

PLACE-BASED STEWARDSHIP EDUCATION CASE STUDIES



Carbon-neutral Graduation

*City High/Middle School
Grand Rapids, Michigan*

An urban high school



About the case study

This case study of place-based stewardship education (PBSE) at City High/Middle School is one of 11 case studies developed by staff of the Great Lakes Stewardship Initiative (GLSI), staff of the GLSI's nine regional hubs, and the educators whose work is featured in the study.

The case studies focus on PBSE efforts during the 2014–15 school year. At most of the sites featured in these studies, the PBSE approach has been developed over the course of several years.

Each school featured in a case study works with the GLSI through a regional hub. Hubs provide professional development for educators, help schools connect and

partner with community-based organizations, and provide funding and other PBSE supports with an environmental stewardship emphasis. City High/Middle School has a longstanding relationship with its hub, Groundswell.

Cover: The City High/Middle School 2016 “green” graduation.

Carbon-neutral Graduation at City High/Middle School

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Conventions in this document

As you read this study, you will see special icons in the text.



This icon marks a teaching tool, resource, or product that you can access and download from the case study.



This icon marks a connection between the work being described and the GLSI's Guiding Principles for Place-based Stewardship Education, developed by GLSI central and hub staff to describe the GLSI's vision for exemplary place-based stewardship education. Certain aspects of each case study illustrate how one or more of the principles can be enacted in classrooms and communities.



Quick Summary

Our school is green, why isn't graduation?

Seniors worked to make their graduation carbon-neutral.

Grand Rapids City High/Middle School is an urban school serving students in seventh through 12th grade in Grand Rapids, Michigan. City's seniors wanted to reduce the waste and carbon footprint of their graduation ceremony. They worked with partners to make their graduation as green as possible, offset the ceremony's carbon footprint by planting trees and native species; and do local cleanups and beautifications to make their community a better place.

The project supported City High/Middle's focus on environmental economics. Students learned that a green graduation could be a more cost-effective graduation. Their efforts set the stage for a legacy of carbon-neutral graduations at City.

The entire senior class at City—more than 90 students comprising a racially, culturally, and socioeconomically diverse group— participated in the effort. A subgroup of 20 students, members of the E-Club (Environmental Club), managed the project as part of their club's weekly meetings.



Clockwise from top: City students; planning at the annual Walden Day; planting on Earth Day; graduation day.

“The environment shouldn’t suffer for our class to celebrate our graduation.”

—City High/Middle School student



Community Context



Context is essential in place-based stewardship education

There is perhaps no more distinctive characteristic of PBSE than its treatment of place as the context for learning.

Our sense of place does not exist in only one geography, and it changes as we age. When we are very young, we may experience our strongest sense of place in our homes, neighborhoods, and favorite places for play. As we grow, we begin to understand that we are members of other communities, too—a school community, a city or town, a watershed, a state, or a bioregion such as the Great Lakes.

PBSE relies on place—including lands and waters, people

and organizations, history, and culture—as a starting point for teaching and learning. Reading about rainforests or deserts may be interesting, but environmental learning grounded in students' home communities builds on a foundation of community attachment and place-based knowledge.

For Grand Rapids youth, that foundation includes a city that is committed to sustainability, surrounding farmland and forests, and the Grand River, Michigan's longest at 252 miles.



Grand Rapids is a thriving urban center and a world leader on sustainability

Founded on the banks of the Grand River, Michigan's second largest city quickly evolved into the furniture production capital of the world, thanks to its proximity to vast natural resources and distribution channels.

Grand Rapids is one of only 146 localities worldwide to be designated by the United Nations as a Regional Centre of Expertise on Education for Sustainable Development; there are only five such centers in the United States. The city, which has a multiyear sustainability plan that includes more than 200 specific targets, boasts a disproportionately large number of LEED Fellows, B Corps, and other sustainability-minded organizations and people.

With civic, municipal, business, and philanthropic support,

several initiatives are in the works or underway to further revitalize the city's significant natural resources. One such effort focuses on restoring the rapids to the Grand River's urban corridor by removing some dams and lowering others.

The Grand River watershed is known for its diversity of plants, animals, and habitats. Within the city limits, green space can be found in traditional urban parks nestled in residential communities or along the Grand River's banks.

LINK: [GRAND RAPIDS SUSTAINABILITY PLANS AND REPORTS](#)

LINK: [WHAT ARE B CORPS?](#)

The city is within a half-hour drive of Lake Michigan

City High/Middle students study the Great Lakes and their place in this unique ecosystem.

Lake Michigan is an important part of this region's history, consciousness, lifestyle, and economy. West Michigan is a second summer home to many Chicagoans, who for decades have traveled around the southern shore of the lake to the coastal towns of Saugatuck, Grand Haven, Holland, and Muskegon to spend summers at the beach.

West Michigan is unusually rich in foundations and philanthropic spirit, and many organizations and individuals invest their resources in protecting and preserving the Great Lakes.

Despite its inland location in the region, Grand Rapids' connection to Lake Michigan is strong, and the city contributes significantly to regional ecotourism. In 2012 and 2013, it was named "Beer City USA" in recognition of its local craft beers. Each fall, the city stages ArtPrize, an international competition that spans 19 days, attracts 400,000 people, and features art—much of which focuses on the environment—placed at various venues in downtown Grand Rapids.



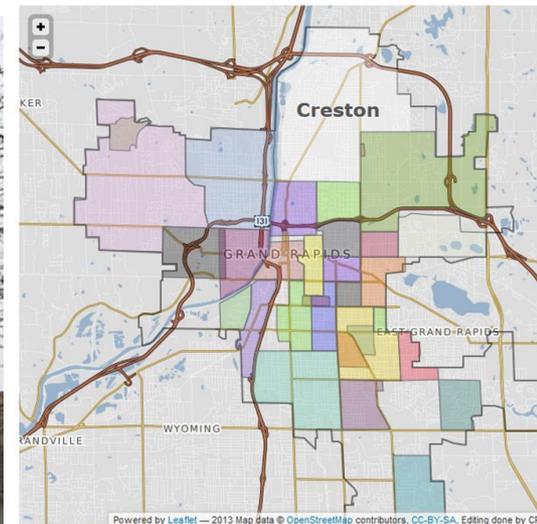
A Lake Michigan beach. © Anne Kitzman/Adobe Stock

City High/Middle School is a top-rated high school with a thematic focus on economicology

The school district supports place-based education and other hands-on pedagogies.

City High/Middle School, part of the Grand Rapids Public Schools, offers the International Baccalaureate Middle Years and Diploma Programmes. The school's unique focus is *economicology*— a term coined by the late Steelcase Furniture Inc. CEO, Peter Wege, to describe a philosophy that emphasizes natural resource stewardship and human sustainability as a necessary component of successful business. Mr. Wege practiced this philosophy in his own work at Steelcase. Its application to other contexts continues today through the work at City High/Middle School and through the Wege Foundation's grantmaking efforts, including its generous support of the GLSI.

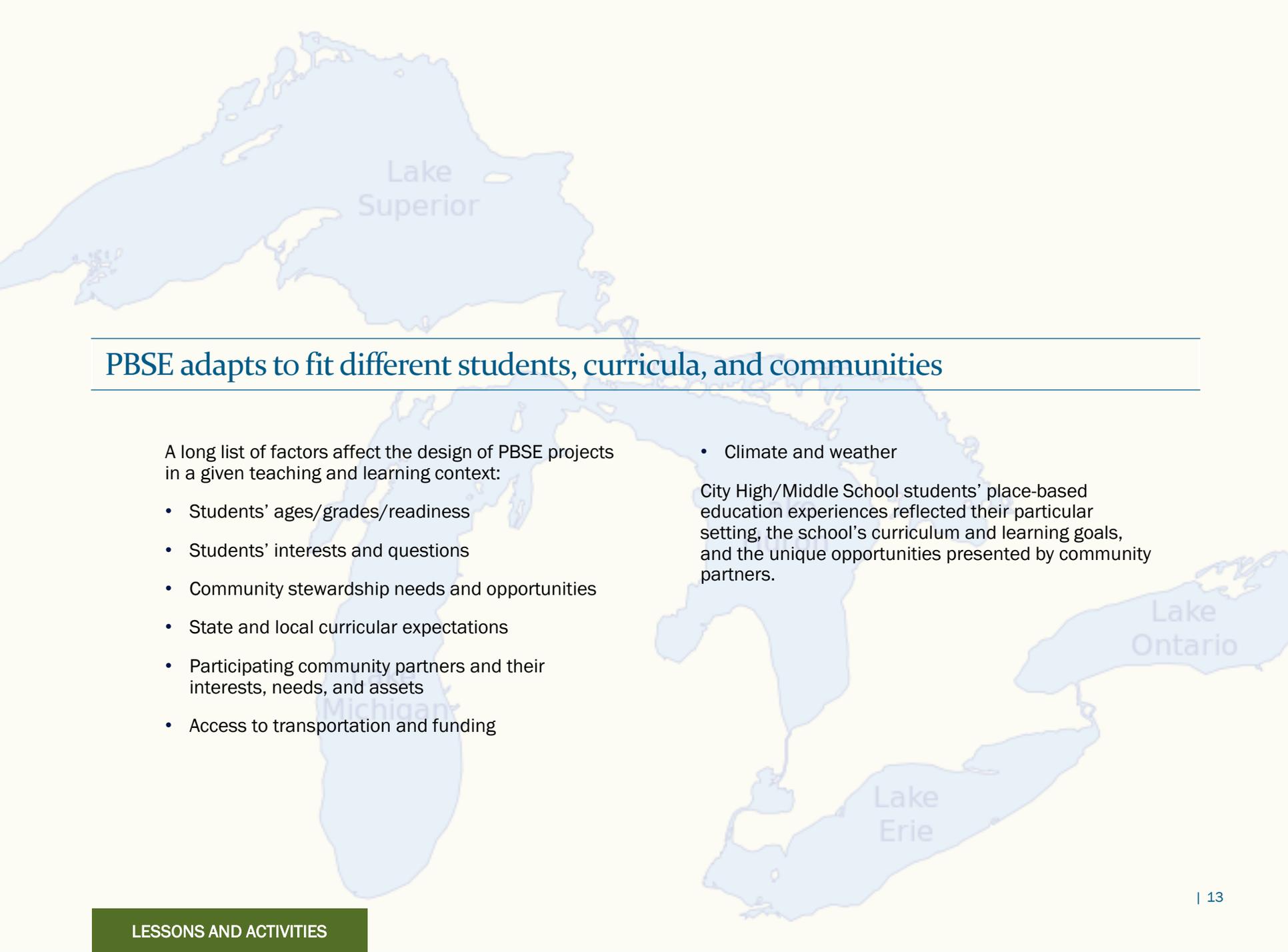
The Grand Rapids Public Schools include 12 themed schools with custom curricula (organized around themes including, but not limited to, the arts and the environment). Four of these schools are also Centers of Innovation, established through partnerships with area institutions. Superintendent Teresa Weatherall Neal, who began her career in the district as a student worker, is a strong advocate for place-based education. With support from the district's board of education, she is working with other community organizations—including Groundswell—to expand its practice in schools across the district.



