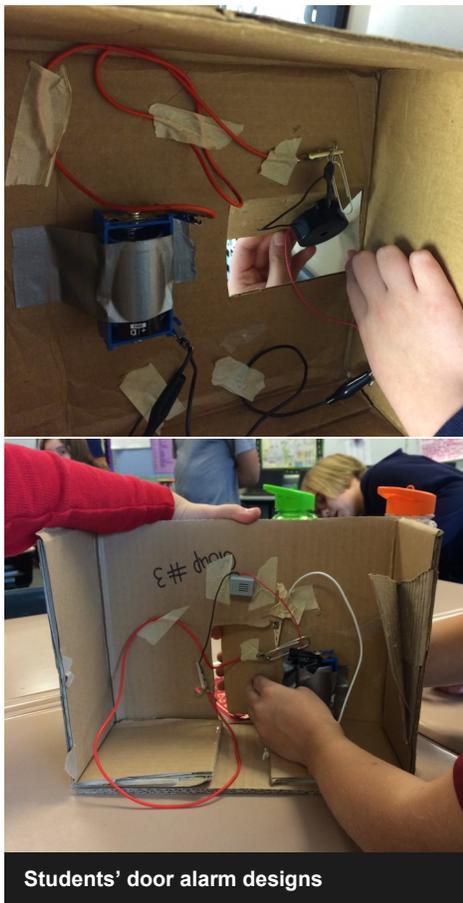
Students' Take a Stand designs

Take a Stand at Klondike

Lauri Mitchell

We started the year with "Take a Stand." The design stands are expected to be able to hold a baseball, softball, and shot put (one at a time) two inches above the surface of the table for at least 20 seconds. Although not all of the designs were able to hold the shot put on their first try, every group successfully built a stand that held each two inches above the surface. I have been extremely impressed this year with the quality of work shown by our fifth graders. This is the first year that our students have already completed one year of SLED as fourth graders, and their understanding of the design process and planning is superb compared to what I have previously seen. It has improved their teamwork, cooperation, and communication as well. This was an amazing improvement from what I have seen in the past. The students really enjoyed this design task because it seemed like something they may truly be asked to do. They were persistent throughout the entire design process, and the groups that did not succeed in the initial design made significant improvements during the redesign process.

This year we skipped an inquiry on glue types to ensure that we had plenty of time for both design and redesign, and I was pleased with our decision. An addition that I incorporate is allowing the students to complete the same design task at home for bonus points using any materials they would like and with "help" from parents or siblings if they wish. This allows them to be creative and think about the same problem in a slightly different way. Sometimes it even gives me ideas for materials to add in the future! After the completion of the "Take a Stand" design, nearly half of our class designed and built another stand (some even made two!), which reinforced just how much they love these SLED design units!



Students' door alarm designs

Door Alarm, cont'd.

This design task challenges students to create an alarm that sounds when a door is opening, so the circuit must then be closing, which is difficult to understand at first. This makes a working prototype much more rewarding and the redesign process especially important. After the first round of designs, only one group's worked consistently. However, after a couple short periods of redesign, all groups had at least two working designs - with great variety. It was encouraging to see them try and address different aspects - quality of the connection that was made, housing the alarm entirely inside versus part outside of the door, ensuring that it would sound even with a slight door opening, etc. Individuals and small groups even opted to stayed inside during recess to test out other design plans after we had used our allotted class time. This being my second year implementing this particular design task, I feel like I was more purposeful in the timing of the various phases and in the inquiry involved before. I made sure students were able to experiment with insulators and conductors, build simple circuits using the same buzzer for the door alarm, and use pre-made and student-designed switches. After the completion of the redesign process in class, students are able to build additional prototypes - after planning - using other materials.

Fall Reflections Due

Remember that teacher reflections are due on or before **December 19**. A second reflection will be due in the spring. Each teacher must write an individual reflection based on the implementation of one SLED Design Team-based, content-specific task. This task must be implemented by you and must include evidence of start to finish of the task. We are interested in learning how you implemented a content-specific task with your students and what you and your students learned.

A copy of the SLED Teacher Reflection Template is on SLEDhub under Participant Resources or also on SLEDteach. Remember, upload your reflections via SLEDteach rather than the regular SLED group. If you have any questions or problems with uploading your documents, please contact Jim Lehman at lehman@purdue.edu.

Happy Holidays from SLED!

