

A Rain Garden for Our School: Becoming Environmental Stewards

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At our school's Rain Garden Dedication and Ribbon Cutting Assembly in the spring of 2008, twelve-year-old Grace stood before the packed audience of school and community leaders and recalled the moment, a little over a year earlier, when she and her classmates first heard the news. "We were excited when we found out that we could build the rain garden," she exclaimed enthusiastically. "This wasn't just a thought, this was reality! Thank you so much!" Her sincere appreciation was directed to the community organizations, individuals, and volunteers who had supported the construction of two large rain gardens at Hampton Elementary School in Bay City, Michigan. The rain gardens, which hold more than 3,000 native plants, were the first public rain gardens in Bay County, Michigan.

Seeking Community Support

Fourteen months earlier, Grace and Maranda, two fifth grade students, had confidently asked ten board members of the non-profit organization, the Saginaw Bay Watershed Initiative Network (WIN), for funds to construct a large rain garden on the expansive school property. The goal of the project was to slow and filter silt-laden runoff (from parking lots, sidewalks, and playground) on its path to Saginaw Bay in Lake Huron. In addition, doing so, the rain gardens would demonstrate to our township, city, and the rural farming community a proven method of reducing storm water runoff. Our rain gardens would be placed in a visible location, within sight of softball and soccer teams and residents who use the wide school grounds for walking and riding bikes.

The WIN board of trustees award funds each year to worthy, sustainable projects within the Saginaw Bay watershed, Michigan's largest, covering all or part of 22 counties.¹ The board was not accustomed to having fifth graders apply for funds, and we were not at all sure how our proposal would be viewed.

Birth of an Idea

The idea of building a rain garden had germinated the preceding fall. Students had gathered at their classroom window and watched a thunderstorm pelt the pavement and form muddy puddles. They were concerned with how this dirty water from these frequent Michigan storms might affect one of Michigan's most important resources: fresh water.

In the afternoon, the class ventured outside and observed the oil and dirt laden storm waters pour down the parking lot storm drain. The children were alarmed! They wanted to protect Saginaw Bay from receiving this polluted water. They had learned that wetlands, like the marsh bordering a portion of the bay, help to slow down runoff (which prevents erosion) and to filter it (which removes some pollutants and sediment). They also understood from classroom studies that various land uses can cause excess sediment, manure, fertilizer, or other manufactured chemicals to be washed into rivers or storm drains. With this knowledge, one student suggested that we "build a small marsh" on the low school grounds to collect storm water. At this time, students did not know about rain gardens, so this proposal seemed a logical solution. As we returned to the classroom, two students urgently asked to talk to the principal about this idea.

Researching Solutions

With the principal's full support, the class delved into research, using mostly online, free resources. They discovered that several Great Lakes communities had built rain gardens in urban areas and at schools to improve the quality of their rivers and lakes. The whole fifth grade class divided into committees to learn all they could about rain gardens: how to build them, how to maintain them, and what to plant. Students mapped Michigan's rivers, identified the watershed of each, and studied the elevation map of the school grounds. The class examined an online drainage map from the Bay County drain commissioner's office and was appalled to discover that the ditches alongside many of

their suburban and rural houses connected directly to Saginaw Bay. When the ditches are full, the flap gates open and the muddy, untreated storm water enters the bay. "Ugh!"

Spreading the Word

The students enthusiastically set to work to educate the school and their families about rain gardens. They created Power Points (PPT) presentations and drafted and polished colorful, informative, illustrated brochures. Teams of students gave presentations about rain gardens in other classrooms. One group of fifth graders, who had siblings in third grade, wrote a skit on how to plant and maintain a rain garden. They presented it to all the third grade classes, so the younger children would know how to care for the rain garden when they became fifth graders.

Chad made a colored map of the school grounds and surrounding area, identifying where the rain garden would be located. Brad, Zach, and others researched low-impact development and wrote a report explaining how rain gardens were economically beneficial, when compared with storm drains. Children wrote poems, journals, and other original pieces of writing inspired by their rain gardens experiences and learning.

