

Duck Habitat Project at Southwestern Classical Academy



Flint, Michigan

An urban middle/high school

About the case study

This case study of place-based stewardship education (PBSE) at Southwestern Classical Academy 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. Southwestern Classical Academy has a longstanding relationship with its hub, Discovering Place.

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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

Students have been working to relocate nesting ducks and their ducklings for several years at Southwestern Classical Academy



A mother duck and her ducklings.

During the 2014-15 school year, they were able to create a plan for a more permanent solution.

Southwestern Classical Academy is an urban middle/high school located on the south side of Flint, Michigan. The school campus has been an unusual nesting ground for migrating mallard ducks looking for a safe place to raise their young. Over the last 25-plus years, the ducks have frequently nested in walled-in, interior courtyards at the school. This has resulted in a high mortality rate for the ducklings.

In 2011, students began asking, “How

can we help the ducks so they don’t die?” Their initial question has evolved over time and with inquiry. This case study focuses on the fourth year of the project, when students developed plans to encourage the ducks to use a vernal pool adjacent to the campus as more suitable nesting ground. Teachers relied on lessons in the Earth Partnerships for Change curriculum to develop a multidisciplinary learning effort around the question of duck habitat.



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 students at the Detroit Institute of Technology at Cody High School, that foundation includes their school and the broader Cody-Rouge neighborhood in which it is situated.

Southwestern Classical Academy is located in the southwest quadrant of Flint, Michigan

Often characterized by its automotive past, this post-industrial rust belt city is working to forge a new path for a sustainable future.



A view of downtown Flint in 2009. Photo: Rebecca Cook/Reuters, http://www.slate.com/blogs/the_slatest/2015/12/15/flint_declares_state_of_emergency_because_of_lead_in_drinking_water.html.

Flint, Michigan is a resilient city. Its population declined by 43% between 1970 and 2000, largely due to many waves of losses of plants and jobs in the auto manufacturing industry. Continued economic decline after 2000, capped off by the Great Recession, resulted in another 18% drop in the city's population between 2000 and 2010. Flint's population in 2010 was 102,434 residents, down from a high of more than 200,000.

Despite its many challenges, Flint also has many strengths. Strong grassroots, local movements and collaborating community organizations are supporting community building and revitalization. In 2013, the City of Flint completed and adopted the first update to its Comprehensive Master Plan since 1977. Over 5,000 residents and partners contributed to the plan, which provides a holistic vision and path forward for the City (Houseal Lavigne Associates, 2013)

LINK: [IMAGINE FLINT MASTER PLAN](#)

While portions of Flint struggle with blight and vacancies, there is hope in strong neighborhoods, a growing downtown, and cultural and recreational amenities



Property vacancies, blight, and aging infrastructure are all issues facing the City of Flint.

Decades of population and job loss have yielded some stark realities for the City of Flint and its residents. Almost a quarter (22%) of the city's residential lots are vacant, and another 14% are in poor or substandard condition. Many commercial and industrial properties lie empty or vacant, often unavailable for redevelopment without costly remediation of environmental hazards. The loss of tax base has stressed city finances, and the difficult conditions heavily impact residents. In 2011, 40%

of residents lived below the federal poverty level and 60% of were people of color (Houseal Lavigne Associates, 2013).

Despite these challenges, the city still has strong neighborhoods with engaged residents, a growing downtown, historic and cultural amenities, and over 1,800 acres of public land including 60 parks.



Despite challenges, the city still has strong neighborhoods and amenities.

The Flint Community School District serves only a fraction of the students it once did

Enrollment, once as high as 46,000 students in the late 1960s, decreased to less than 7,000 students in 2013, and 41 of 56 of the district's buildings have been closed.

Population loss, combined with alternative enrollment options such as schools of choice and charter schools, has heavily impacted the Flint Community School District (FCSD). The loss of 85% of the student body (relative to the highs of the 1960s), and closure of more than 70% of the district's school buildings, is both a consequence of, and a contributor to, great and persisting fiscal strain.

In December 2014, the district adopted a multi-year Deficit Elimination Plan, which resulted in more school closings, but avoided state takeover of the district.

Cost reductions resulted in several layoffs, a seven-year wage freeze for teachers, and increases in class-size maximums (to 36 students for 2nd-3rd grades, 40 students for 4th-6th grades, or 42 students for secondary). Additionally, planning time was removed from the school day, meaning that secondary teachers are teaching an additional class each day and doing planning and preparatory work before or after school (Adams 2014b).

LINK: [STATE APPROVES DEFICIT ELIMINATION PLAN](#)

LINK: [TEACHER CONCESSIONS HELP AVOID STATE TAKEOVER](#)



Flint School District Interim Superintendent Lawrence E. Watkins Jr. talks to the crowd during a school board meeting at Southwestern Classical Academy in Flint on Dec. 17, 2014. Image and caption text: Laura McDermott | MLive.com. http://www.mlive.com/news/flint/index.ssf/2014/12/teachers_support_flint_schools.html.

Southwestern Classical Academy is one of two middle/high schools in the Flint Community School District



*Photo of Southwestern Classical Academy: MLive Media Group,
http://www.mlive.com/news/flint/index.ssf/2014/06/all_seventh_graders_in_flint_s.html.*

[LINK: SOUTHWESTERN CLASSICAL ACADEMY \(FSCA\)](#)

[LINK: INTERNATIONAL BACCALAUREATE \(IB\) ORGANIZATION](#)

Flint's Southwestern Classical Academy (FSCA) serves approximately 1,000 students in grades 7–12, and is a Title I school.

FSCA's mission is to develop a community of diverse learners committed to academic and personal excellence. As part of the school's vision, FSCA uses the framework of inquiry-based learning to support academic achievement, which also aligns with its designation as an International Baccalaureate (IB) school.

FSCA is authorized by the International Baccalaureate (IB) Organization as an IB World School at all grade levels. All FSCA students in grades 7-10 participate in the IB

Middle Years Programme. After they complete the 10th grade, students can choose to enroll in the IB Diploma Programme for grades 11-12, or can continue in classes organized around the Michigan Merit Curriculum (i.e., the public school standard).

The IB Organization partners with schools, governments, and international organizations to develop educational programs with rigorous assessments. Its aim is to develop active and compassionate life-long learners who are tolerant of other beliefs and cultures. The IB program emphasizes critical thinking and service learning, making it a natural fit with place-based stewardship education.

Flint's city park system includes several park/school sites, in which a park sits adjacent to a public school building

Flint's city park system features more than 60 parks of various sizes. Fifteen of these parks were developed as Park/School sites—sites where city-owned parks were developed adjacent to public school buildings and land. On the City of Parks map, these Park/School sites can be identified by the purple school areas adjacent to the dark green and/or named park areas.

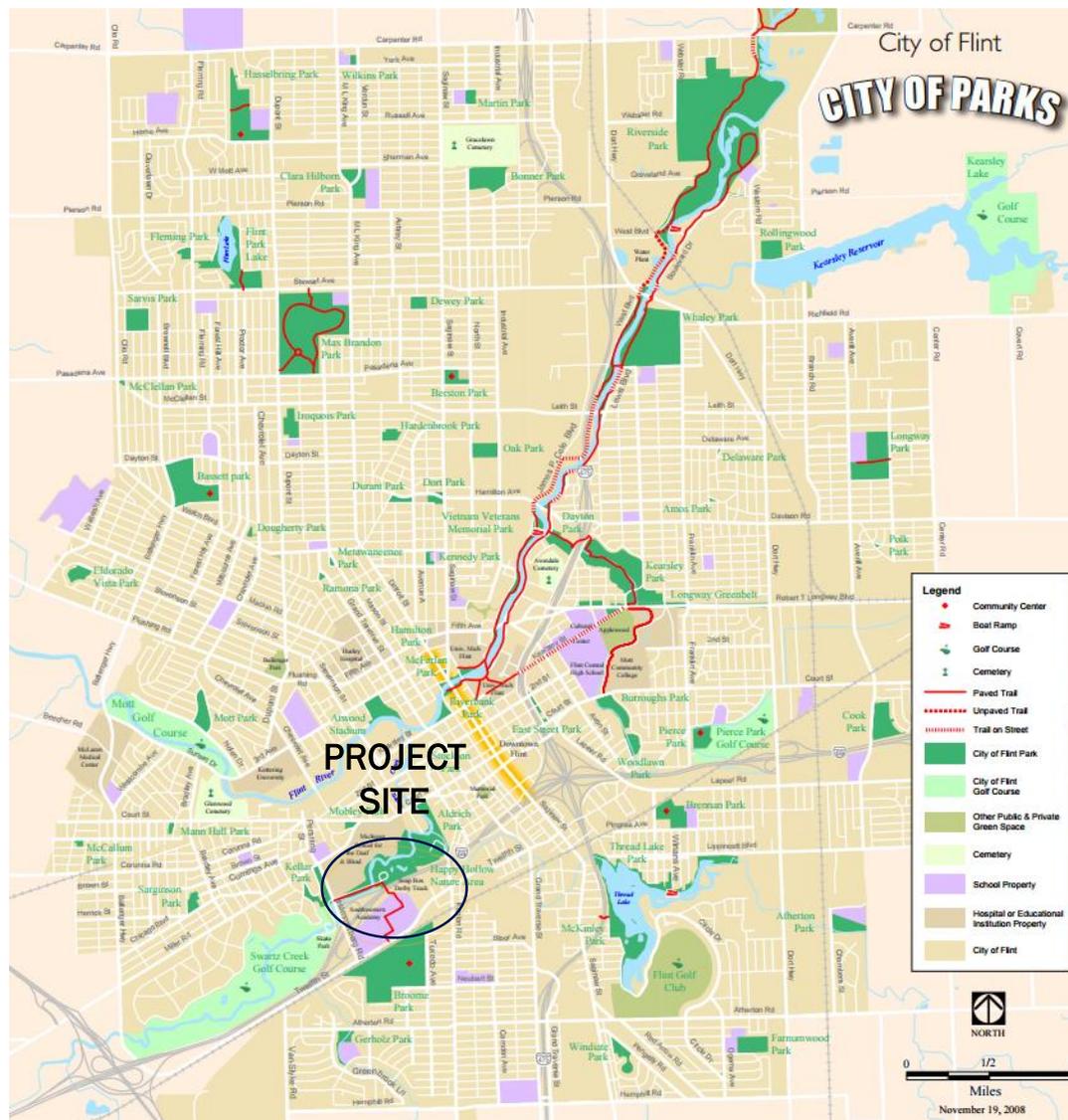
Flint's Southwestern Classical Academy is one of these Park/School sites. The area east of the school building is known as Cronin Derby Downs, a grassy park area that features a soap box derby hill.

