

# ST. CATHERINE UNIVERSITY



**EcoSTARS GLOBE Partnership at St. Catherine University**

**presented by  
Lori R. Maxfield, Ph.D.**

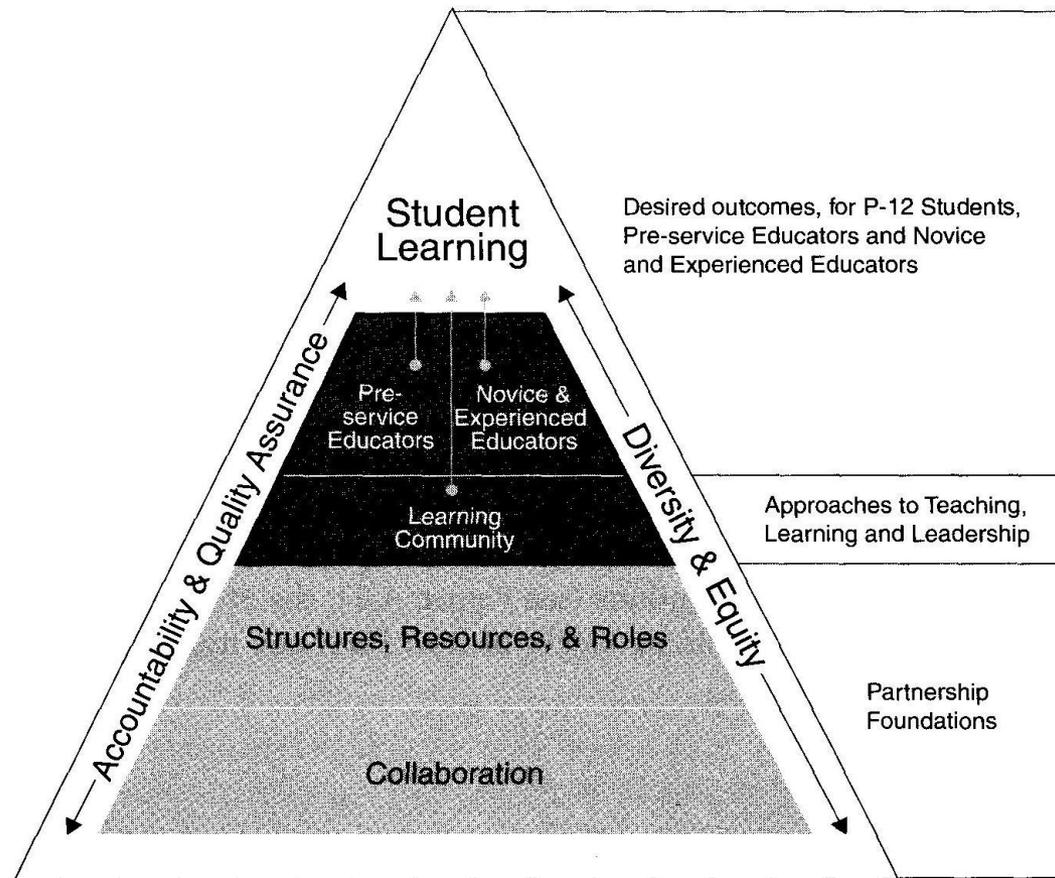
**at the  
2011 NSTA North American Regional Meeting  
San Francisco, CA  
March 9, 2011**

## SCU Professional Development Schools

### EcoSTARS PDS Model

#### Goals:

- Increase in K–6 teachers' confidence and knowledge in environmental education and academic STEM literacy;
- Increase in education majors' confidence and knowledge in environmental education and academic STEM literacy;
- Increase in student learning in environmental education concepts;
- Increase in student academic STEM literacy skill levels (e.g., taking environmental action, understanding and using academic language);
- Increase in student enthusiasm for science and development of skills and passion for responsible environmental stewardship; and,
- Continued development of a model of integrated environmental learning coupled with academic STEM literacy that can be used in other school districts in Minnesota and throughout the country.