Working with Community Leaders

Throughout the year the students worked with community leaders to plan a rain garden. Fifth grade student leaders met with school personnel, an environmental engineer, and a landscape architect with rain garden experience. Jeff Jatczak, Senior Project Environmental Engineer of Bay City's General Motors Powertrain, and Diane Huckins, Bay City Public School Science Coordinator, facilitated networking with community organizations and managed facets of the projects. The County Drain Commissioner visited the site and gave us his support.

After studying the elevation map, the student leaders and landscape architect, Patrick Sellenraad, of Designscapes, Inc., of Saginaw, Michigan, selected a location for a rain garden low enough and large enough to capture run-off from the paved areas and the playground.² When Mr. Sellenraad learned of plans

for a new paved bus loop behind the school, he convinced the school maintenance supervisor to have that surface drain to a second rain garden, instead of a storm drain. The students were delighted! Besides having a large demonstration rain garden in the front of the school, there would now be a second rain garden that specifically collected run-off from the pavement where six buses idled and parked every day.

The class listened to professionals in the field, participated in soil testing, selected plants, and surveyed their parents and children in the school to determine what they knew about

storm water runoff and rain gardens.

A second group of fifth graders prepared to ask the Bay Area Community Foundation for funds to purchase native grasses and other plants. The students sat in a panel in front of the Foundation's Board of Directors and answered their questions with ease.

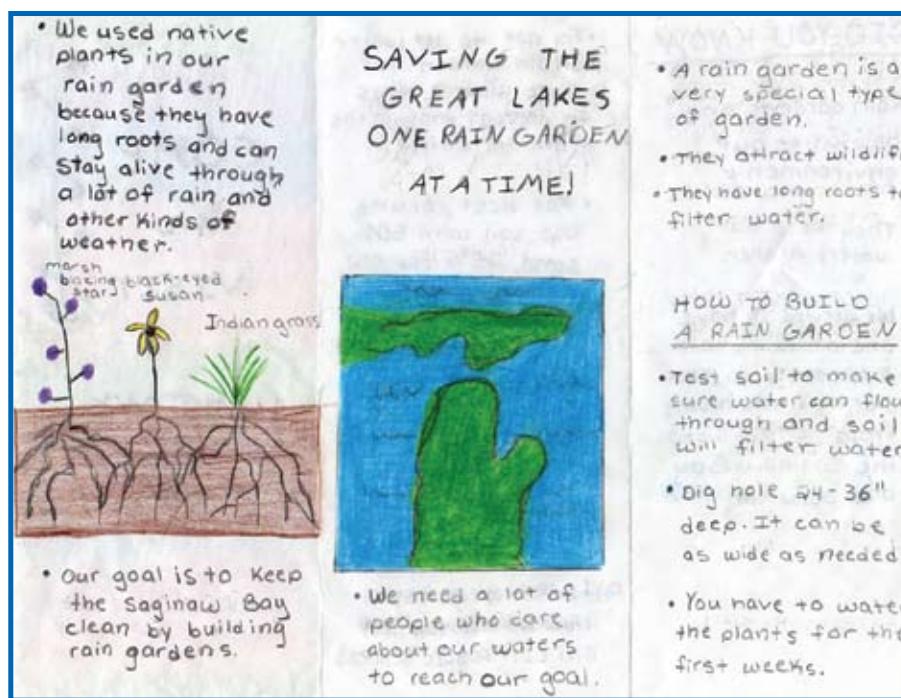
The students observed first-hand how various people in the community pulled together to

solve a real environmental problem (with students at the forefront!). They wrote personal thank you letters to members of the organizations who were supporting their project and to professionals and adults who were volunteering their time.

Utilizing Volunteers

Since the rain gardens would be constructed in June to coordinate with the bus loop paving, students made signs asking pedestrians, bicyclists, and ATV vehicle riders to please stay off the newly laid rain garden soil. Walkers, sports teams, and others who used the school grounds enjoyed reading the signs and learning about the role of the future rain garden. After school ended, two students joined me in distributing the brochures to the residential homes adjacent to the site so that the neighbors would know more about the rain garden being constructed in their view.