City High/Middle School is located in Creston, a northern Grand Rapids neighborhood, in the former Creston High School building. Photo of City High/Middle: City Parent-Teacher-Student Association (PTSA). Grand Rapids neighborhoods image: CRI, http://cridata.org/Neighb_GR.aspx.



Lessons and Activities

A light blue map of the Great Lakes region is in the background. The lakes are labeled: Lake Superior, Lake Michigan, Lake Erie, and Lake Ontario. The text 'PBSE adapts to fit different students, curricula, and communities' is centered in a white box with a blue border.

PBSE adapts to fit different students, curricula, and communities

A long list of factors affect the design of PBSE projects in a given teaching and learning context:

- Students' ages/grades/readiness
- Students' interests and questions
- Community stewardship needs and opportunities
- State and local curricular expectations
- Participating community partners and their interests, needs, and assets
- Access to transportation and funding

- Climate and weather

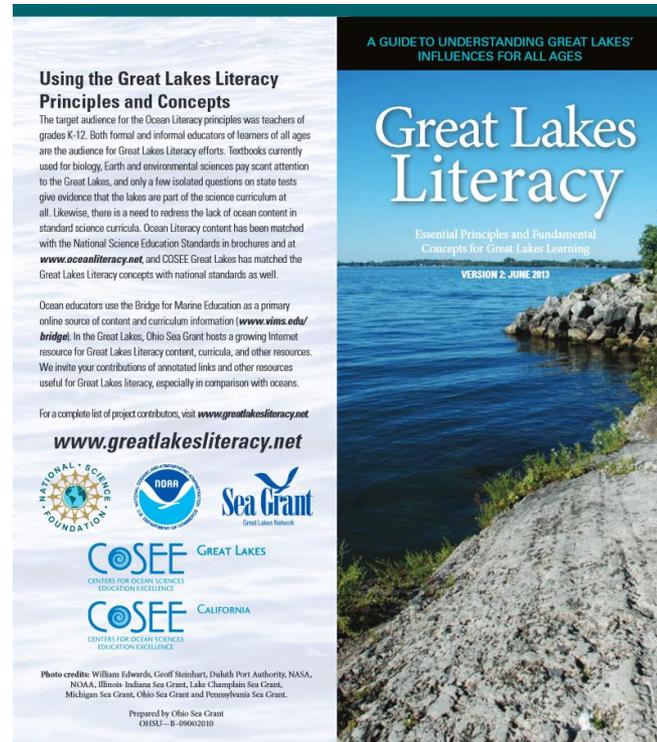
City High/Middle School students' place-based education experiences reflected their particular setting, the school's curriculum and learning goals, and the unique opportunities presented by community partners.

Teachers tied the goals of the carbon-neutral graduation to students' broader, long-term study of the Great Lakes

Mini-lessons were taught on multiple occasions that emphasized the importance of the Great Lakes, our impact on them, and how we can minimize our negative impact while maximizing our positive impact.

The Great Lakes have been an important theme of Groundswell's work at City High/Middle and other schools working with this GLSI hub since 2012, when Groundswell began to receive funding from the Great Lakes B-WET program. The hub used this support to educate teachers about the Great Lakes Literacy Principles—principles that explain how we affect the lakes and the lakes affect us.

Many of City's graduating seniors—as well as their teachers—developed a strong base of Great Lakes knowledge through the three years of the grant.



The Great Lakes Literacy Principles brochure lists all eight principles and describes how the principles were developed. Use the link below to access the brochure.



LINK: [GREAT LAKES LITERACY TEACHING RESOURCES](#)

LINK: [GREAT LAKES LITERACY PRINCIPLES](#)



Seniors set the direction for their PBSE effort at Walden Day, an annual school event

In fall 2015, as a culminating experience associated with their reading of portions of Thoreau’s *Walden*, students participated in a one-day field experience at nearby Pickerel Lake. Through guided exercises and discussions conducted in this natural setting, students reflected on their relationship with the environment, the community, and each other.

Groundswell staff led a lively class discussion about an excerpt (“The Economy of Things”) from *Walden*. Throughout the day, students talked with each other about this excerpt’s relevance to their upcoming experience as seniors. They concluded that they wanted to leave an environmental legacy that future classes could inherit—a carbon-neutral graduation.

“The cost of a thing is the amount of what I will call life which is required to be exchanged for it, immediately or in the long run.”

—Henry David Thoreau



LINK: [THOREAU'S WALDEN-AN ANNOTATED EDITION](#)

Seniors gathered information about the economicology of graduation gowns

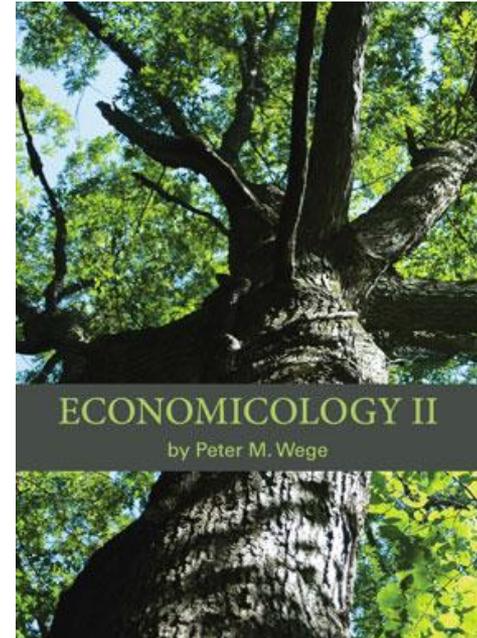
More than five million graduation gowns are worn by high school and collegiate graduates annually.

Students learned about the waste problem inherent in graduation gowns from Seth Yon, the founder of Greener Grads, an organization dedicated to reusing graduation gowns.

Seth also introduced students to inequities in the pricing of graduation gowns and accessories that exist nationwide. Students discovered that the costs of buying caps and gowns were, in many cases, inversely associated with the socioeconomic status of a given community. Communities with higher average incomes had lower package costs.

The combination of environmental impact and economic injustice (economicology in action) inspired the students to work with Greener Grads.

LINK: [ECONOMICOLGY BOOKS BY PETER WEGE](#)



Peter Wege distributed the first copies of [Economicology II](#) at his 90th birthday party. Proceeds from the sale of the book help to support the Center for Economicology, a sixth-grade-only school housed with City High/Middle School.

Student leaders began to identify options and strategies for reducing the carbon cost of their graduation

Student leaders of the project used weekly Environment Club (E-Club) meetings to organize and manage the project. They calculated the carbon cost of a traditional graduation ceremony, and brainstormed ways to make the event less costly to the environment. Ideas included:

- Collecting graduation gowns from Grand Valley State University
- Serving cupcakes instead of cake (so that silverware and plates were not needed)
- Buying reusable cups that could be used for future graduations
- Encouraging carpooling and bike riding
- Offering recycled graduation announcements

After calculating the carbon costs of the ceremony, the carbon used to transport families to and from the ceremony, and the energy used to cool the facility, students determined that they needed to plant 50 trees and have about 25 survive for over 15 years to offset the carbon footprint of their graduation ceremony.