“City parks serve, day in and day out, as the primary green spaces for the majority of Americans.”

—Bruce Babbitt, U.S. Secretary of the Interior (1993-2001)

[LINK: CITY OF PARKS MAP](#)

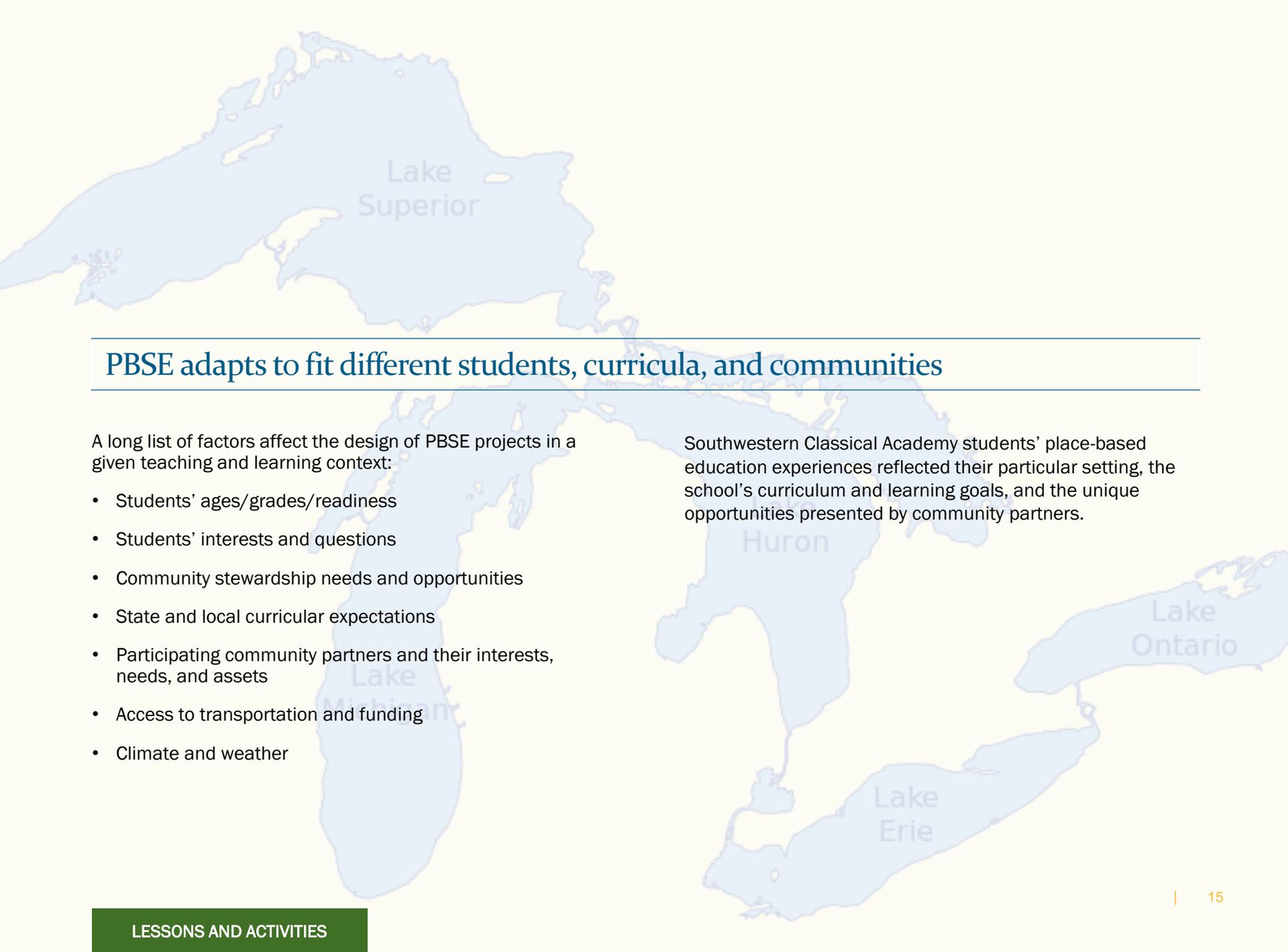
COMMUNITY CONTEXT



Southwestern Classical Academy is one of 15 Park/School sites in Flint's city park system. Map: © 2008 Center for Applied Environmental Research.



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 Huron, Lake Erie, and Lake Ontario. A white box with a blue border contains the title.

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

Southwestern Classical Academy students' place-based education experiences reflected their particular setting, the school's curriculum and learning goals, and the unique opportunities presented by community partners.

Southwestern Classical Academy students had many questions about the ducks in their courtyard

For the past twenty years, ducks have been nesting in the four interior courtyards of the Southwestern Classical Academy school building. The ducks were considered a distraction rather than a teaching opportunity. They experienced high mortality rates due to lack of water and food supply, and interfered with landscaping efforts.

Students became fixated on the wellbeing of the ducks and resolved to help them. Their efforts to do so become a multi-year place-based stewardship education effort.