In September of 2007 volunteers, parents, and 540 Hampton Elementary School students planted more than 3,000 native Michigan plants in the two rain gardens. Former fifth graders returned to the school on buses to participate in planting of the project they had initiated just 10 months earlier. They also



assisted in placing three permanent signs explaining the function of the rain gardens to future students and visitors. Betsy's words were engraved on the illustrated sign posted in front of the bus loop garden:

Why Build a Rain Garden?

Rain gardens help keep our lakes, rivers, and the Saginaw Bay cleaner. Do you know why? Rainstorms wash dirt, oil and pollutants off the pavement and into our rain garden. The long roots of native plants and the rain garden's soil absorb the water and trap sediment and pollutants. That way the polluted water doesn't flow down storm drains and out to our Bay! You can build a rain garden, too!

Sustaining the Project

The new class of fifth graders eagerly took over the rain gardens. They educated themselves about the native plants in each rain garden, such as black-eyed Susan, Joe Pye, coneflowers, and purple asters. They labeled each of the flowers and grasses (using both the common name and the scientific name), charted rainfall, marked the trail through the large demonstration rain garden, and took responsibility for watering and weeding during the summer drought. The Olde Thyme Herb Society asked our class to share information at their meeting and enjoyed a student-led tour of the rain gardens in the early summer.³

At her home computer, Marissa created a "Hampton Rain Garden" website with multiple topics on the menu bar. Since this view-only website was on freewebs.com, it is no longer accessible. However, for about a year, students and people nationwide viewed her website, which was a great learning experience for Marissa.

Extending Learning and Service

In October the class participated in a service project collecting native grass seeds at the Bay City State Recreation Area's restored grassland. The program was aimed at high school students, but the naturalist was grateful to have our fifth graders volunteer. The grass seeds were sent to Michigan State University, where they were disbursed to groups throughout Michigan who are trying to re-establish Michigan prairies where they once existed. As the students walked beneath the towering grasses, bending the stalks in order to reach the seed heads, they imagined being pioneers living on the frontier.

The organizers of "Green Gardening Day" at Midland County's Chippewa Nature Center invited the Hampton students to share rain garden information at this annual event. Students rose to the challenge, creating a tabletop model and volunteering on a Saturday to demonstrate to guests how rain gardens work. The fifth graders were the only children presenting. It was impressive to watch the students answer adults' questions. Students also provided leaflets they had made, exhibited photos of the rain garden in various stages of construction, and

displayed their own PPT shows on a laptop. They were truly active citizens, sharing their environmental knowledge with another community.

Stewarding the Environment

During the Rain Garden Dedication and Ribbon Cutting Assembly in the spring of 2008, Grace (now a sixth grader) offered a public "thank you," and the administrator of the Saginaw Bay Watershed Initiative Network congratulated the students on being true "stewards of the environment." He urged all in attendance to continue the concern that these students had demonstrated in caring for the environment.

"Stewards of the environment" was an accolade that had been bestowed on the students previously. Jeff Jatczak, the professional engineer, praised them similarly, and they were recognized by the Board of Education. During planting, a local television station featured the class as their "Good Kids" of the week. The Saginaw Bay Watershed Initiative Network Annual Report for 2007 selected Hampton rain gardens as one of their focus projects.⁴

Achieving Educational Goals

The rain garden project wove together science, technology, and society. The second year class enthusiastically created their own rain garden power points and informative leaflets. Their final tri-fold leaflets were disseminated at the Rain Garden Assembly and given to organizations. Students continued primary research. Brett tested the quality of the ditch water outside his home and graphed the results, while others made a model of a rain garden showing how it captures sediment and other pollutants. At the district science fair, students provided rain garden demonstrations for families and visiting adults.