City seniors plant a tree. Photo courtesy of Kathleen VandeGevel.



GLSI Guiding Principle 2: Equip students to understand how all humans, in various ways, affect and are affected by the natural environment, and that the community's environmental resources, laws, and beliefs and perspectives influence and are influenced by broader physical and social systems.



LINK: [TERRAPASS, A CARBON FOOTPRINT CALCULATOR](#)

The graduating seniors planted native trees and plants on Earth Day 2015



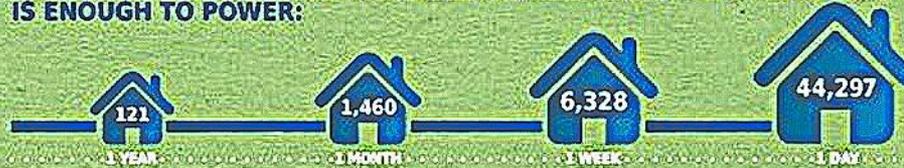
City seniors planted 50 trees and over 2,000 native plants to offset their projected carbon use for graduation.

Native trees and plants were purchased with funds from the GLSI's grant from the U.S. EPA. E-Club members helped organize schoolwide planting and cleanup activities at local businesses by City students during Earth Week. Senior class members were responsible for placing or distributing plants in neighborhoods.

During this project, students drew awareness to carbon use within their community, helped change practices related to waste and consumption, and worked with innovators in sustainable businesses, all while improving the natural world by adding native plants to the school campus and neighborhoods.

-  **REDUCES WASTE**
 -  **SAVES YOU MONEY**
 -  **HELPS THE ENVIRONMENT**
- 

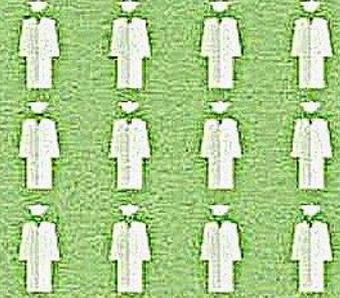
PRODUCING GOWNS USES 3.2 MILLION GALLONS OF OIL A YEAR. THIS IS ENOUGH TO POWER:



GOWNS ARE MADE OF THE SAME MATERIAL AS PLASTIC WATER BOTTLES, REUSING A GOWN 1 TIME, SAVES THE EQUIVALENT OF 23 BOTTLES.

UP TO 100 MILLION GOWNS HAVE BEEN DISCARDED IN LANDFILLS.

THAT'S A 120 MILE CARAVAN OF GARBAGE TRUCKS FULL OF GOWNS - THE DISTANCE FROM PHILADELPHIA TO WASHINGTON DC



1 GOWN CAN BE USED UP TO 12 TIMES BEFORE BEING RECYCLED



Graphic courtesy of Greener Grads.

City students collected gowns from Grand Valley State University graduates

The two schools are close together, and use the same color gowns.

Students' work involved more than plantings and cleanups. Beyond simply renting graduation gowns from Greener Grads, City students worked with Seth Yon of Greener Grads, staff of Groundswell, and the Grand Valley State University Office of Student Life to organize a graduation gown collection at GVSU's graduation ceremony. Conveniently, the graduation gown colors for GVSU and City High are identical.

Groups of students stationed at donation booths, along with teachers and Seth, collected enough gowns from GVSU graduates to supply City High's entire senior class. These gowns were then added to Greener Grads' inventory. Seth plans to pursue future gown collections at GVSU.

The graduation ceremony was held on June 4, 2015

Students donned the cleaned and pressed gowns they had collected the month before at GVSU and headed in for their carbon-neutral graduation. Families met at the high school and carpoled or bussed to the graduation site. After the ceremony, guests noticed some welcome changes.

Gone were the paper cake plates and plastic utensils. They were replaced by cupcakes and compostable napkins. Styrofoam cups had disappeared as well and were replaced with reusable glassware.





Seniors at camp. Photo courtesy of Kathleen VandeGevel.

City seniors “greened” their senior party

Students so embraced the place-based stewardship education they garnered at City High/Middle School and felt such ownership in their graduation ceremony, they extended their environmental commitment when they expressed their wishes for their senior trip to their parents and the Parent-Teacher-Student Association (PTSA).

Other senior classes took trips to Chicago, Detroit, or Cincinnati. But these seniors chose to stay close to home, enjoying the natural world, choosing the subtle glow of the campfire over the bright lights of the city.

Students and parents planned a wonderful three-day, two-night camping experience that immediately followed graduation.

Activities included bonfires, rope courses, group hikes, swimming, kayaking, and much more. Class bonding was the goal, and the goal was achieved!

“We have a lot to be proud of with our accomplishments as a group, but this year, and especially the year’s end, was the best.”

—City student

A subset of senior class students shared their story with others



Photo courtesy of Kathleen VandeGevel.



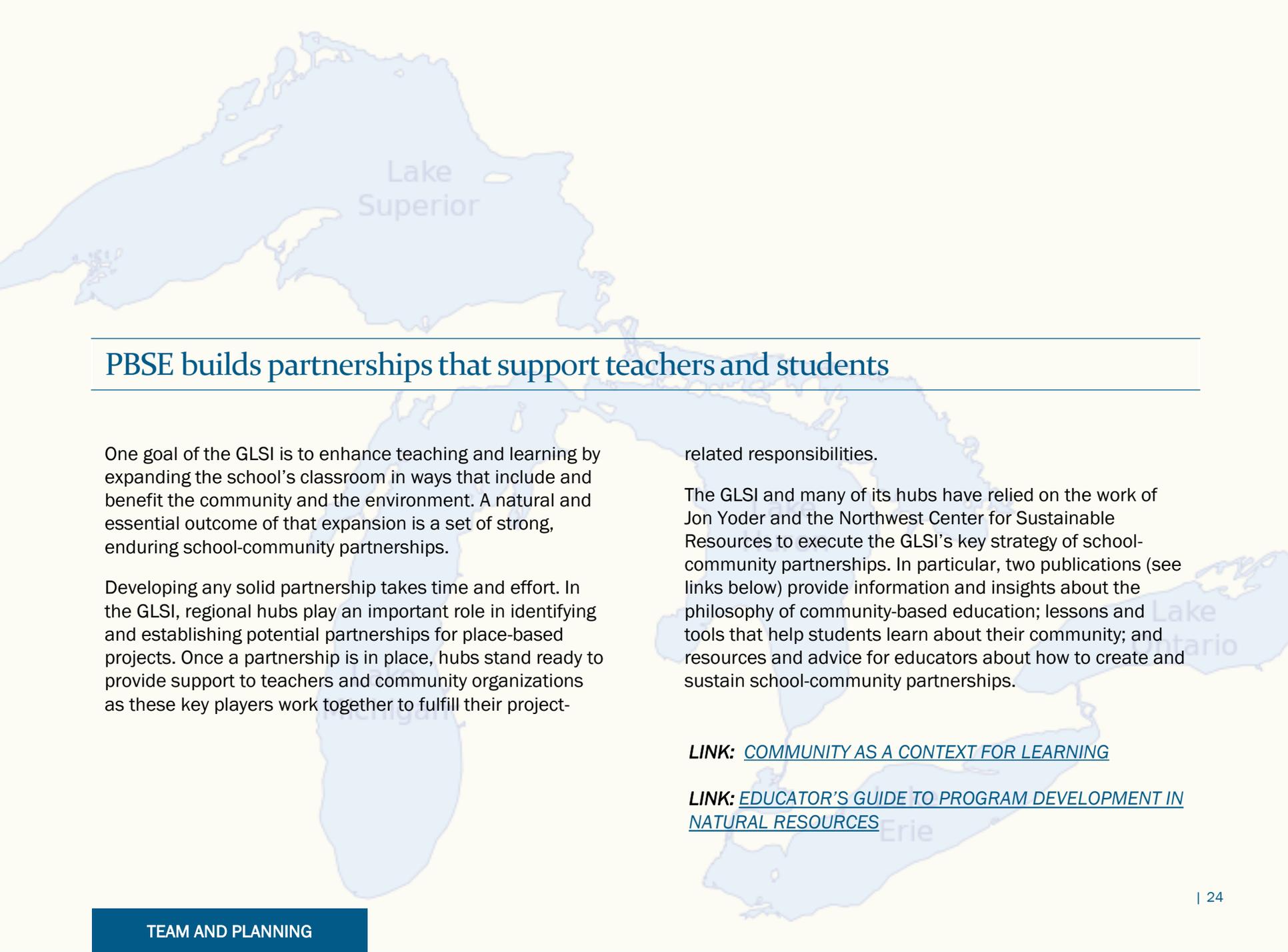
Photo courtesy of Groundswell.

Students presented their carbon-neutral graduation project to their peers and community members at the annual Groundswell Student Showcase. They also presented at the Great Lakes Place-based Education Conference, an annual meeting hosted by the GLSI.

At each venue, students took ownership of their project and explained how and why the senior class decided to implement a carbon-neutral graduation. Students justified their choices and described the outcomes of their efforts on themselves, the school, the community, and the environment.