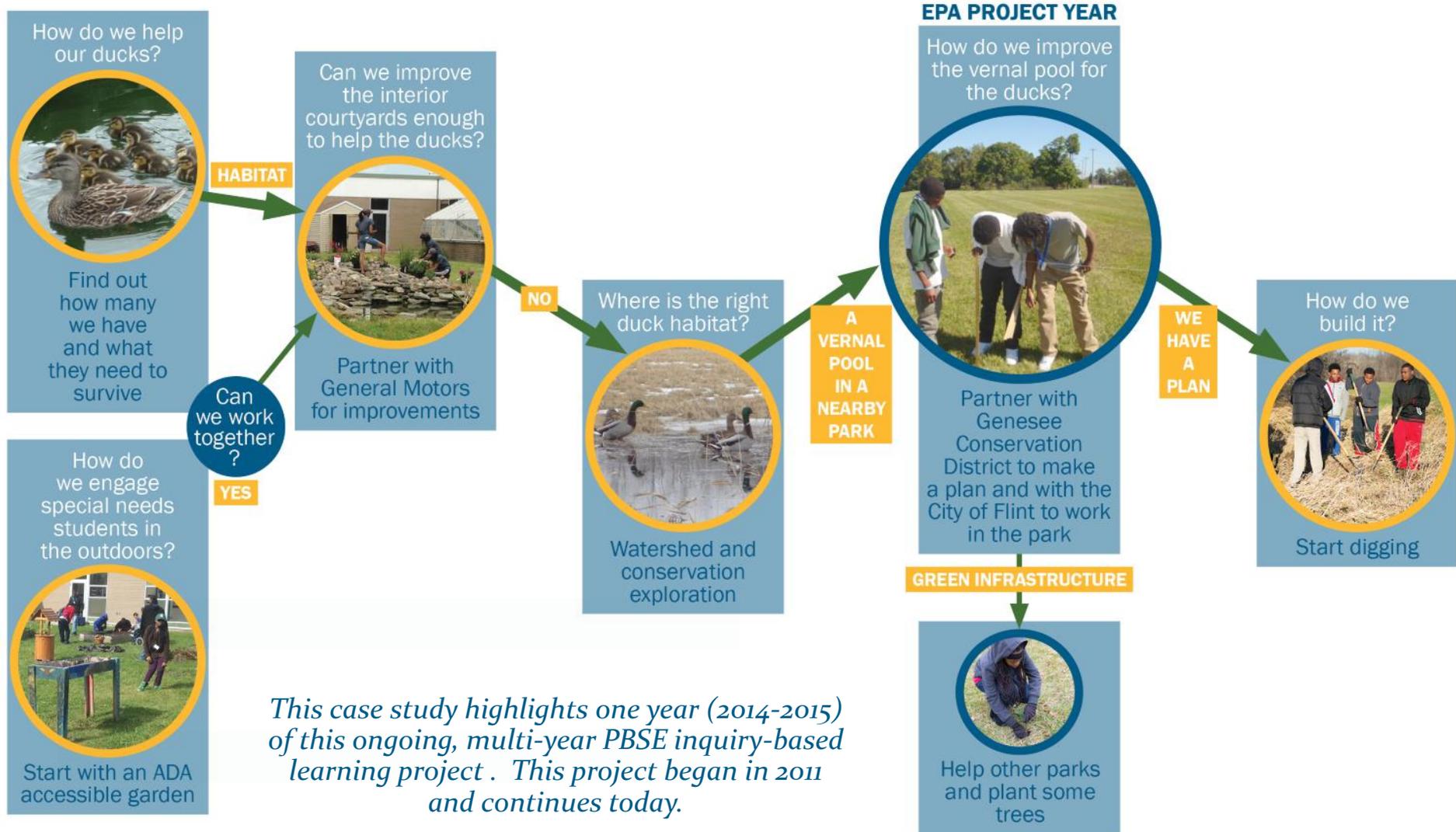


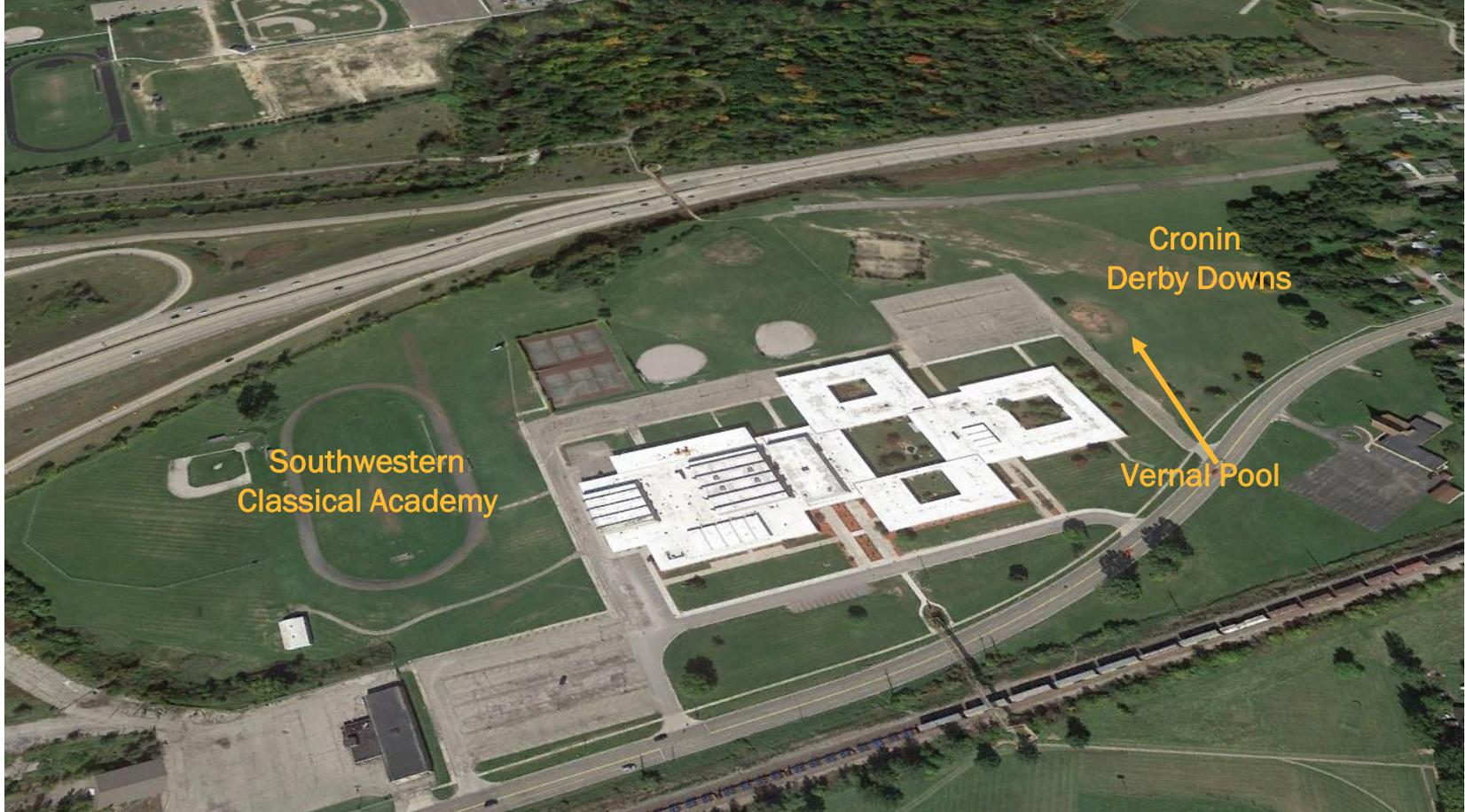
A mother duck with her ducklings.

The inquiry-based PBSE project started with student questions:

*“We can’t touch the ducks! (Or can we?)”
“Can you eat the eggs?”
“Why are they here?”*

The multi-year PBSE effort has been propelled forward, over time, by the sequence of core questions and motivations shown here





Imagery ©2016 Google, Map data ©2016 Google.

By the 2014-15 school year, a vernal pool adjacent to the school had been chosen as the space for enhanced duck habitat

Through previous year's PBSE explorations, FSCA students had determined that the best place to provide a natural habitat for the ducks was in a vernal pool located just east of the school

in Cronin Derby Downs. The property was adjacent to the school and owned and managed by the City of Flint. The next step was to create a plan to bring to the City.

Student work under the EPA grant occurred in the spring of 2015

April '14

Southwestern teachers and partners worked closely together to coordinate the students' cross-grade, cross-curricular PBSE project. Building off of previous years' work, the project outcome was identified as students' development of a plan for improving the vernal pool habitat. Because students would not be able to implement the plan during this school year, a complimentary service project/field trip was also identified.

Common elements for all students included building an understanding of the vernal pool site's history, hydrology, and how the site operated as part of the larger watershed. Each class then focused on a specific element of the vernal pool plan: science focused on watersheds, water quality, and vernal pools; math focused on site engineering and design; and the special needs classroom focused on biodiversity and plant recommendations.

April

All students Tour the site; learn about the site's history; see the presentation, *Watershed 101*.

7th grade science Water in the watershed lesson*; water quality learning.

8th grade math Surveying and engineering presentation and project; school tree planting

7th-9th grade special needs Biodiversity baselines lesson*; learning about native plant species.

May

All students Continuing research; a selection of 35 students plant trees at the park.

7th grade science Vernal pools.

8th grade math Measuring slope lesson*.

June

All students Poster boards developed and presentations of recommendations.

June '14

*Lessons marked by an asterisk were drawn from the EPS curriculum.

Teachers adapted the Earth Partnership for Schools curriculum to meet student learning needs

Students learned about water stewardship and rain gardens to prepare for their outdoor experiences.

The Southwestern Classical Academy team utilized existing Earth Partnerships for schools rain garden and habitat restoration curriculum resources for some of the lessons, and tailored them to fit the needs of their local investigations.

Lessons from the EPS Water Stewardship Guide and Rain Garden Curricular Sampler served as the basis for many classroom activities. While the EPS curriculum outlines a comprehensive 10 step process, the teachers at Southwestern focused only on the first 5 steps during the EPA project year.

The EPS K-12 Curriculum Guide contains more than 100 lessons keyed to Common Core Standards and Next Generation Science standards, and outlines EPS's 10-step process (see graphic) for building rain gardens and restoring native habitats.

These materials were supplemented by support from the Genesee Conservation District, which led watershed lessons and land surveying activities with the students.

LINK: [EARTH PARTNERSHIP FOR SCHOOLS](#)

LINK: [EPS K-12 CURRICULUM GUIDE](#)



Earth Partnership for Schools (EPS) is a part of the University of Wisconsin-Madison Arboretum. Earth Partnership promotes native habitat restoration as a process for community learning and land stewardship.

After gaining background knowledge in the classroom, special needs students moved outdoors to begin baseline biodiversity surveys in the vernal pool area

This work corresponded to step two of the EPS process, “study.”

Students engaged in nature journaling, observation, and documentation to determine the baseline biodiversity of the vernal pool site. This baseline will serve as a point of reference for students in later phases of the project.

Valuing the contributions of all students is an essential component of Southwestern’s PBSE efforts. This component of the project was conducted by special needs students in Dani Davis and Linda Heck’s classes. See the link below to view Linda Heck’s recommendations for including students with a variety of special needs in place-based stewardship education.

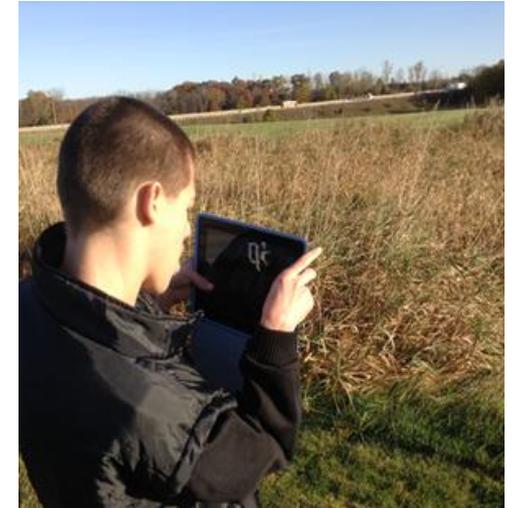
GLSI Guiding Principle 3e: Use PBSE to inform, enhance, and support school building and district priorities.



[LINK: TIPS FOR WORKING WITH STUDENTS WITH SPECIAL NEEDS – NOT JUST SPECIAL EDUCATION STUDENTS](#)



[LINK: EPS SAMPLE ACTIVITY: “OBSERVATIONS FROM A SINGLE SPOT,” AN OBSERVATION PROTOCOL](#)



Top left: Students in Ms. Davis’s classroom pose for a picture before getting to work. Top right and bottom left: Students record observations of the vernal pool and conduct biodiversity surveys. Bottom right: A student documents observations of the vernal pool area using an iPad.

Next, students studied the hydrology and history of the vernal pool site

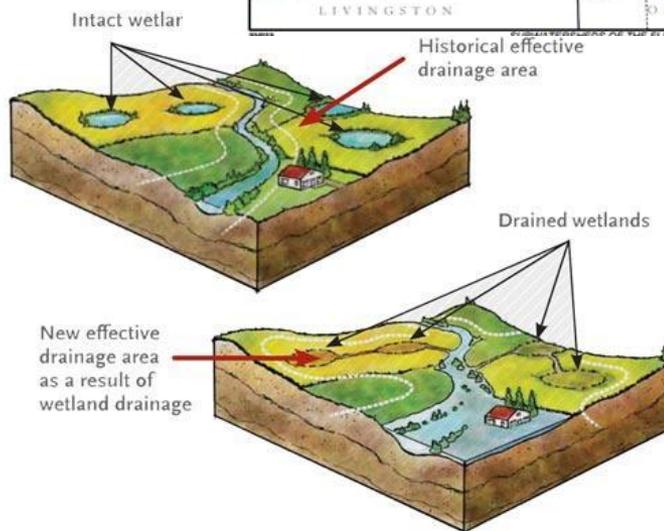
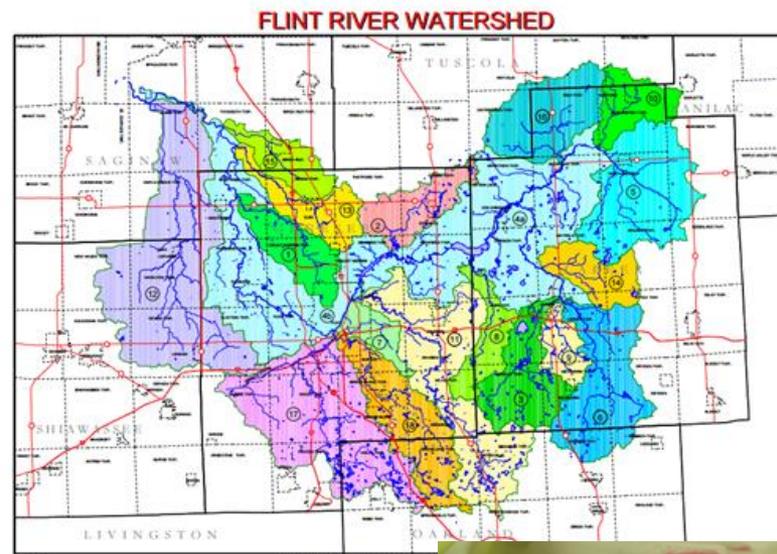
This work corresponded with steps 2 and 3 of the EPS Process, “study” and “investigate.”