Teitel, L. (2003)

## Kindergarten and Second Grade Classrooms: Earth as a System

- Seasons and Phenology
- Learning Activity
  - What Can We Learn about Our Seasons?
  - A First Look at Phenology
- Protocol
  - Green-down



Photograph by Sher Stoneman

## First and Third Grade Classrooms: Atmosphere

### ➤ Learning Activities

- Observing, Describing, and Identifying Clouds
- Estimating Cloud Cover
- Cloud Watch

### ➤ Protocol

- Cloud Protocols



## Fourth Grade Classrooms: Hydrology



Photograph by Sher Stoneman

- Learning Activities
  - Water Walk
  - Model a Catchment Basin
  - Practicing Your Protocols
- Protocols
  - Water Transparency
  - Water Temperature

## Fifth and Sixth Grade Classrooms: Soil



- Learning Activities
  - Why Do We Study Soil?
  - Soil and My Backyard
- Protocols
  - Soil Site Selection and Exposure
  - Soil Characterization

- I learned new ways to teach the GLOBE protocols. I also had the chance to stretch myself as a mentor. It was a very positive experience.
- Erin supplied me with some wonderful additional activities to add to my cloud protocol file.
- Seeing this new protocol taught is very beneficial for future years. I also enjoyed working with the St. Catherine's students. It helped me look at my own teaching practices and make important changes.



Photographs by Sher Stoneman

- I think that my kids gained a great deal of knowledge about clouds. They are now able to identify the different types of clouds and get excited to look for them and observe the sky.
- I definitely feel my students gained a lot from this experience. They were able to learn about clouds, things we hadn't learned about, and in a fun active way. They were also given practice with learning from a new teacher with a different style than my own.



*“I thought GLOBE was good because I got to see that students can learn at a very high standard. Water and soil seem daunting and crazy and too hard for kids – and the vocabulary was over the kids’ heads. But they can attain it and they soak it up! They love the big words! I think it helped me feel less afraid to do experiments in science and push kids beyond just planting a seed. GLOBE is cool – posting stuff online and seeing others’ work around the world is really cool. Making a connection to the world and bringing in experiences a child would never have understood with that website and resources.”*







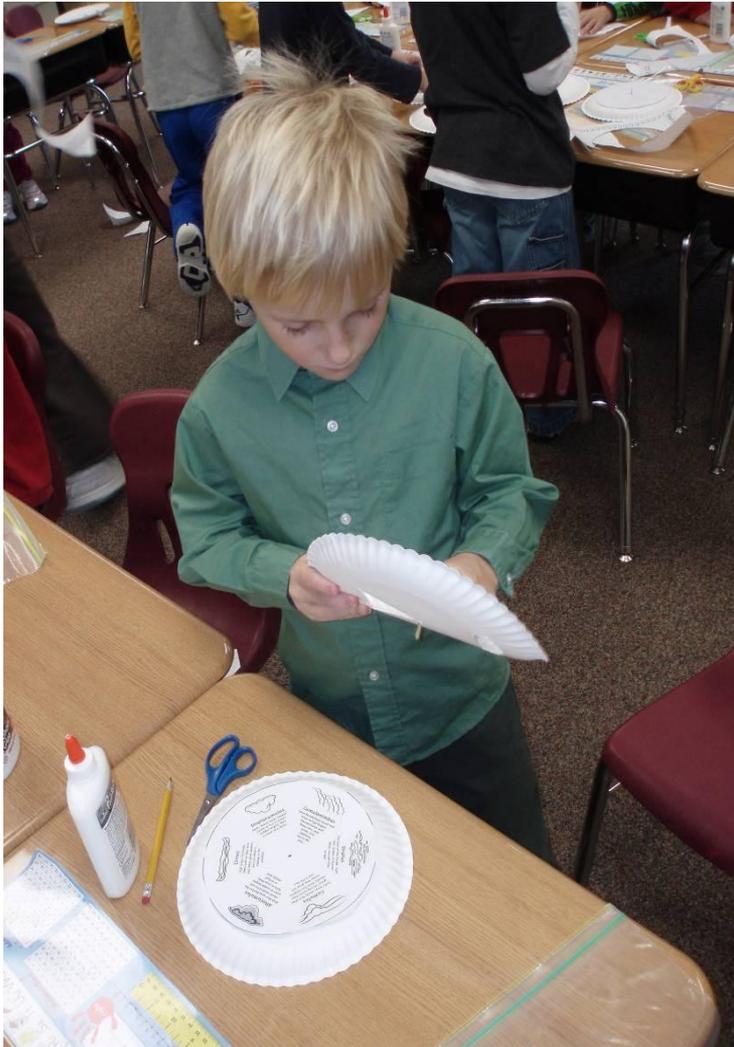
- In summary, the activities conducted during year one provided a solid foundation for continuing year two activities. Although not all outcomes were met during year one, the recommendations suggested for year two should provide opportunities to address these items (e.g., increasing student learning of environmental education concepts as measured by performance assessments). The key elements required to ensure this success rest in the oversight by the EcoSTARS Advisory Board, and the continued coordination and collaboration efforts between Cara Rieckenberg (Environmental Education Coordinator for Prior Lake–Savage Schools) and Dr. Lori Maxfield (CSC Faculty in the Field).