Team and Planning



PBSE builds partnerships that support teachers and students

One goal of the GLSI is to enhance teaching and learning by expanding the school's classroom in ways that include and benefit the community and the environment. A natural and essential outcome of that expansion is a set of strong, enduring school-community partnerships.

Developing any solid partnership takes time and effort. In the GLSI, regional hubs play an important role in identifying and establishing potential partnerships for place-based projects. Once a partnership is in place, hubs stand ready to provide support to teachers and community organizations as these key players work together to fulfill their project-

related responsibilities.

The GLSI and many of its hubs have relied on the work of Jon Yoder and the Northwest Center for Sustainable Resources to execute the GLSI's key strategy of school-community partnerships. In particular, two publications (see links below) provide information and insights about the philosophy of community-based education; lessons and tools that help students learn about their community; and resources and advice for educators about how to create and sustain school-community partnerships.

LINK: [COMMUNITY AS A CONTEXT FOR LEARNING](#)

LINK: [EDUCATOR'S GUIDE TO PROGRAM DEVELOPMENT IN NATURAL RESOURCES](#)

Teachers, the assistant principal, community partners, and the GLSI hub helped students achieve their goals



A City student with her senior class advisor, Joe Wierda.

Teachers

Kathleen (Kathy) VandeGevel teaches 11th and 12th grade English/Language Arts at City High School. She is also the E-Club advisor and senior class advisor. She has participated in Groundswell for over five years.

Joe Wierda teaches an International Baccalaureate class called Theory of Knowledge, along with high-school history courses. Joe served as co-advisor to the senior class. Joe has participated in Groundswell for three years.

Kathy and Joe also worked with **Ryan Huppert**, the assistant principal at City. Ryan has been an environmental education advocate for his entire career and has helped leverage unique environmental initiatives at City through his support for teachers and students.

Partners

Seth Yon is the founder and CEO of **Greener Grads**, and worked closely with the senior class. Seth was a guest lecturer on a few occasions, assisted the students in gown collection, and attended the students' Groundswell Showcase event and their graduation ceremony.

Bill Snyder owns **Wildtype Design, Native Plants, and Seed Ltd.** and donated his time and expertise in native plants to help the senior class select and ultimately plant their trees. Bill also gave the class a discount on the plants that were selected and discounted the delivery charge for the school.

The Grand Valley State University Student Life Office worked with **Greener Grads**, **Groundswell**, and City students and allowed gown collections following their graduation ceremony. This led the way to further partnerships between Grand Rapids Public Schools, Grand Valley State University, and Greener Grads.

Mike Posthumus, formerly of **Groundswell**, supported students and teachers in project planning and in many other ways throughout the year as a representative of Groundswell.

Members of the City High E-Club took responsibility for planning and organizing

Student leaders of the classwide initiative met weekly after school during E-Club to plan ways to achieve their carbon-neutral graduation. These E-Club leaders coordinated with student government; the senior class advisors, Mrs. VandeGevel and Mr. Wierda; and their assistant principal, Ryan Huppert. Planning began early in the fall, and continued throughout the year, culminating on June 4, 2015.

The students faced ongoing challenges in having adequate time to meet, fact-find, discuss, and disseminate information. They created and used Facebook groups for communication, and also did some project-related work during their Senior English and History classes.



City's E-Club members are pictured along with Ryan Huppert, assistant principal. Photo courtesy of Rapid Media.

Greener Grads offered the tools and data students needed to find an alternative for their graduation gowns

Greener Grads is a Grand Rapids–based sustainability initiative established in 2014 to keep single-use graduation gowns out of the waste stream. The organization collects used graduation gowns, cleans them, and rents them to graduating high school and college students.

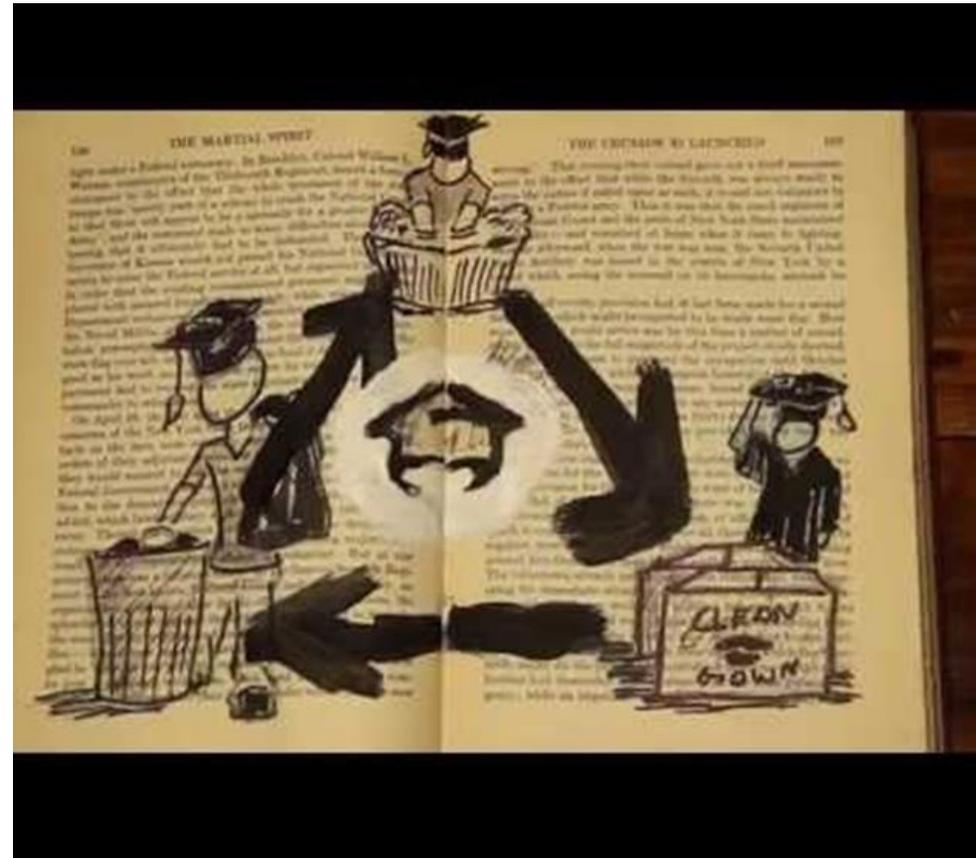
Students benefited from discussions with founder Seth Yon, as well as the educational materials he provided regarding the impact of traditional gowns and the inequitable costs to purchase gowns across different types of communities. In turn, Greener Grads benefited from students' outreach and enthusiasm, which opened up new opportunities for the sustainability initiative.



GLSI Guiding Principle 4: Cultivate collaborative, mutually beneficial school-community partnerships.

LINK: [GREENER GRADS](#)

LINK: [GREENER GRADS VIDEO ON THE WASTE CYCLE FOR GRADUATION GOWNS](#)



Greener Grads' video describes the waste cycle for graduation gowns and the alternative it offers.

“If I can instigate a change in the industry and positively impact the environment, then my efforts are not in vain. Every gown counts.”

—Seth Yon, Greener Grads founder

“I think it was obvious to the students that partnerships helped make the project come to life. That’s valuable because they’ve seen how organizations actually can make significant changes happen when they work together.”

—Seth Yon, Greener Grads founder



Students also benefited from expert assistance with native trees and plants

City students planted apple trees on their campus on Earth Day as part of their effort to offset the carbon footprint of their graduation.

Bill Snyder of Wildtype Design, Native Plants, and Seed Ltd. offered the students expertise in the selection of plants and trees and how to plant them. The nursery specializes in Michigan native trees, shrubs, grasses, and wildflowers, working to maintain the genetic diversity required for self-sustaining native plant populations.

[LINK: WILDTYPE DESIGN, NATIVE PLANTS, AND SEED LTD.](#)



Bill Snyder of Wildtype gives students guidance in tree planting. Photo courtesy of Kathleen VandeGevel.



“Place-based education is one of the most important things we can offer our students. It allows our kids the opportunity to get out and see that all these things we discuss are actually happening in their community and that they can use what they’ve learned to do something about it.”

—Ryan Huppert, assistant principal, City High/Middle School



Impacts of the Project

New trees and native plants left the community cleaner, healthier, and more beautiful, and continued a tradition of service at City High/Middle School

In addition to the trees, shrubs, and native plants placed by City seniors, other students participated in beautifying their school grounds and picking up trash for neighboring businesses. Their work marked a continuation of a long tradition of the school's students helping to improve the community.

For several years, City High/Middle School students have also participated in Global Youth Service Day, an annual event focused on community service, service learning, and activities that encourage the expression of youth voice. This annual event, coordinated by Youth Service America, engages young people from around the world.



Photo courtesy of Kathleen VandeGevel.

LINK: [YOUTH SERVICE AMERICA](#)

Students neutralized the environmental impact of their graduation and built awareness among other schools in the region

The interest that the project kindled in carbon-neutral graduation is a legacy that will yield further environmental benefit.