Southwestern Classical Academy students across the grades and content areas engaged in understanding the hydrology and history of the vernal pool site, and its role within the larger watershed. Students also participated in interactive watershed education sessions with Genesee Conservation District Staff, such as “Watershed Jeopardy,” which focused on water quality.

The science class used watershed education activities that addressed and connected water quality issues, land management issues, and their habitat restoration project. One such classroom activity was the EPS “Water in the Watershed” activity (see link).

[LINK: EPS SAMPLE ACTIVITY: "WATER IN THE WATERSHED"](#)

[LINK: NGSS AND COMMON CORE ALIGNMENT FOR THE "WATER IN THE WATERSHED" LESSON FROM EPS](#)



Top: Students learned about their place in the Flint River watershed. The watershed drains a land area of over 1,358 square miles in portions of 7 counties before it merges with other rivers to drain into Lake Huron. Bottom left: Students used models and graphics to learn about watershed drainage and the purpose of wetlands. Bottom right: Students built models to explore the concept of watersheds.

Students in math class measured the slope and area of the vernal pool to find out what water source fed the vernal pool

This work corresponded with step 4 of the EPS process, “analyze.”

Through their math curriculum, students measured slope and area of the vernal pool.

Coupled with earlier demonstrations of land surveying techniques coordinated by the Genesee Conservation District, students determined that the vernal pool was fed by runoff from the grassland in the park. Students also found that once the vernal pool was filled with water, excessive runoff drained into the school parking lot. This observation led the students to determine that improving the vernal pool habitat area would help reduce runoff into the school parking lot.

LINK: [EPS SAMPLE ACTIVITY: "MEASURING SLOPE FOR RAIN GARDENS"](#)

LINK: [NGSS AND COMMON CORE ALIGNMENT FOR THE "MEASURING SLOPE FOR RAIN GARDENS" LESSON FROM EPS](#)



Top: Students put theoretical math concepts to practical use in measuring the slope of the land near the vernal pool. Bottom: Students worked together to carefully measure and calculate slope and area.





Students planted trees in Longway Park as an extension of their duck habitat project.

Students applied their learning about the nearby landscape to an additional service project in Flint

While the students worked on their plan for vernal pool duck habitat during the spring of 2015, students and teachers both recognized that permissions and funding would be needed before work to improve the vernal pool could begin. Despite this delay, students were eager to put what they had been learning about habitat restoration to use, so community partners and teachers identified a complimentary service project in another park.

Over four hours, students planted, mulched, and watered over

600 white pine seedlings and native shrubs in a four-acre area of Longway Park, a school/park site located near Potter Elementary. Joining them were neighbors, students from Potter Elementary School, and partners from the City of Flint and the Genesee Conservation District as well as the mayor and the superintendent of the Flint Community Schools. Students gained new skills in tree planting that could be useful back at their school park in later phases of the habitat restoration.

Students prepared poster boards that detailed their work over the year

The poster boards were presented in a gallery walk format at the Genesee Conservation District. Having students present findings allows teachers to build in additional disciplines and address additional content standards, such as writing and speaking skills (English language arts) or technology (for graphic presentations). Such assignments also foster critical thinking, as students must edit their material down to the most important, and help students learn how to interact in a professional manner with adults as well as their peers.



The Genesee Conservation District offices. Image: Google Maps, Map data ©2016 Google.



Team and Planning



PBSE builds relationships that support teachers

Relationships are an important part of most PBSE efforts. Teachers can work in grade level, multidisciplinary teams on a common PBSE effort, or on teams that span grades or even schools. This does not mean that a single teacher cannot implement PBSE, just that the benefits are far greater when they can work with a team.

Teachers also form partnerships with community members who have environmental expertise or resources to share, or an ongoing community or environmental project that would benefit from the involvement of students.

Over the years that the GLSI has been operating, many teachers have said that they particularly value this opportunity to collaborate with other teachers and experts in the community.

The benefits of teacher collaboration are supported by research like [*The Missing Link in School Reform*](#), from the Stanford Social Innovation Review.

LINK: [THE MISSING LINK IN SCHOOL REFORM](#)

A diverse team of teachers and community partners have supported the *Duck Habitat Project* at Southwestern Classical Academy



Left to right: Linda Heck, Kim Hatfield, and Lynn Louchart-Kiefer, Flint Southwestern Classical Academy Teachers

Teachers

Kim Hatfield teaches middle school math and has been the primary teacher for the school's duck habitat projects.

Linda Heck is a special needs teacher who has taught both social studies and math, and was the primary teacher for the school's other recent PBSE project, an ADA accessible courtyard garden.

Lynn Louchart-Kiefer has served in multiple roles at the school including as a middle school environmental science teacher.

Dani Davis has been a special needs teacher at Southwestern Classical Academy for 12 years.

Kim, Linda, and Lynn have worked together to lead place-based education efforts at Southwestern Classical Academy since 2011.

Partners

The Genesee Conservation District (GCD) supports natural resource protection in Flint and Genesee County. **Angela Warren**, the GCD Administrator, was instrumental in coordinating efforts between the school, GCD and City of Flint. **Jeffery Johnson**, GCD Outreach and Senior Conservation Coordinator, worked in and out of the classroom with teachers and students to supplement watershed and conservation education lessons. **Brian Schorr**, GCD Soil Conservation and Watershed Technician, provided technical assistance in conservation plan development and led demonstrations with students on land surveying.

The City of Flint Department of Planning and Development coordinates the City's park and recreation efforts. **Adam Moore**, Planner I, supports parks projects and coordinated with partners on the Longway Park tree planting effort. Mr. Moore is also helping advance the school's vernal pool duck habitat project.

Other organizations and individuals supported other aspects of place-based education at Southwestern, including the **Genesee County Parks Formar Nature Preserve and Arboretum**, **General Motors**, **Suzanne Knight** and **Laura McLeman** of the **UM-Flint Education Unit**, and numerous others.

The partnership between Southwestern Classical Academy and the Genesee Conservation District was an important force in this effort

The partnership has been developed over a period of several years.

The Genesee Conservation District (GCD) has been a long-time partner in Southwestern Classical Academy's place-based stewardship education efforts. The partnership has evolved over time, beginning in the 2012-13 school year, when the GCD offered in-school water-education presentations and demonstrations for Southwestern students and teachers.

In the following year, the partnership became more integrated and collaborative, and by 2014-15, it had matured into a collaborative, mutually beneficial partnership. The GCD helped inform the development of the students' plan for the vernal pool, and asked students for assistance with tree planting. The work at Southwestern Academy helped advance the GCD's partnership with the City of Flint, positioning the GCD as a lead contributor to green infrastructure projects in city parks.



Left to right: Jeffery Johnson, Angela Warren, and Brian Schorr of the Genesee Conservation District.

“This is a win-win for us. We are connected to the Imagine Flint Master Plan, Arbor Day, local donors, and kids!”

—Angela Warren, Genesee Conservation District



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

Multiple partners came together to work side by side with students in the Longway Pines tree planting service project

The number of partners and resources that supported the Longway tree planting was staggering.

The effort was part of the statewide On Track to a Greener Michigan initiative sponsored by Consumers Energy and Michigan International Speedway, who teamed up with the Michigan Association of Conservation Districts to plant 50,000 white pine seedlings across Michigan.

Additional partners in this collaborative efforts included individuals from the City of Flint, teachers from Flint Community School District, Southwestern Classical Academy students, Potter Elementary students, Keep Genesee County Beautiful, the Potter Longway Neighborhood Association, Eastwood United Methodist Church, the University of Michigan-Flint, and the Genesee Conservation District..



Students and partners gather for a photo opportunity during the Longway Pines tree planting day.

“The collaborative nature of this project is a prime example of working together and pooling resources to accomplish objectives in our community.”

—Angela Warren, Genesee Conservation District

Planning the Duck Habitat Project during times of uncertainty in the district required patience and flexibility

Timelines were affected when the teachers' assignments were suddenly changed mid-year.



The results of a day long planning session with teachers for the duck habitat project.

“We will just plan as best we can, and adjust our sails to course-correct as needed.”

– Leyla Sanker, Discovering PLACE Hub Coordinator

Planning for Southwestern’s PBSE project began early. As it was built from previous years’ PBSE explorations, the teachers knew that the 2014-2015 project would focus on a student plan for improving duck habitat in Cronin Derby Downs, the City of Flint park property adjacent to the school.

The teachers and Genesee County Conservation District partners began meeting after school in the fall of 2014 to discuss the project and curriculum and to determine if the vernal pool that students had identified previously would make a viable student project.

However, 2014-2015 was a tough year for the Flint School District. In the first semester of the school year, classroom and teaching assignments were reorganized twice. Then, in December 2014, the District adopted a deficit elimination plan that resulted in teacher layoffs, loss of planning hours, and another restructuring of building classroom assignments.

When the dust settled as the second semester began, the teachers and Genesee Conservation District partners met for a marathon session to plan out the remainder of the year.

After a six hour planning session during the school's spring break, the project plan was solidified within a new time frame

Primary components of the PBSE project were finalized by the three lead teachers and primary partners at the Genesee Conservation District. The session was facilitated by curriculum consultant Rebecca Nielsen at the request of staff of the GLSI hub, Discovering PLACE. PBSE lessons, activities, and timelines were solidified for April through June 2015.

