



Tales from the Field
PLACE-BASED EDUCATION IN ACTION

*Tale #6: "Rain Garden"
Outdoor Lab*



A long uphill driveway takes visitors to the parking area of this combination middle/high school, located on a hill just up from the main street of this town. This one-story flat-roofed school replaced an older structure a few years ago. In re-grading the school grounds for the new construction, engineers designed the area so "run-off" rain and snow melt from the expansive flat roof and parking areas could funnel into two large grass-covered earthen basins. During storms, water accumulates in these approximately 40' x 40' five-foot deep catch-basins, allowing it to slowly percolate into the soil, avoiding erosion and street flooding downhill from the school.

The DTE teacher from this school, based on what she learned in the summer workshop, decided to turn one of these basins into a "rain garden." This would be a year-long project for the 22 students in her environmental science class. In addition to the student learning and skill development that would take place, the goal for the project was to improve the school yard with a permanent "garden" that could also be used by younger students as an outdoor learning lab. Subsequent high school classes would help maintain and enhance the rain garden.

The teacher provided various background materials and students did web-based research about rain gardens to determine what might be possible at their site. Measurements of the area were made. Previous observations of the site showed that during heavy rains, several feet of water could accumulate in the basins and then slowly seep into the soil. Sometimes the water would remain for several days. This would clearly be a factor in selecting plants adapted to these conditions.

The teacher and students presented their rain garden idea to the principal and school maintenance personnel and received approval to proceed. The next step was to prepare a layout for the garden. There would be a contest! Each student created a design for the garden, showing walkways and planting areas. Many students created elaborate and complex geometric plans, colorfully illustrated on large posters. When all designs were complete, students judged them for suitability for the site, esthetics, feasibility in development, and practicality in maintenance. Top-rated plans were then discussed and a winner selected. The winning design framed the site with perimeter grassed walkways and off-set diagonal crossing paths through the center of the garden. The four triangular-shaped areas would be the planting areas.

A local nursery became the community partner for this project, advising students on the suitability of particular plants for the garden conditions. The nursery would also obtain the plants and advise on the planting design and schedule. The Institute classroom grant received by this teacher was used to help pay for plants for the rain garden. She also applied for and received an additional mini-grant from DTE Energy to help pay for the plantings.

Actual work on the garden began in April, with the pathways and planting areas being prepared. Students used shovels and wheelbarrows to prepare the site, working during part of their regular class time and before and after school. As plants became available, they were placed according to the plan. By the end of the school year, about half of the plants were in place. Additional work would occur during the

summer and again in the fall. A major challenge for students was the lack of easily accessible water. This necessitated students carrying water in buckets from the school building to the site. They enlisted help from middle school students. Plans call for labeling of garden plants, as well as engaging students from elementary and middle school in the project.

As part of their regular environmental science curriculum, students had also been learning about ecology and plant/animal relationships, water quality (including testing water at a nearby lake with members of the lake association), and invasive species. As part of a mini-grant from Lowe's home improvement store, it was decided that students would prepare permanent posters about invasive species that would be weatherized and placed on posts around the perimeter of the rain garden. Posters were based on research and illustrations gathered by students from the Internet. Inspired by a nature artist/poet who presented at the DTE summer workshop, students also created a major public wall art piece that included ceramic tiles with nature-themed artwork and poems.

When asked what they had learned as a result of this project, students indicated that it was a lot of hard work and required perseverance and patience. None had been involved in such a long-term project in their school careers. Some had done community-based projects through scouts and other youth group activities. This group of students was clearly proud of their work, and contribution to the school. The teacher indicated that some students take the environmental science class as an alternative to the regular science sequence. She tries to engage them in more relevant and real-world projects. This rain garden was an example, but "much more involved than any I've done before."

This teacher and two of her students subsequently applied for and received funding to participate in an "environmental" exchange program (facilitated through Michigan State University) with teacher-student teams in Japan during the summer of 2006. Several teachers and their students from across Michigan traveled to Japan for a one-week visit to water resource-related sites to learn about water quality issues in Japan. Students lived in the homes of Japanese students during their visit. The teams toured public gardens, natural areas, schools, and city sites. They learned about Japanese student water quality testing and other studies, water resource issues, and sampled foods and cultural traditions. Later that summer, Japanese teacher-student teams visited Michigan, including sites in Northwest Michigan, to learn about water quality issues. This teacher subsequently presented a photo tour of their Japan experience to the newest cadre of DTE Institute teachers.

This is one of several *Tales from the Field* prepared by the external evaluators of the DTE Freshwater Institute, Science and Mathematics Program Improvement (SAMPI) at Western Michigan University. This vignette is based on a site visit to the school to observe the project, an interview with the teacher, and review of student work and final products. It is part of a comprehensive evaluation that was conducted during the 2005-06 school year of the entire DTE Energy Freshwater Institute. For more information about the evaluation, contact Dr. Mark Jenness, SAMPI—Western Michigan University (269-387-3791 or mark.jenness@wmich.edu). For more information about the DTE Freshwater Institute, contact Becky Ewing, Great Lakes Water Studies Institute, Northwestern Michigan College (231-995-1787 or bewing@message.nmc.edu). Prepared 12-06.