Shortly after the press provided positive coverage of City's unique graduation, Rockford Public Schools, a nearby district, committed to using Greener Grads as their gown service provider. The Grand Rapids Public School District began conversations about using Greener Grads as a gown rental option for graduations and other events within the district. Gowns collected from Grand Valley State University graduates added supply to Greener Grads' inventory, and the process opened a conversation between the organization and the college about future gown collections and rentals.

Countless parents and relatives of senior class members learned about carbon-offsetting practices and other ways to reduce the waste associated with graduation ceremonies. These same people were informed about sustainable practices they could implement in their own lives. Students expected the resulting attitudes and behavioral changes to persist and extend beyond the single event of graduation. Ultimately, the students were most excited and hopeful for permanent change in the way that graduation ceremonies are conducted in the future.



Students engage in the traditional act of tossing their caps at the close of the graduation ceremony.

LINK: [MEDIA COVERAGE, GRAND RAPIDS BUSINESS JOURNAL](#)

LINK: [MEDIA COVERAGE, RAPID GROWTH](#)

A subset of the graduating seniors completed a postprogram online survey and most seniors completed a postprogram reflection

These evaluation tools examined students' civic capacity, environmentally responsible behaviors, place attachment, skill gains, and general perceptions of the project and its influence on their outlook.

Seniors were asked to complete an online survey about their project. Because the project was focused on graduation, the survey was not distributed until just before graduation, after students had been released from their formal classes.

Unfortunately, many students did not complete the survey. Twenty-eight students returned a survey out of 90 graduates, for an overall response rate of 31 percent. Although the survey was conducted anonymously, and it cannot be confirmed, it is likely that a disproportionately high percentage of the respondents were among those most involved in the planning, such as E-Club members.

The survey used the retrospective “pre/post” methodology. In this approach, a respondent offers a self-assessment or other rating associated with *now*, and the same self-assessment or rating associated with *before the program/experience*.

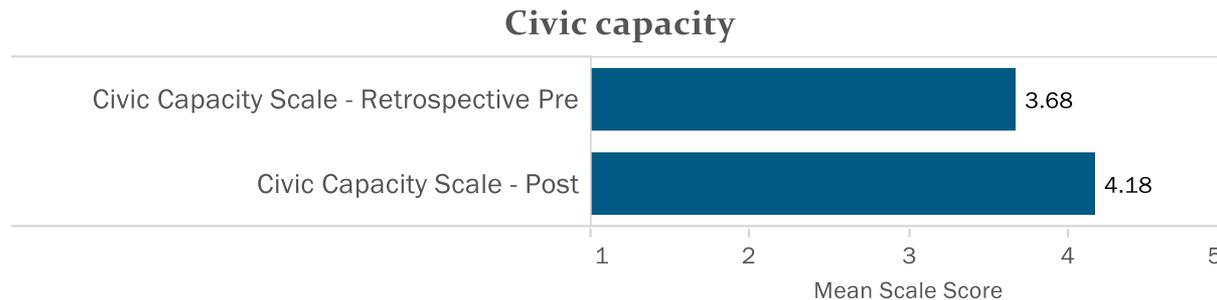
After completing an educational experience, it is not unusual for people to say that, while they had *thought* they were knowledgeable about the topic, what they learned in the educational experience helped them see that their

baseline knowledge was less comprehensive than they had thought. A preprogram self-assessment might indicate a great deal of knowledge on the topic of focus, and the postprogram self-assessment would indicate lesser knowledge. It is not that the attendees have become *less* knowledgeable, of course; rather, they now have a more reasonable gauge of their level of knowledge.

The online survey included Likert-type, agree-disagree or rating-scale questions measuring civic capacity, environmentally responsible behavior, attachment to Grand Rapids, skill gains, and level of satisfaction with the project.

The postprogram reflection, completed by 75 seniors (83 percent), was a free-write prompt: “How do you think the Greener Grads project has influenced you, your sense of your own ability to make change, and your community?”

Seniors responding to the survey reported significant increases in civic capacity



Students taking the survey were asked how well they would be able to perform various civic actions if there were an environmental problem they wanted to do something about. Students self-assessed, for each action, on a scale of 1 (I definitely can't) to 5 (I definitely can). The items were:

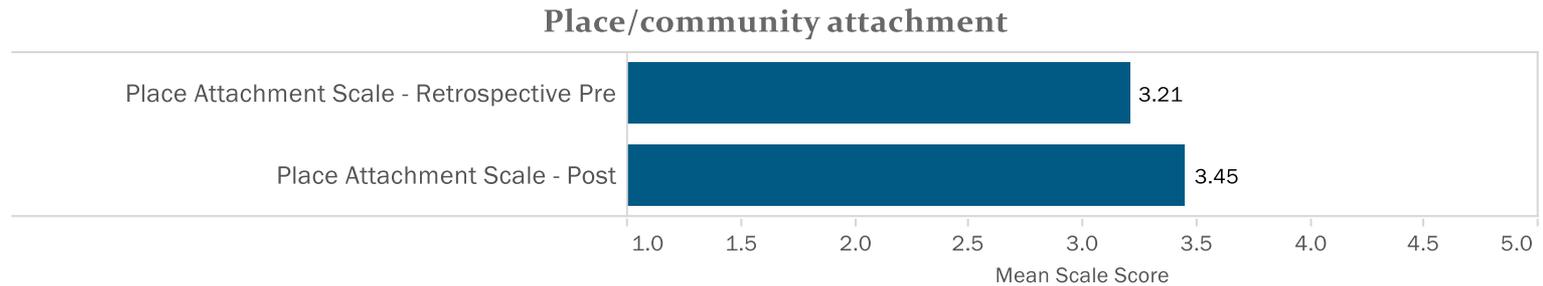
- Gather data and information to describe the nature and extent of the problem
- Get other people to care about the problem
- Express your views in front of a group of people.
- Identify individuals or groups who could help you with the problem
- Write an opinion letter to a local newspaper

- Call someone on the phone that you had never met before to get their help with the problem
- Create a plan to address the problem
- Contact an elected official about the problem
- Organize and run a meeting

The item scores were combined into a single composite score representing the average of the 1-to-5 responses to the individual items.

Students rated their capacity *now* at 4.18, and their capacity at the beginning of the year at 3.68. The difference of +0.5 is an increase of 0.62 standard deviations, a moderate to strong effect.

Seniors responding to the survey reported modest increases in place attachment



Students taking the survey responded to five questions about their feelings of connection to the community. The scale ranged from 1 (disagree very much) to 5 (agree very much). The items were:

- If I had to move away from this community, I would be very sorry to leave.
- I know a lot of people in the community, and they know me.
- No other place can compare to this community.
- This community is the best place for me to do what I like to do.

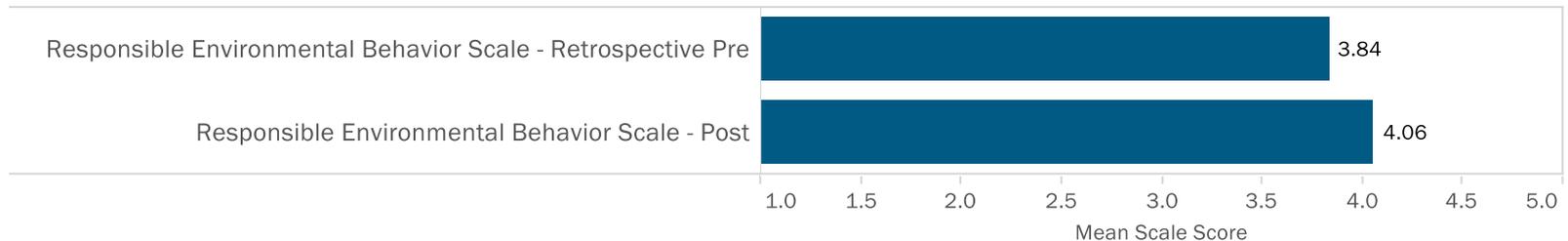
- I feel like this community is a part of me.

The item scores were combined into a single composite score representing the average of the 1-to-5 responses to the questions on community attachment.

Students rated their community attachment *now* at 3.45 and their attachment at the beginning of the year at 3.21. The difference of +0.24 is an effect size of 0.34, a relatively small effect.

Seniors responding to the survey reported increases in responsible environmental behaviors

Responsible environmental behaviors



Students taking the survey responded to eight questions about their environmentally significant behaviors. The scale ranged from 1 (very true) to 5 (very false). The items were:

- To save energy, I turn off lights, televisions, and other electronic devices at home when they are not in use.
- I do not let a water faucet run when it is not necessary.
- I have talked with my friends about ways to help the environment.
- I have asked my parents to recycle some of the things we use.
- I leave the refrigerator open while I decide what to get out (reverse coded).
- I have volunteered on my own time for an environmental

cleanup or other environmental effort in my community.

- If I see litter, I pick it up.
- Often, I ride a bike or walk even when I could travel by car.
- When I need to carry drinking water with me, I use a refillable bottle that I fill with water from the tap.