The Southwestern PBSE project was cross-curricular, cross-grade, and LARGE. To meet the goal of having students create a plan for the vernal pool site, each teacher decided to focus on one aspect of planning with their students.

Planning across grades, across content areas, and with multiple

community partners can be complex. Devoting the time to planning and coordination before the project commenced was an essential component of the success of this PBSE effort.

Roles and responsibilities were clearly defined and lead people for tasks were identified. Deadlines and extenuating factors such as statewide assessment school testing days that might impact the project were noted. A master planning calendar and task lists were created and distributed to assist the teachers and partners in managing the project. This detailed level of project management supported the PBSE effort in reaching completion.

“Thank you. You took a burnt out teacher and made her excited!”

--Lynn Louchart-Kiefer, Southwestern teacher

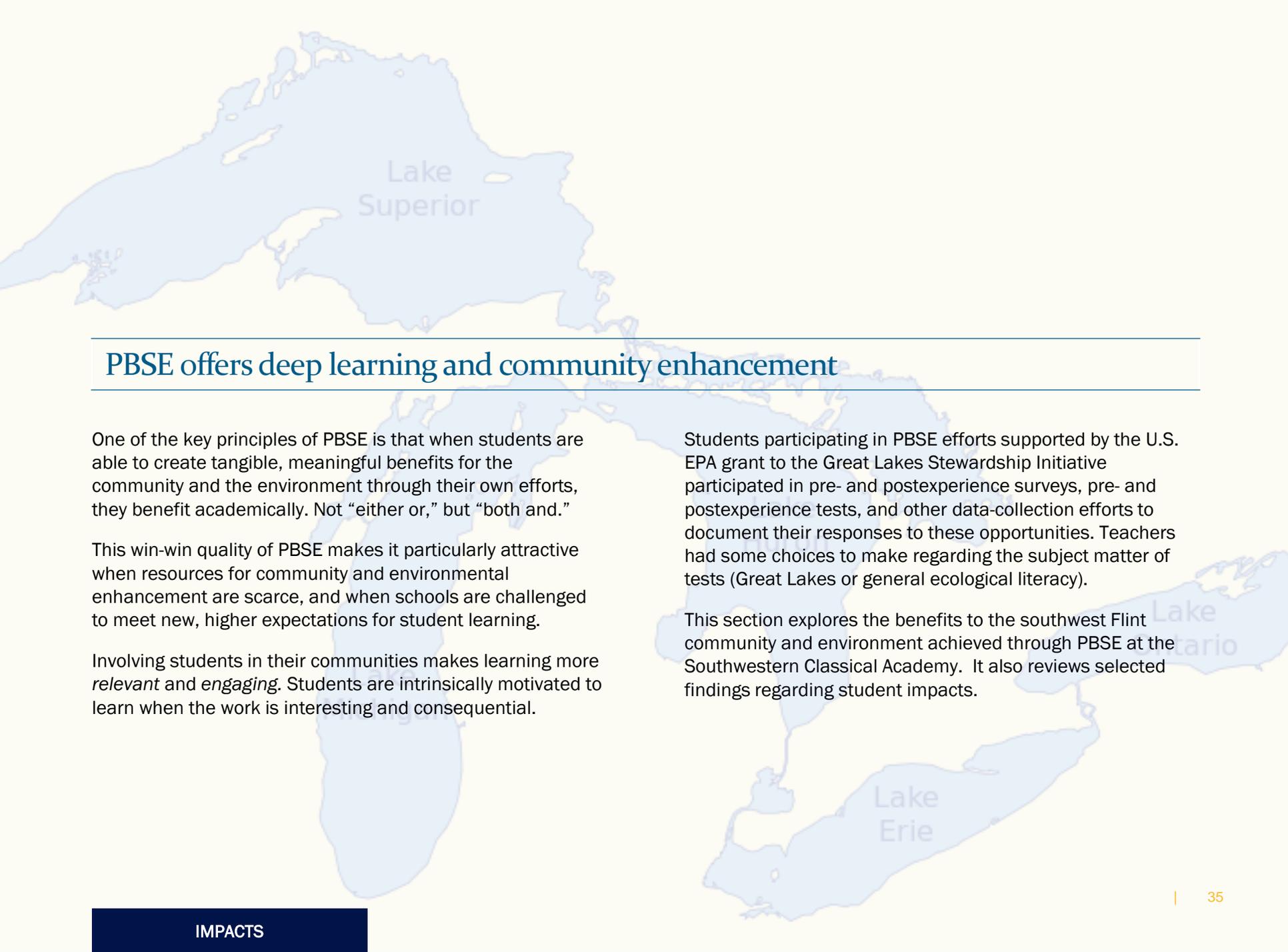


“Planning all these activities can be hard, but it is the right thing to do for our students. It supports their learning and growth.”

– Linda Heck, Southwestern Classical Academy teacher



Impacts of the Project



PBSE offers deep learning and community enhancement

One of the key principles of PBSE is that when students are able to create tangible, meaningful benefits for the community and the environment through their own efforts, they benefit academically. Not “either or,” but “both and.”

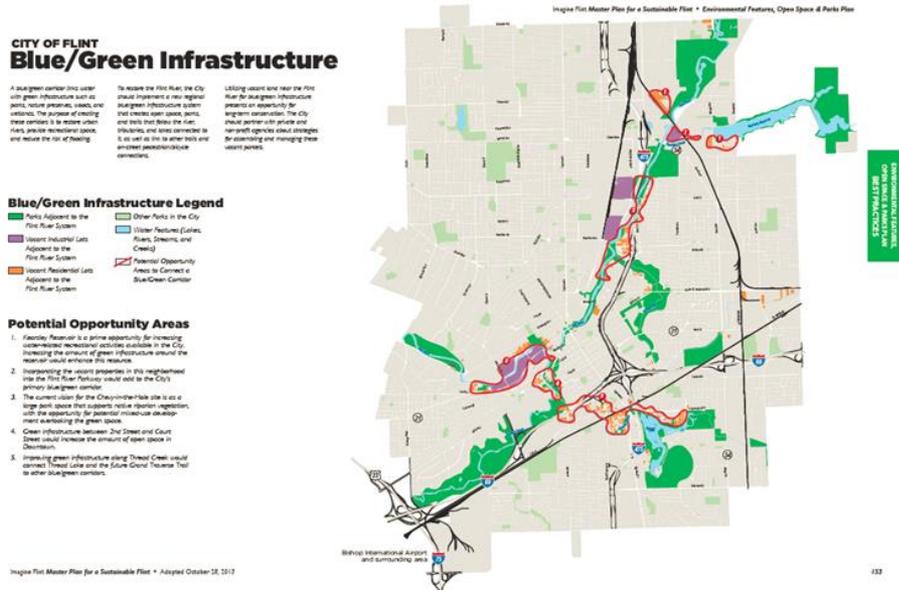
This win-win quality of PBSE makes it particularly attractive when resources for community and environmental enhancement are scarce, and when schools are challenged to meet new, higher expectations for student learning.

Involving students in their communities makes learning more *relevant* and *engaging*. Students are intrinsically motivated to learn when the work is interesting and consequential.

Students participating in PBSE efforts supported by the U.S. EPA grant to the Great Lakes Stewardship Initiative participated in pre- and postexperience surveys, pre- and postexperience tests, and other data-collection efforts to document their responses to these opportunities. Teachers had some choices to make regarding the subject matter of tests (Great Lakes or general ecological literacy).

This section explores the benefits to the southwest Flint community and environment achieved through PBSE at the Southwestern Classical Academy. It also reviews selected findings regarding student impacts.

The Duck Habitat Project is evidence that when community needs and curriculum align, great things can happen



The City of Flint has worked to create a plan for Blue/Green Infrastructure.

Flint is a community with severely limited resources. Implementation of the diverse and aspirational goals outlined in the Master Plan takes leveraging multiple resources.

Typically, schools are not looked to as partners for advancing land use goals. Yet, when community needs and curriculum align, great things can happen.

Through the PBSE partnerships, shared goals were identified that supported all of the partners involved. Students were valuable partners in the collaboration. Jeff Johnson, Senior Conservation Coordinator for Genesee Conservation District expressed his satisfaction and appreciation for the efforts of the students who participated. "I'm proud of the students involved, they all worked hard and were determined to get the job done correctly."

Green infrastructure



Improves water quality of rivers and streams



Improved habitat for ducks



Engaged learning

Teens partnered with the City of Flint to improve parks and planted over 600 White Pine seedlings

The students' service project with the Genesee Conservation District and the City of Flint helped maintain the City's Tree City USA designation through the Arbor Day Foundation. On April 30, 2015, thirty-five 7th and 8th grade Southwestern students served as leaders working in partnership with neighbors, the City, and numerous community organizations to plant over 600 white pines seedlings in Flint's Longway Park.

The students efforts on both the duck habitat/vernal pool and the Longway Park tree planting helped to implement goals from the City of Flint's Imagine Flint Master Plan for parks, open space and green infrastructure. The youth were recognized as valuable, contributing members in these efforts.



Flint Southwestern students instruct then Flint Mayor Dayne Walling and Flint Community School Superintendent Larry Watkins on how to plant trees in Flint's Longway Park.

“The kids get excited about these place-based projects. Applying what they are learning in the classroom to real world projects makes learning more relevant for them.”

- Kim Hatfield, Southwestern teacher

The Duck Habitat project and Longway Pines tree planting created a new narrative for Flint – one in which students create positive change and news



Students pose with City officials during the Longway Pines tree planting event.

LINK: [NBC 25 NEWS STUDENT TREE PLANTING STORY](#)

LINK: [ABC 12 NEWS STUDENT TREE PLANTING STORY](#)

One often hears about the challenges and hard times faced by the Flint community. Good stories are harder to come by.

Giving students opportunities to contribute to a hopeful future for their community is an important part of PBSE.

The response from partners and city and school officials was overwhelmingly positive, and students were excited to be recognized for their contributions. Local news stations featured the Longway Park tree planting, highlighting the students efforts.

Through this project, students became active agents of change and advanced the City of Flint's Master Plan goals

Through the school-community partnerships, Southwestern students became change agents who were actively participating in realizing a vision for their community's future.