- In summary, the activities conducted during year two provided a solid foundation for launching the model into new schools. Although not all recommendations suggested for year two were addressed, the items essential to a successful partnership were fine-tuned. The key elements required to ensure success with future partnership include oversight by an EcoSTARS Advisory Board, continued coordination and collaboration between a school liaison coordinator and a Faculty in the Field mentor, training classroom teachers and CSC students in a common curriculum (e.g., GLOBE), and the development of materials (e.g., common sense guides, scope and sequence documents).



- Assessments indicate that both students' confidence and competence in teaching in general, and in science education specifically, increased through their participation in the EcoSTARS program. This is reflected in the pre and post field work assessment and in response to open ended questions. Their overall assessment of the program is positive. They felt that the program would be enhanced with additional time in the classroom. They suggest that this type of pre-service training be extended to the other methods courses; math and social studies.
- When given the opportunity to express themselves in the focus group they described many of the intricacies of the benefits of the program including an understanding of the school culture, the professional rules of being a teacher as well as how to apply the skills of scientific inquiry to other programs such as math and social studies. As a result of the training they felt confident in their ability to effective teachers in their own classroom. The program is strong and stable and is successful in meeting its goal of advancing pre-service teachers ability to be successful teachers who will promote science education in the elementary schools.



- In conclusion, it appears as though the goals for the EcoSTARS program were indeed met during the 2009–2010 academic year. After engaging in the EcoSTARS fieldwork pre-service teachers demonstrated increased confidence in their ability to teach developmentally appropriate hands-on science lessons. The pre-service teachers had greater opportunities to engage in teaching science and also had the opportunity to use GLOBE protocols to teach science. Additionally, the in-service teachers also increased their science-teaching knowledge and comfort.
- It also appears as though the pre-service teachers are confident in their ability to teach hands-on science lessons when they have their own classroom and are in-service teachers. One pre-service teacher described her experience student teaching when she taught science: *“Students were excited. It was as if I brought gold! Everyone was exclaiming – thank-you – they loved the science and they loved when we did this and they loved the hands-on science.”*

## Plans for 2011–2012

- Continue focus on literacy and academic language development.
- Add Project Wet and Project Learning Tree Curriculum to support GLOBE protocols.
- Create curricular units designed to address new MN Academic Standards in Science.
- Continue integration of Mathematics, Science, and Social Studies.
- Increase use of signature pedagogies and strategies (e.g., inquiry, co-teaching).
- Embed Teacher Performance Assessment tasks to evaluate pre-service teacher development and elementary student development.



Find books, articles and videos about literacy, or start your own literacy or reading group!

[http://www.rsc-northwest.ac.uk/acl/eMagArchive/RSCe-Mag2005\\_6/November06/003eMagazine/LiteracyProject.jpg](http://www.rsc-northwest.ac.uk/acl/eMagArchive/RSCe-Mag2005_6/November06/003eMagazine/LiteracyProject.jpg)



## Foundation and School Partnerships

### Foundation Support



### EcoSTARS Partners