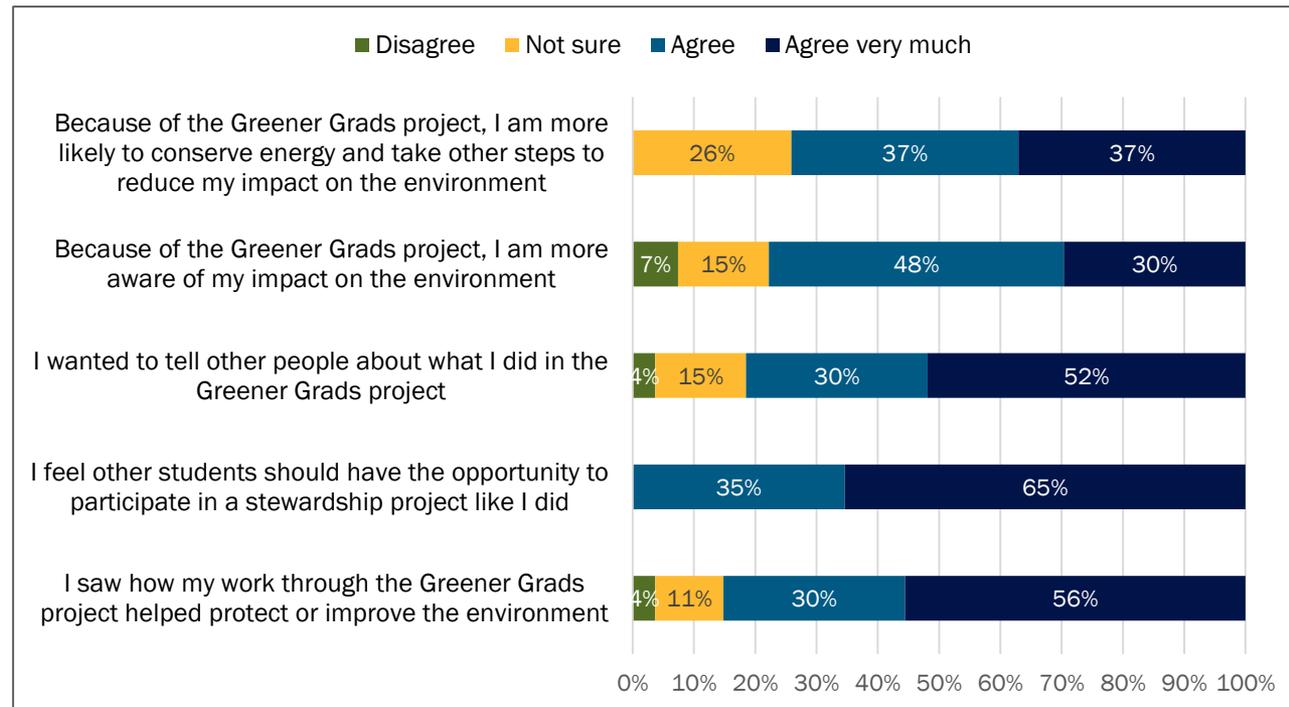
The item scores were combined into a single composite score representing the average of the 1-to-5 responses to the questions on community attachment. The scale was inverted so that higher scores indicate more pro-environmental responses, and lower scores indicate less pro-environmental responses.

Students scores *now* averaged 4.06 and their scores for the beginning of the year averaged 3.84. The difference of +0.22 is an effect size of 0.35, a small but not insignificant effect.

Students expressed favorable impressions of the project and its outcomes

Students taking the survey responded to several agree-disagree questions focused on their perceptions of the worthiness and impact of the carbon-neutral graduation, which was referred to colloquially as the “Greener Grads project.” Of students who participated in the survey, 74 percent or more “agreed” or “agreed very much” with each of these statements.

Although the results are very positive, the reader should remember that only about one-third of the senior class participated in the survey.



In their own words, seniors described how the carbon-neutral graduation effort influenced their outlook on making change

Each response was read and coded into like categories, using multiple categories where necessary.

Seventy-five students wrote a paragraph or more in response to the question, “How do you think the project has influenced **you, your sense of your own ability to make change, and your community?**” The top themes were:

- *I am more aware of or confident in my ability to make change* (35 students). Also included in this category are students who stated their intent to bring the practice forward with them to college, and students who expressed great pride and satisfaction in the results their class was able to achieve.
- *It is important that the practice of carbon-neutral graduations spread to other schools* (21 students). Also included in this category are students who predicted the spread of the practice.
- *I have new awareness of how little changes, compiled across many actors, can add up to significant impacts* (18 students).
- *General praise for the effort, e.g., “awesome,” “great thing to do”* (13 students).

- *This project made me realize that I often make environmentally harmful choices without giving it much thought* (12 students).
- *Much more is accomplished when people work together* (seven students).
- *I became more aware of my carbon footprint* (five students).
- *I became more aware of things I can do to reduce my environmental impact* (four students).

Other, more unique themes were expressed by a total of 17 students, such as a new idea for opening an environmentally sustainable business, or an expression of support for the importance of environmental education. Small groups of students said they were already environmentally attuned and thus did not feel they were affected (five students), or were not very involved in the effort (four students).

"I'm glad to be able to have a say in what my impact will be and how I can counteract its negative effects. Every school should be doing this."

"Graduation is a big event, so if I can be environmentally friendly with an event as big as this, then I should be more than capable of living a greener life with the smaller things, such as recycling and composting."

"Greener Grads has influenced me and my sense of my ability to make change by motivating me to think of more ways I can use similar techniques."

"It's inspired me, and brought the idea of owning an environmentally friendly business. It's made me happy to know that these are being reused, compared to being thrown away into trash cans, or accumulating dust in a lonely closet."

"It has helped me realize that I have the power to create positive change in my community with my peers through hard work and the help of others."

"Before this was introduced to me, I knew about the impact of common things like plastic bottles or food waste or automobiles, but I never really considered the impact clothing has or disposable/one-time-use things can have."

"It's programs like Greener Grads that make the most difference in what I do and what a community does. Small(ish) programs provide everyday people like myself the chance to make a small difference, while also making a big difference."

"I can make changes for being greener in my community, and I must voice it myself to make the changes."

Seniors from City were thoughtful when describing how the carbon-neutral graduation affected their outlook on making change.

“Greener Grads has opened my sense of the ability I have to change my own community including my school, my city, and my neighborhood. Collecting the graduation gowns means less waste in the environment and damage to the ozone as well as a smaller footprint for me and my peers on this Earth. The idea of creating a healthier environment for everyone has always been of importance to me, but to feel like I am physically a part of something has heightened my respect for this Earth even more. Thank you so much.”

—City High/Middle School student



“I am inspired by our students’ accomplishments and ability to achieve at the highest levels while simultaneously showing a profound empathy for our environment.”

—Kathy VandeGevel, teacher

Two graduates and lead teacher Kathy VandeGevel celebrate a successful, green graduation ceremony.

Other PBSE efforts could yield a different set of benefits

There is a lot of freedom within the PBSE framework, so many benefits are possible depending on the direction taken.

BENEFITS OF PLACE-BASED STEWARDSHIP EDUCATION CAN INCLUDE:

STUDENT ACADEMIC GAINS

- Improved academic scores and grades
- Improved critical thinking skills
- Increased engagement in school and motivation for achievement
- Increased professional skills, such as leadership, persistence, taking responsibility, teamwork, developing plans to reach a solution, managing time, motivating others, and dealing with unexpected challenges
- Deeper learning and action competence
- Increased awareness of career options

POSITIVE YOUTH DEVELOPMENT AND STEWARDSHIP GAINS

- Social-emotional development, including increases in self-esteem, a sense of empowerment and agency, social interaction skills and capital, and awareness of cultural diversity
- Sense of place and community attachment
- Civic-democratic competencies and

attributes

- Pro-environmental attitudes
- Environmental sensitivity and awareness
- Responsible environmental behaviors

TEACHER BENEFITS

- Opportunity to pursue their interests and advance their values
- Skill development
- Motivated students

SCHOOL AND DISTRICT BENEFITS

- Teacher engagement and satisfaction
- An integrated option to reach numerous and robust standards and curricular priorities as well as youth development priorities
- Increased awareness from the community of the conditions, needs, and efforts of the schools
- Stronger connections with community-based organizations, parents, and individual community members