This advanced the goals of the city and natural resource organizations, aligned with curriculum in the classroom, and advanced the students goals of establishing a productive relationship with the city that will allow them to advance their duck habitat project – moving it from a plan to reality.



"This project is one piece of a larger effort to improve both the active and passive recreation areas of Longway Park with our many different park partners and the community. These improvements are an example of the City of Flint's commitment to enhancing the quality of our public park amenities and its green infrastructure system."

- Megan Hunter, former City of Flint Director of Planning and Development

The project engaged students and the school community in unanticipated ways



This duck mural was painted by 10th grader Evan Foster as part of his IB personal project.

As part of a multi-year initiative, Southwestern's PBSE efforts have evolved in ways that were not originally anticipated. The school took something the kids were interested in and built the project and environmental connections around it. These PBSE project connections have manifested in other classrooms and student projects over time.

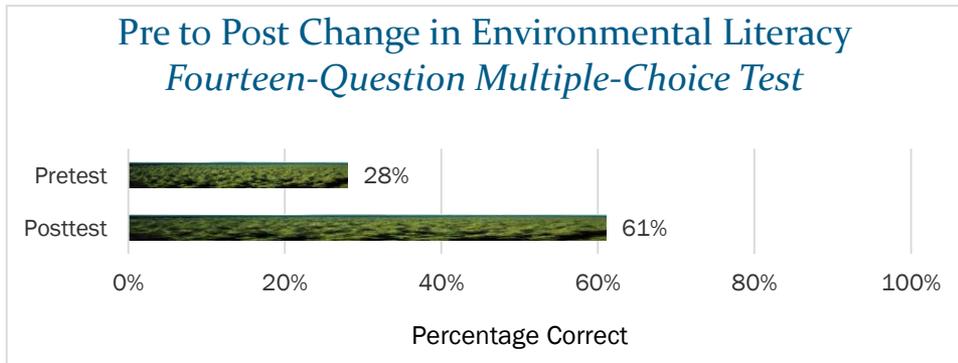
For example, 10th grader Evan Foster was not a student in the classrooms highlighted in this case study. Yet during the 2014-15 school year, based on his previous year's involvement with duck inquiry questions, Evan incorporated his desire to see a new duck habitat built into his 10th grade personal IB project.

As this PBSE project continues, more teachers and students have expressed an interest in becoming involved.

“You have to start with something the kids are interested in, and for us it was ducks. Using their interest in ducks has allowed us to build additional lessons and learning experiences. This becomes a visible component that you can refer back to through all types of curriculum and content.”

- Linda Heck, Southwestern Teacher

Student scores on a test of general environmental literacy increased sharply between the pretest and the posttest



Seventy-three students completing both a pretest and posttest increased their average scores on the test from 28% to 61%.

Most of the questions for the ecological knowledge test were adapted from survey questions that informed the National Environmental Education and Training Foundation's (NEETF's) 2005 report, *Environmental Literacy In America* (Coyle 2005, see box). These survey questions were used to test the environmental literacy of Americans through telephone surveys conducted in 1997 and 2001. While the questions are somewhat dated today, they allowed for a comparison of the environmental literacy of participating students with the general adult population. Southwestern students were asked two additional questions—one focused on the definition of a watershed, and the second focused on the consequences of invasive species.

Contents of the Environmental Literacy Test Adapted from Roper/National Environmental Education and Training Foundation Questions

- The most common source of water pollution
- How most electricity in the United States is generated
- The definition of biodiversity
- The primary benefit of wetlands
- Protection provided by ozone in the upper atmosphere
- Disposal of nuclear waste in the United States
- Recognition of a renewable resource
- The largest source of carbon monoxide (air pollution) in the United States
- Knowledge about materials considered hazardous waste
- Name of the primary federal agency that works to protect the environment
- The most common reason for extinction of animal and plant species
- Where most household garbage ends up

Source: Coyle 2005, p. 5.

By the time their school year was ending, Southwestern students outscored a cross-section of American adults who were asked these questions in 1997 and 2000

Figure 1-1: National Environmental Report Card – 1997 and 2000

Subject: Environmental Knowledge • Student: The American Public

Grade		% of Total Sample Receiving Grade	% of Men Receiving Grade	% of Women Receiving Grade
A (11 or 12 correct)	Pass	11	15	6
B (10 correct)	Pass	10	14	7
C (9 correct)	Pass	11	14	8
D (8 correct)	Fail	13	13	13
F (7 or fewer)	Fail	55	45	65
Overall passing grade		32	43	21

% of Southwestern Students Receiving Grade
21
8
11
16
44
40

The report card shows the percentage of Americans correctly answering each question for the 1997 and 2000 quizzes.

Source: NEETF & Roper, 1997 and 2001

Image of findings on left from Coyle 2005, p. 3. Note: A misprint in the original categorized every grade as “pass,” and this misprint is corrected in the image above. Findings on the right compare the post-program scores of Southwestern students to those reported on the left. Post-program scores from Southwestern students were based only on those questions also present on the 1997 and 2000 surveys of adults.

Students at Southwestern Classical Academy performed very poorly on the pretest of environmental literacy: 97% earned an “F,” 3% earned a “D,” and the overall average score was 28% correct. Scores at the posttest were not exemplary, with the average being 61%, a “D.” However, 40% passed the test with a “A,” “B,” or “C,” more than the 32% of adults studied

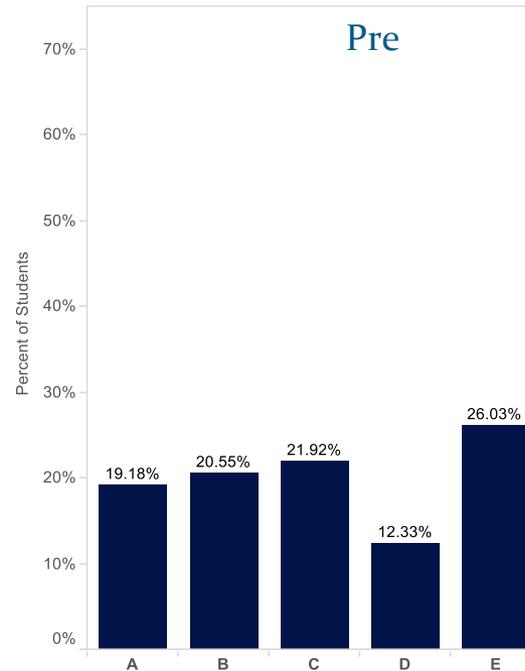
by Roper and NEETF, and the growth in scores was remarkable. These students had the opportunity to learn and revisit these questions, while adults surveyed in the NEETF study were cold-called once, so the comparison is useful for highlighting the challenges of educating Americans about the environment, but is not an apples-to-apples comparison.

Pre-to-post improvements in recognizing the definition of biodiversity—one focus of the project—were particularly sharp

About 20% answered the question correctly on the pretest, while about 70% did so on the posttest.

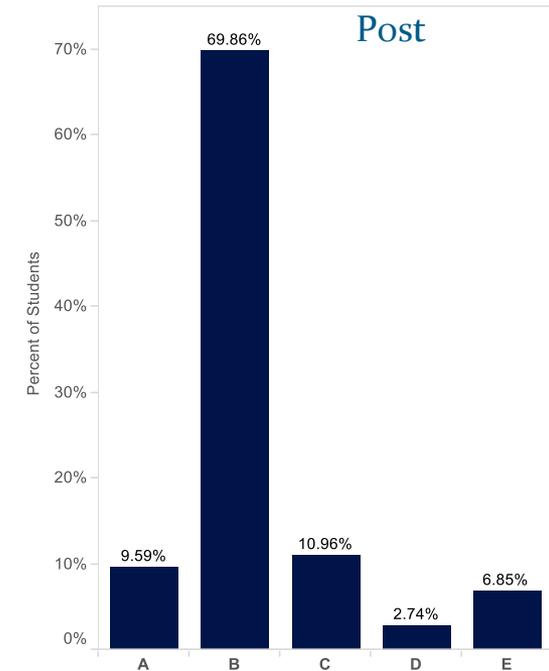
Special-needs students led the effort to establish baseline biodiversity in the vernal pool area (see slide [21](#)), using Earth Partnerships for Schools' "Observations from a Single Spot" tool.

Other answer choices for this question, including "multiplicity," "socioeconomics," "evolution," or a "don't know" option, might seem simplistic to some readers. Yet only 40% of adults participating in the 1997 and 2000 surveys answered this question correctly.



Question 1: There are many different kinds of animals and plants, and they live in many different types of environments. What is the word used to describe this idea? Is it...

- A. Multiplicity
- B. Biodiversity**
- C. Socioeconomics
- D. Evolution
- E. Don't know



Question 1: There are many different kinds of animals and plants, and they live in many different types of environments. What is the word used to describe this idea? Is it...

- A. Multiplicity
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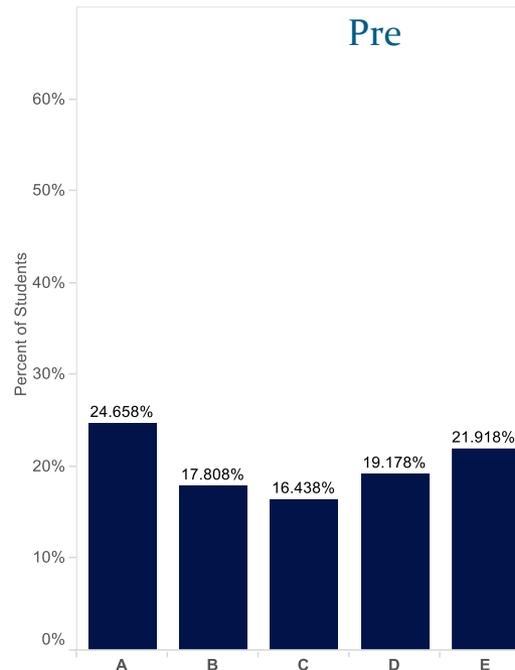
Pre (left) and post (right) scores on the question focused on biodiversity. The correct answer is "B," shown in red.

Students made strong gains on a question focused on the most typical sources of water pollution—also an issue of focus in their project

About 18% answered the question correctly on the pretest, while about 59% did so on the posttest.