The students met multiple state and district standards for fifth grade social studies, including inquiry, research, analysis, public discourse, decision making, and citizen involvement.⁵ In addition, they became aware of the roles that state and local governments play in securing clean water for residents and of the importance of non-profit agencies in helping to address community problems. The students explored each of the essential elements of the National Geography Standards and gained proficiency in several standards within these elements: the World in Spatial Terms, Human Systems, Environment and Society, and Uses of Geography.⁶ National social studies curriculum standards were also addressed in these activities, including **6 POWER, AUTHORITY, AND GOVERNANCE**, and **8 SCIENCE, TECHNOLOGY, AND SOCIETY**.⁷

Grade level expectations for reading, speaking, and writing were met and expanded as the students wrote and spoke extensively about rain gardens and their experiences.⁸ The students recognized the importance of perfecting their written work and oral presentations, and they willingly undertook numerous revisions.

The students had worked together to solve a real life problem.

They brought the themes of social studies to life, interacting with others, and they gained the confidence to pursue their ideas and the skills to collaborate effectively, as suggested by the theme **INDIVIDUALS, GROUPS, AND INSTITUTIONS**, I felt assured that this first-hand experience in active citizenship would help them as adults to meet the challenges their communities may face in years to come.

Continuing the Legacy

Each new class embraces the rain gardens as their legacy. They are excited by their responsibility for the rain gardens and are proud to be making a difference in their world. Hampton School students continue to be leaders, workers, and environmental stewards. ☺

Notes

1. Saginaw Bay Watershed Initiative Network, www.saginawbaywin.org/info_on_water_shed.
2. DesignScapes, Inc, "Storm Water Design," www.dscares.com/stormwaterdes.htm.
3. Olde Thyme Herb Society of the Bay County Historical Society, www.bchsmuseum.org/id21.html.
4. Saginaw Bay Watershed Initiative Network, "2007 Annual Report," www.saginawbaywin.org/uploads/2007_Annual_Report.pdf.
5. Michigan Department of Education, "Social Studies Grade Level Content Expectations" (2010), www.michigan.gov/documents/mde/SSGLCE_218368_7.pdf.
6. National Council for Geographic Education, National Geography Standards (2010), www.ncge.org/i4a/pages/index.cfm?pageid=3314.
7. National Council for the Social Studies, *National Curriculum Standards for Social Studies: A Framework for Teaching, Learning, and Assessment* (Silver Spring, MD: NCSS, 2010), www.socialstudies.org/standards/strands.
8. Michigan Department of Education. 2010. "English Language Arts Grade Level Content Expectations," www.michigan.gov/documents/ELAGLCE_140483_7.pdf.



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Guidelines for Planning an Environmental Project on School Grounds

- Gather information on the issue from a variety of resources (see list below).
- Share your early plans with parents, principal, school staff, and district leaders. You will need all of these people to be active partners if the project is to succeed.
- Seek interested professionals in the community. Professionals can provide technical guidance and connect you with interested non-profit associations, potential funding organizations, and supportive individuals.
- Appeal to local foundations and businesses, which can be sources of grants or volunteers. For example, Waste Management Co. contributed funds to purchase native plants, and General Motors provided release time for their environmental engineer. Volunteers from Aramark and United Way helped with spring preparation and fall cleanup.
- Involve students in every step, and integrate the project with the curriculum. Classroom discussions and problem solving develop understanding and instill an appreciation of different viewpoints. Relate the many tasks students are doing to civics, government, economics, and geography. Ask historical questions: *How was this land used in earlier times? When did rules and regulations about clean water become law?* Reserve time for students to write in journals and draw about their experiences related to the project.
- Notify the media at major milestones, and feature the work of your students.
- * Celebrate the project's success and publically thank all supporters and participants.

References about Rain Gardens

- West Michigan Environmental Action Council. 2010. "Rain Gardens of West Michigan." www.raingardens.org
- Wisconsin Department of Natural Resources Rain Gardens page: www.dnr.state.wi.us/runoff/rg/
- University of Connecticut Cooperative Extension Service's Rain Garden Design Guide for Homeowners: www.sustainability.uconn.edu/pdf/raingardenbroch.pdf
- Virginia Department of Forestry's Rain Garden Page: www.dof.virginia.gov/mgt/rfb/rain-gardens.htm
- Center for Watershed Protection's Guidance on Building and Installing Rain Barrels and Rain Gardens: www.cwp.org/images/stories/RainBarrelGarden.pdf