- Access to grants, funders, and recognition

PARTNER ORGANIZATION BENEFITS

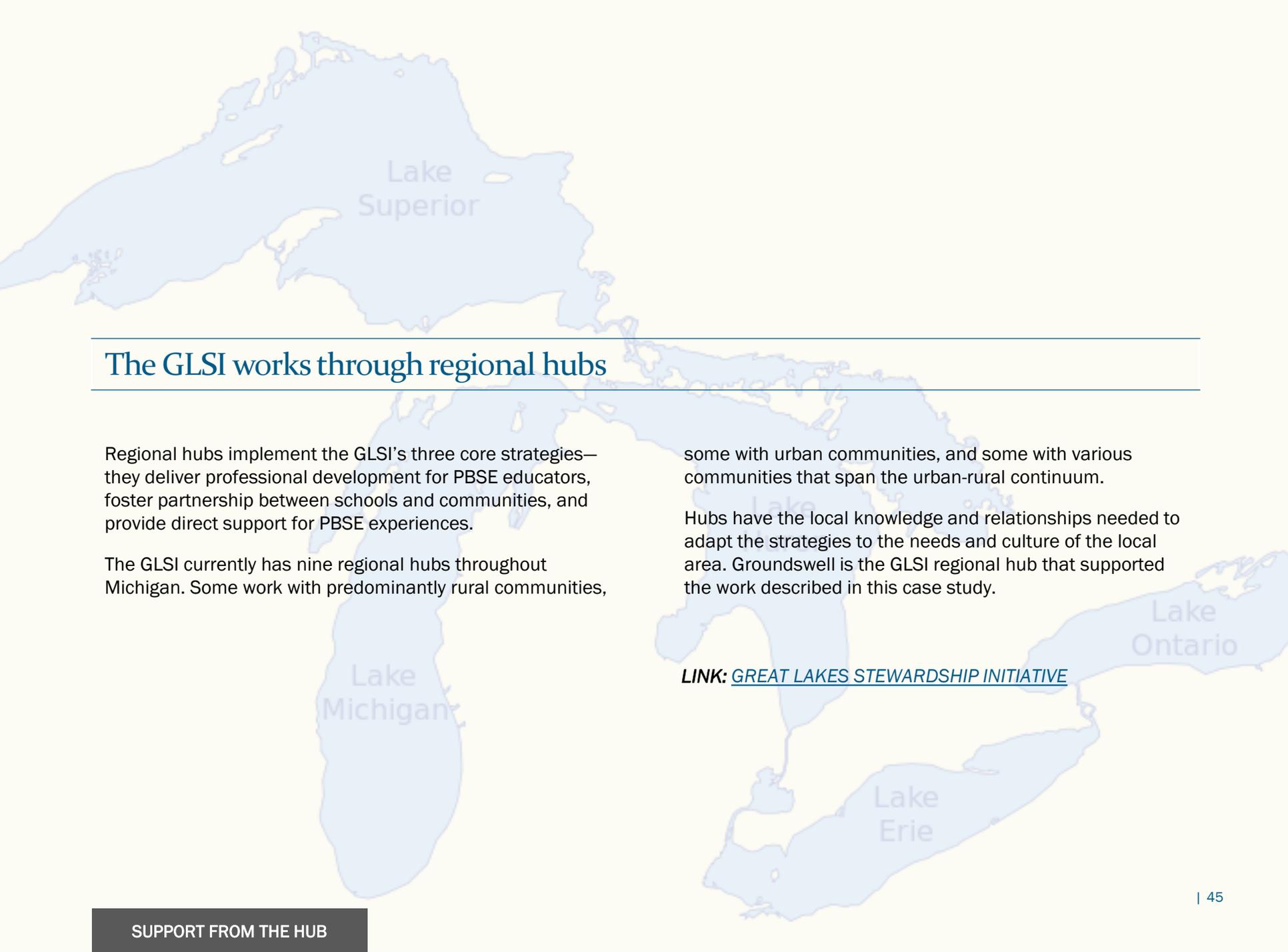
- Engaged youth and schools in their work
- Raised awareness of the mission
- Increased capacity
- Networks with other organizations in the field
- Access to grants, funders, and recognition

LOCAL BENEFITS

- Community revitalization and environmental improvements
- Sense of place
- Social capital and community capacity



Support from the Hub



The GLSI works through regional hubs

Regional hubs implement the GLSI's three core strategies—they deliver professional development for PBSE educators, foster partnership between schools and communities, and provide direct support for PBSE experiences.

The GLSI currently has nine regional hubs throughout Michigan. Some work with predominantly rural communities,

some with urban communities, and some with various communities that span the urban-rural continuum.

Hubs have the local knowledge and relationships needed to adapt the strategies to the needs and culture of the local area. Groundswell is the GLSI regional hub that supported the work described in this case study.

[LINK: GREAT LAKES STEWARDSHIP INITIATIVE](#)

Groundswell

Groundswell is the GLSI hub for the Lower Grand River watershed

Groundswell is a place-based environmental education program that creates opportunities for hands-on learning for K–12 students in West Michigan. The program is housed in the College of Education at Grand Valley State University and relies on the active support of community organizations that partner with Groundswell schools.

The program began in 2009 through a collaborative effort by 29 individuals representing 23 organizations, including institutions of higher education, K–12 schools, government entities, nonprofit organizations, and businesses. A planning grant from the GLSI sparked this effort.

Groundswell continues to expand its efforts to support educators and community partners and ultimately engage students in high-quality PBSE.

City High/Middle School, the focus of this case study, has worked with Groundswell since 2009.

LINK: [GROUNDSWELL](#)

Hubs implement three core strategies for stewardship

Each GLSI hub provides a program of sustained professional development, brokers school-community partnerships, and supports place-based education. Their strategies are not inherently tied to environmental stewardship—that theme and content must be infused into each aspect of the work.

The GLSI's hubs have developed approaches that reflect the environmental character and needs of their respective communities, the interests and goals of their school districts, the strengths of the hub staff and the host organization, and the mix of community organizations engaged in stewardship work with youth.

Every hub shapes their strategies to meet the needs of its people and places.



Groundswell offers teachers an intensive, sustained program of professional development

The more teachers are exposed to new PBSE projects and strategies, the stronger their own projects become.

Groundswell supports educators who want to move beyond the classroom walls and teach students through their own community's learning opportunities.

The network supports educators throughout Kent County (including Grand Rapids) by providing free, sustained professional development, project funding, partnership matching, and access to a network of inspiring educators.

Since Groundswell's inception, more than 150 educators have engaged in professional development offerings. More than two-thirds of those educators have accumulated at least 30 hours of training. Many have amassed more than 100 hours of professional development and exposure to content about environmental issues or new teaching methods and strategies.

Sustained relationships have been the key to Groundswell teachers' success. Over the years, many teachers at City High/Middle have participated in hub-supported professional development events and individual consultations with Groundswell's staff.



Groundswell teachers learn water quality monitoring techniques.

Mini-grants and coaching support PBSE efforts by teams of teachers, partners, and students

Groundswell helps engage students in meaningful and relevant work throughout their community.

Quality PBSE actively engages students, teachers, and partners in purposeful work to address local stewardship needs or opportunities.

Possible focus areas for PBSE are selected, in part, on the degree to which they will yield a meaningful and valued benefit to the environment and the broader community. Groundswell works closely with other local organizations to identify possible projects and make teachers aware of these options.

Once the project is underway, students, teachers, and partners share the responsibility to manage their time and resources so that intended outcomes are achieved. Groundswell awards mini-grants to cover some of the project's costs, and provides project planning tools, individual coaching, and advice along the way.

Groundswell Project Proposal Form 2014 - 2015

Groundswell Team Contact Information:

School Name(s):
Physical Address(es):
Groundswell Program (PBE, L
Date of Proposal Submission:
Financial Information:
School District
Make check payable to
Mail check to



City students at work on Earth Day 2015.

Groundswell connects teachers and schools with community partners looking to make a difference through education and action

Groundswell serves as a bridge between the education, business, and nonprofit worlds. The hub hosts events and facilitates meetings to connect educators and potential partners. As partnerships develop, Groundswell helps teams by providing professional development, financial resources, and additional networks.

At City High/Middle, Groundswell helped connect teachers and students to two community partners—Wildtype and Greener Grads—that shared the team’s interests.



Groundswell partners share their knowledge and advance their outreach efforts related to stewardship at the second annual River City Water Festival. Over 400 area students learned about the Lower Grand River Watershed from these partners during first day of the event, which targeted students. The next day, which was open to the public, nearly 700 people learned about protecting this watershed. Photo courtesy of Groundswell.



Mike Posthumus and students prepare the ground for a new tree. Photo courtesy of Kathleen VandeGevel.

Groundswell’s impact on the carbon-neutral Graduation was significant

Groundswell staff and the students at City had developed a rapport over four years of working together.

Over the course of the 2014–15 school year, Groundswell provided direct assistance to the students in the form of project-planning support and guidance. Groundswell staff also met with school administrators and teachers to help plan out-of-school events, field work, logistics, and other important aspects that students were unable to address alone.