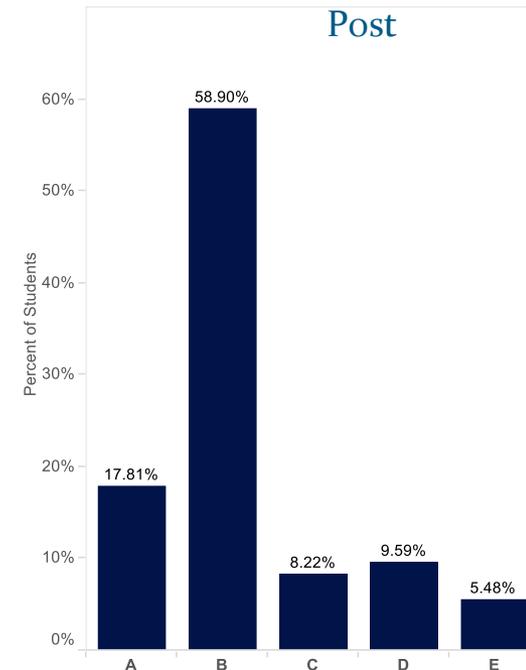
All students involved in the project studied water quality and watersheds with the Genesee Conservation District and through selected EPS lessons, while eighth-grade math students additionally studied slope and runoff at the vernal pool site (see slides [22](#) and [23](#)). Strong improvement in understanding of the subject matter of this question was likely given these learning opportunities.

Back in 1997 and 2001, adults presented with this question were strongly drawn to answer “D,” focused on factories: 47% selected it, while only 22% correctly identified nonpoint source pollution as the biggest issue (Coyle 2005, p. 23). The intervening years have seen significant effort by the environmental community to target nonpoint source water pollution.



Question 5: What is the most common cause of pollution of streams, rivers, and oceans? Is it...

- A. Dumping of garbage by cities
- B. Surface water running off yards, city streets, paved lots, and farm fields**
- C. Trash washed into the ocean from beaches
- D. Waste dumped by factories
- E. Don't know



Question 5: What is the most common cause of pollution of streams, rivers, and oceans? Is it...

- A. Dumping of garbage by cities
- B. Surface water running off yards, city streets, paved lots, and farm fields**
- C. Trash washed into the ocean from beaches
- D. Waste dumped by factories
- E. Don't know

Pre (left) and post (right) scores on the question focused on sources of water pollution. The correct answer is “B,” shown in red.

PBSE has a profound effect on not only the students, but also the teachers who conduct it

PBSE is a learning experience for both students and teachers. Place-based education comes with surprises, unanticipated outcomes, and unforeseen hurdles. Student driven processes can increase the level of uncertainty. But the value derived from this kind of teaching and learning is great.

Not only does PBSE increase student engagement, it has a profound impact on the teachers who conduct it. The participating teachers noted that, like their students, they were excited to plan and engage in inquiry-based lessons and to see their collective progress over time. During a time when school morale was very low and the district was in crisis, the Southwestern teachers used PBSE to boost morale and support students. Not easy, but definitely worth the effort.

Photo: Teacher Lynn Louchart-Kiefer and students work together to prepare a space for planting.



“PBSE takes some trial and error, but you get better each time. Start small and allow your project to grow over time.”

- Linda Heck, Southwestern Teacher

“PBSE is good for teachers as well as students.”

- Kim Hatfield, Southwestern teacher

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

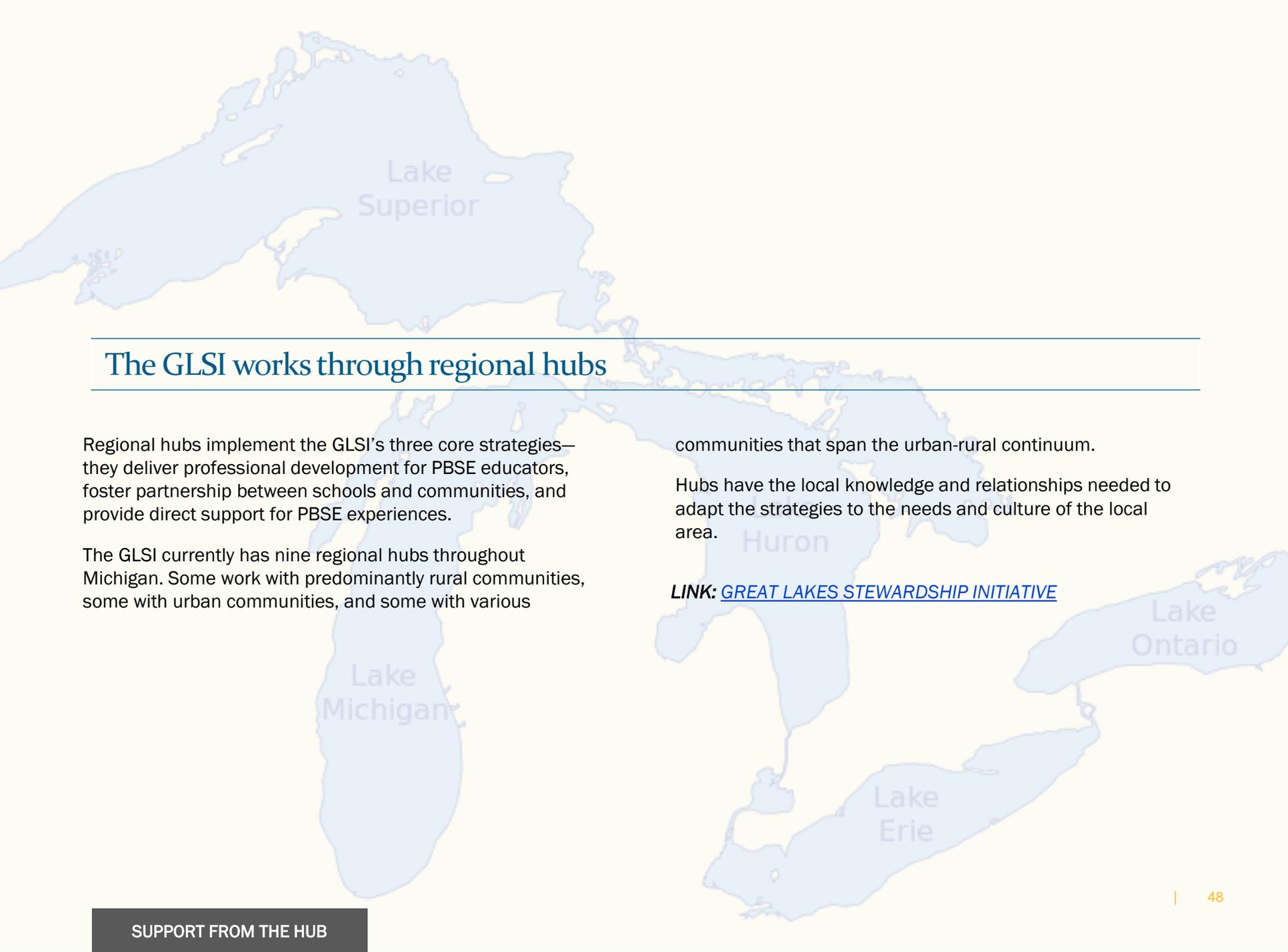
- Engaged youth and schools in their work
- Raised awareness of the mission
- Increased capacity
- Networks with other organizations in the field
- Access to grants, funders, and recognition

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.

[LINK: GREAT LAKES STEWARDSHIP INITIATIVE](#)

Discovering PLACE serves schools in the greater Flint area and across the Flint River and Saginaw Bay Watersheds

Discovering P·L·A·C·E



Discovering PLACE is a collective of Flint-area K-12 schools, University faculty and staff, community organizations, and parents working to connect young people to their communities. From 2009-2015, more than seventy teachers and 1800 youth across multiple school districts have been engaged through the Discovering PLACE program.

Discovering PLACE is coordinated through the Office of University Outreach at the University of Michigan-Flint campus.

Discovering PLACE envisions a future where our youth develop a sense of self value, wonder, hope, and empowerment, supported by school/community partnerships that enable youth to identify and address environmental and social needs in their community. Through these place-based learning experiences, youth will be empowered, learning will be enhanced, and communities will be strengthened. Youth will recognize the interconnectedness between self, society, and the environment.

LINK: [DISCOVERING PLACE WEBSITE](#)

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.



Discovering PLACE is guided by our teachers and partners in identifying resources and PD that supports local PBE efforts

At the Flint-based hub of the GLSI, we focus on both pedagogy and content specific professional development (PD) offerings to support our teachers in advancing place-based education instruction and projects. We believe that inquiry-based learning and project-based learning are the building blocks of great place-based education. We work to offer PD in partnership with other local entities; working to highlight resources available for schools to advance place-based education.

Discovering PLACE offers multiple entry points for teachers and partners to engage in professional development. Events hosted include monthly evening PD sessions, weekend training, summer institutes offered in the region and with other GLSI hub partners across the state, and the bi-yearly “Our Cities, Our Classrooms” conference. Additionally, the hub leverages connections with the UM-Flint Teaching Certificate Programs and other local and regional education partners.



Discovering PLACE strives to make connections between urban life and health of our Great Lakes and natural spaces relevant for teachers and for youth

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

Schools in the Discovering PLACE program connect with local partners on projects that address local food systems and food access, watershed health, land use, and habitat restoration. These projects occur in K-12 classrooms and across multiple subject areas.

Teachers and partners are offered opportunities to learn from and with each other through hub and partner-facilitated trainings and events. External professional development providers such as Earth Partnerships for Schools and Earth Force are engaged to bring curriculum and tools that help inform stewardship topics that align with local interests and needs. Teachers with PBSE experience serve as leaders with their peers and within the community.



David Sobel provides a keynote address at the Discovering Place “Our Cities, Our Classrooms” conference.

Discovering PLACE maintains an active cohort of engaged partners in government, nonprofit, and grassroots organizations to inform PBSE

Students, teachers, and partners share in the responsibility to manage their time and resources to ensure intended outcomes are achieved.