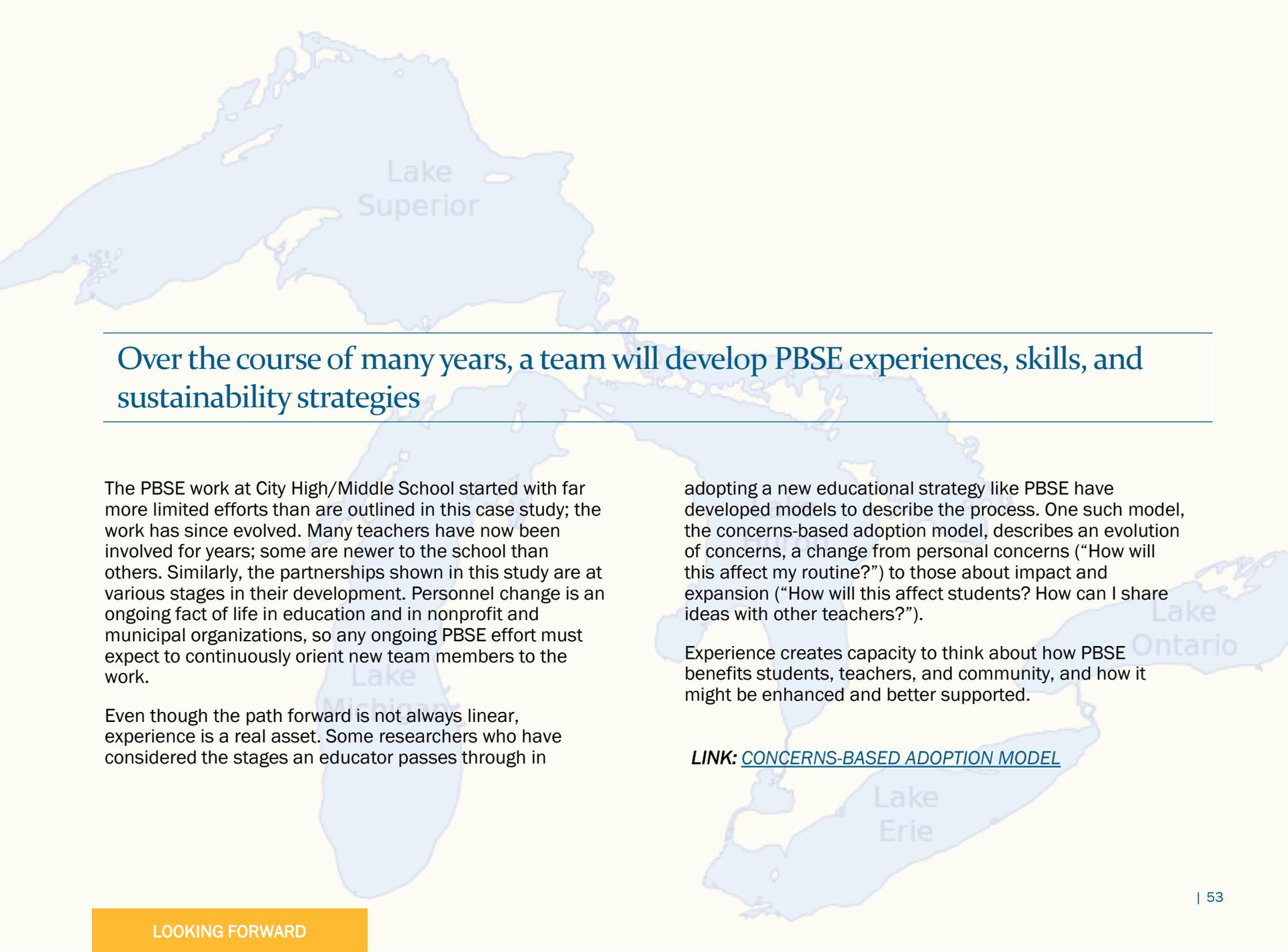
Students’, teachers’, and administrators’ familiarity with the Groundswell staff—through many past years of place-based stewardship education—made collaboration seamless and effective.

“Groundswell is committed to long-term support of schools and promoting the development of lifelong environmental stewards.”

—Kimberly Pawelka, Groundswell Program Manager



Looking Forward



Over the course of many years, a team will develop PBSE experiences, skills, and sustainability strategies

The PBSE work at City High/Middle School started with far more limited efforts than are outlined in this case study; the work has since evolved. Many teachers have now been involved for years; some are newer to the school than others. Similarly, the partnerships shown in this study are at various stages in their development. Personnel change is an ongoing fact of life in education and in nonprofit and municipal organizations, so any ongoing PBSE effort must expect to continuously orient new team members to the work.

Even though the path forward is not always linear, experience is a real asset. Some researchers who have considered the stages an educator passes through in

adopting a new educational strategy like PBSE have developed models to describe the process. One such model, the concerns-based adoption model, describes an evolution of concerns, a change from personal concerns (“How will this affect my routine?”) to those about impact and expansion (“How will this affect students? How can I share ideas with other teachers?”).

Experience creates capacity to think about how PBSE benefits students, teachers, and community, and how it might be enhanced and better supported.

[LINK: CONCERNS-BASED ADOPTION MODEL](#)

City High/Middle plans to hold a carbon-neutral graduation each year

City High/Middle School's administration believes that the carbon-neutral graduation was significant enough to warrant making it an annual tradition.

Given that City's curriculum has a strong environmental focus, there is very little doubt that other PBSE projects will naturally arise over the coming school years. The school continues to infuse PBSE in its culture of teaching and learning, but acknowledges that change often happens slowly.

For now, City High/Middle School and the Center for Economicology have planned and completed PBSE projects and expect to continue that practice in the future.



A senior on Earth Day. Photo courtesy of Kathleen VandeGevel.

“I hope the juniors pick up where we started and keep this tradition going.”

—City student

Increasing participation and engagement across the full senior class is a goal for the future

Finding time for the entire senior class to collaborate and be fully engaged in meaningful efforts was a significant challenge.

Implementation of any PBSE project reveals areas for improvement and insights about the future. In this particular case, engaging an entire senior class in the effort proved to be the most difficult aspect of the work.

A few students seemed to work on the “fringe” of engagement because there weren’t enough individual tasks to complete. Relying on E-Club members for leadership and decision making was important for completing the project, but that choice may have led some students to limit their efforts.

In the future, care can be taken to develop a sufficient number of tasks so that all students can feel a sense of ownership in and contribution to the effort.



Seniors completing Earth Day plantings. Photo courtesy of Kathleen VandeGevel.

“I think we could continue to build on our success. I want to continue to be involved.”

—City High student

Groundswell aspires to support PBSE in schools throughout the Grand Rapids Public School District

City High/Middle School educators, partners, and students can help make the case for the value of PBSE.



Superintendent Teresa Weatherall Neal has suggested that PBSE is essential for all students in the Grand Rapids Public School District. To this end, it may be valuable for teachers and students from City to share their experiences with others in the district.

Ideally, all students in the district will eventually take part in place-based stewardship projects throughout their careers in school. But schoolwide change takes time. It requires committed leaders, strong focus, stable partnerships, solid assessment and evaluation, and opportunities for people to discuss, reflect on, and improve the work. The collective assets of City High/Middle School, Groundswell, and Grand Rapids bode well for the future of PBSE.

Teresa Weatherall Neal, superintendent of the Grand Rapids Public School District. Photo courtesy of Grand Rapids Public Schools.



For More Information

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About the Great Lakes Stewardship Initiative

The Great Lakes Stewardship Initiative was launched in 2007 to develop knowledgeable and active stewards of the Great Lakes and their ecosystems.

The GLSI enacts three key strategies (place-based stewardship education, sustained professional development, and school-community partnerships), mainly through the efforts of its nine regional hubs. A small central staff helps coordinate the work and provides technical assistance and support to hubs.

Hubs are funded, in part, by the Great Lakes Fishery Trust, which in 2007 pledged to provide more than \$10 million through 2017 to support the GLSI's work. The GLSI and its hubs solicit and receive additional support from foundations, federal and state agencies, local and regional partners, and individual donors.

From 2007 through the 2014–15 school year, the GLSI has worked with more than 1,500 teachers in more than 280 schools across Michigan, engaged hundreds of community partners, and supported rigorous place-based stewardship experiences for more than 80,000 students—and the work continues.

LINK: [GREAT LAKES STEWARDSHIP INITIATIVE](#)

LINK: [GREAT LAKES FISHERY TRUST](#)



The GLSI's 2014 grant from the U. S. Environmental Protection Agency supported this case study and other knowledge products

In 2014, the U.S. EPA awarded the GLSI a \$150,000 grant through its Environmental Education Grant Program. Through this grant, the GLSI funded a collection of exemplary place-based stewardship projects across Michigan and documented these projects through case studies.

The grant also supported the development of several knowledge products to support the practice and spread of place-based stewardship education in K–12 schools and communities. The first knowledge product is a set of guiding principles that describes the GLSI's vision for place-based stewardship education in K–12 schools and communities. The principles can serve as a compass for practitioners, and also highlight the ways that place-based education connects to important goals and initiatives in education.

The second knowledge product is a rubric that supports the guiding principles. The rubric describes in detail the actions and practices that characterize various developmental stages in place-based stewardship education. It can be used for several important purposes, including a self-assessment of practice.

A third knowledge product is a white paper that focuses on expectations for and the educational, community, and environmental benefits of place-based stewardship education across urban, rural, and suburban contexts.

This document was developed under Assistant Agreement No. 00E01327-0 awarded by the U.S. Environmental Protection Agency. It has not been formally reviewed by EPA. The views expressed are solely those of the Great Lakes Fishery Trust and EPA does not endorse any products or commercial services mentioned.

LINK: [OTHER EPA KNOWLEDGE PRODUCTS](#)

LINK: [FULL SET OF CASE STUDIES](#)





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With assistance from participating educators, civic leaders, and community partners, the GLSI:

- Helps young people become effective and motivated environmental stewards
- Encourages schools and community organizations to work together for mutual benefit
- Creates a sustained effort across Michigan to expand classrooms, strengthen communities, and improve the environment