Teachers have limited time to identify and develop relationships with community partners. Discovering PLACE assists in making connections between partners and schools by hosting partner gatherings and events and arranging one on one meetings that help lighten the burden on teachers.

Discovering PLACE also participates in local collaborative efforts such as Edible Flint which supports the local food movement and the Flint River GREEN partners which engages schools in water quality testing. Supporting collaboration and aligning schools with local resources and efforts helps to strengthen the community impact of PBSE. The hub also helps to represent the interests of participating teachers with partners when their teaching schedules prohibits their participation.



Teachers Kim Hatfield and Lynn Louchart-Kiefer work with students and partners at a Discovering Place professional development event.

Discovering Place has provided extensive support to the Southwestern Classical Academy teacher team since 2011

Discovering PLACE has supported the Southwest Classical Academy team of teachers since 2011 across two distinct PBE projects: the duck habitat exploration and in development of an ADA accessible garden in a school courtyard to engage students with special needs. Specific support has included bridging efforts between the two projects and finding time to plan assisted in strengthening PBSE outcomes.

Offering specific professional development opportunities such as the Earth Partnerships for Schools collaboration to support habitat restoration efforts also helped inform PBSE project development. Finally, maintaining open communications with community partners to identify and support school/community collaborations has been important in continuing to advance PBSE efforts.

“Discovering PLACE has helped teachers collaborate cross-curricular, which has been difficult in the past.”

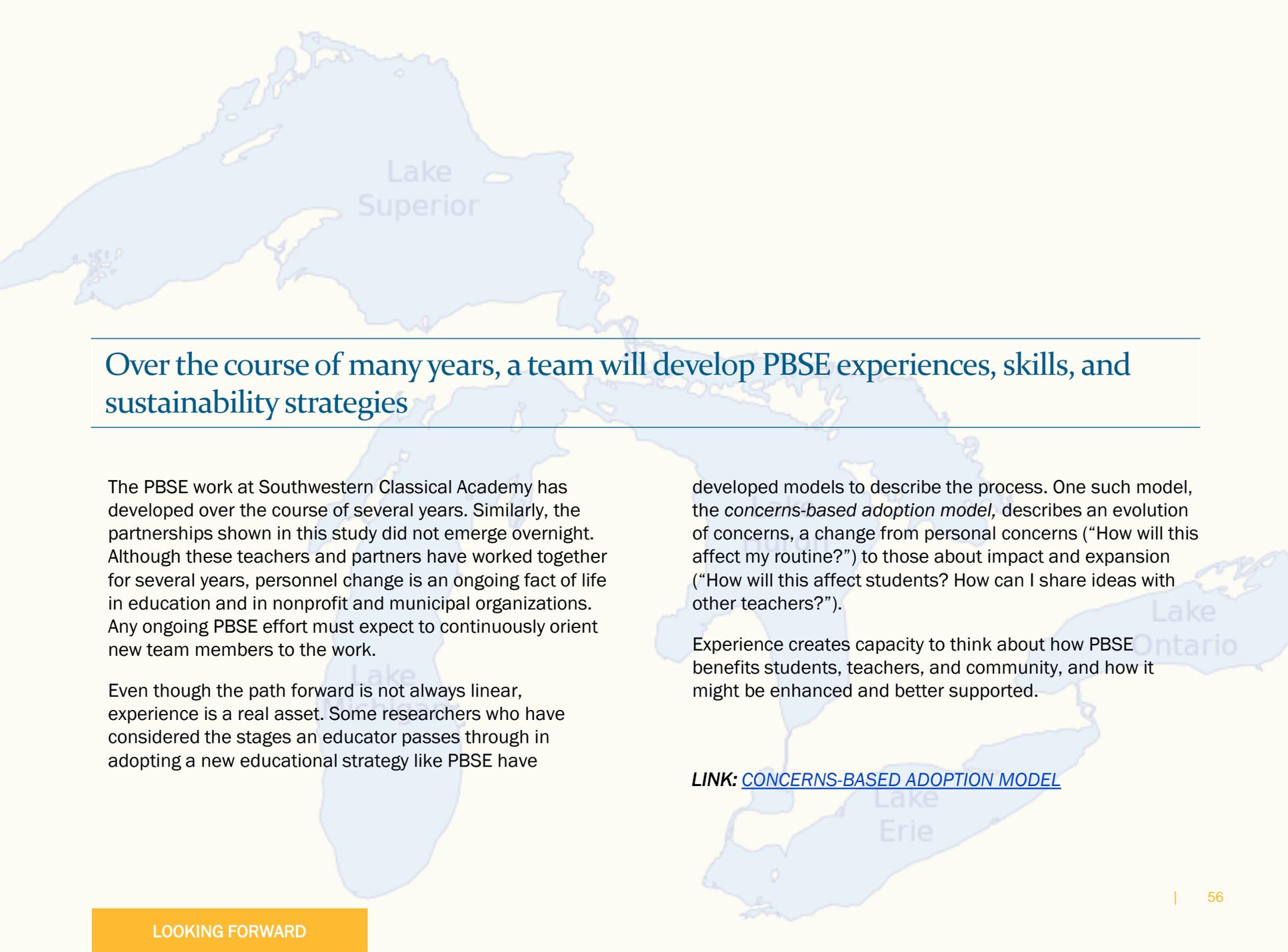
– Kim Hatfield, Southwestern teacher

“Place-based education is the most inclusive teaching approach for students of all abilities. Discovering PLACE allowed these opportunities for all students.”

– Linda Heck, Southwestern teacher



Looking Forward



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

The PBSE work at Southwestern Classical Academy has developed over the course of several years. Similarly, the partnerships shown in this study did not emerge overnight. Although these teachers and partners have worked together for several years, personnel change is an ongoing fact of life in education and in nonprofit and municipal organizations. 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?”).

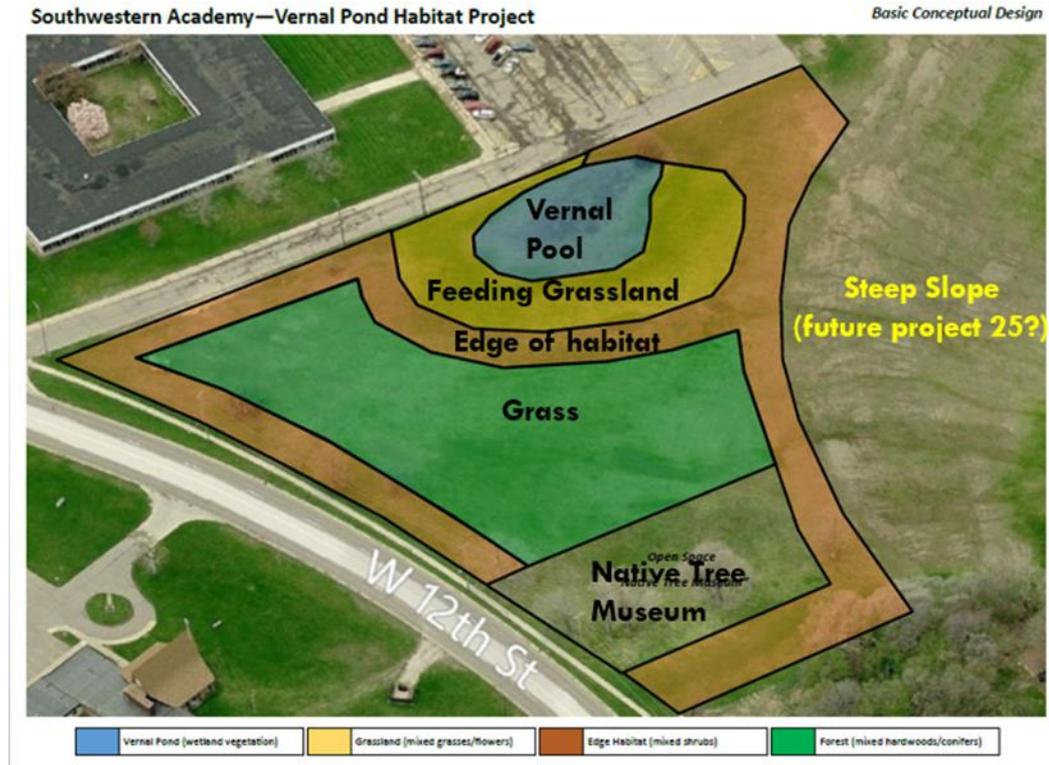
Experience creates capacity to think about how PBSE benefits students, teachers, and community, and how it might be enhanced and better supported.

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

Students have expanded their plan for duck habitat near the vernal pool

The students' plan for the vernal pool duck habitat have expanded. Based on the work they did at Longway Park, students would like to see a tree planting in Cronin Derby Downs Park next to their school. Other projects including planting to limit erosion on a steep slope and expanded native habitat areas are also being considered. But for now, the focus remains on the vernal pool area.

With so many PBSE possibilities, the teachers and students know that it will take a number of years to achieve all of their goals. During the past year, the school is focusing on finding partners and funds that will allow them to take on the first two phases of the project (the vernal pool and feeding grassland for the ducks) while exploring other funding options for phase three: seating and signage.



“When we address erosion control on that slope - THAT will be future project #25.”

– Kim Hatfield, Southwestern teacher

During the next school year improvements will be made to the vernal pool and grassland habitat, and educational materials will be created about the space

In June 2016, Discovering PLACE assisted Southwestern Classical Academy in applying for and receiving funding to support Phase I and II of the vernal pool duck habitat plan allowing for improvements to the pool and grassland habitat surrounding it. In the 2016-17 school year, Southwestern students will also be working to develop educational materials and interpretive signage to share the importance of the vernal pool, watershed health, water quality, and green infrastructure with the community and with fellow students.

Continuation of this project is made possible thanks to a grant from the Saginaw Bay Watershed Initiative Network to support construction and project costs in Cronin Derby Downs and continued financial support provided by the Great Lakes Stewardship Initiative to the Discovering PLACE hub for curriculum and PBSE project support at Flint's Southwestern Classical Academy.





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Discovering
P.L.A.C.E.



OFFICE OF
UNIVERSITY OUTREACH



FLINT COMMUNITY SCHOOLS
Expect More. Achieve More.



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 Assistance 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