

**Great Lakes
Water Studies Institute**
At Northwestern Michigan College



*Findings and recommendations to
the Great Lakes Fishery Trust
about integrating place-based education,
professional development
and school-community partnerships*




CREATING

STEWARDS




OF

THE



GREAT

LAKES



SEPTEMBER 2005

***Findings and Recommendations to the Great Lakes Fishery Trust about
Integrating Place-Based Education, Professional Development and
School-Community Partnerships***

***Presented by: Great Lakes Water Studies Institute at Northwestern
Michigan College***

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INTRODUCTION AND BACKGROUND

This report summarizes the results of a short-term but comprehensive study completed for the Great Lakes Fishery Trust (GLFT) by the Great Lakes Water Studies Institute (GLWSI) at Northwestern Michigan College. The primary purpose of the study was to identify and assess strategies that could be used to increase stewardship of the Great Lakes, with special emphasis on the prospect of integrating place-based education, professional development for educators, and school-community partnerships. The study was conducted in February—September 2005, was funded by a \$54,500 grant from the Great Lakes Fishery Trust, and focused on eight key outcomes:

#1: A working definition of place-based education;

#2: A review of the published literature;

#3: A survey of notable initiatives and interviews with key leaders in the field;

#4: A research-based case for integrating place-based education, professional development for educators and school-community partnerships;

#5: A consideration of community readiness for place-based education;

#6: An evaluation of place-based education projects conducted by participants in the DTE Freshwater Institute (formerly RIPPLE);

#7: An expanded professional development portfolio at the Great Lakes Water Studies Institute;

#8: A set of recommendations to create a sustainable initiative to develop stewards of water resources.

Findings and accomplishments related to these outcomes are summarized in the narrative that follows.

A WORKING DEFINITION OF PLACE-BASED EDUCATION (Outcomes #1, #2)

Place-based education (hereafter for the sake of brevity, PBE) includes many activities spanning many fields of endeavor (e.g., environmental education, community-based learning, project-based learning, internships, mentorships and service learning). In most PBE, the built, natural and social environments are the objects of study, and the community and landscape are the primary texts from which students learn.

We created a working definition for PBE that complements the missions of both GLFT and GLWSI. It draws largely from Sobel (2004), but reflects more strongly the notion that 1) education comprises both teaching and learning, and 2) both academic learning and environmental stewardship are important outcomes of PBE. Our definition is:

Place-based education uses the local community and environment as a starting point for teaching and learning; emphasizes hands-on, inquiry-based, real-world experiences; and involves direct collaboration with community partners.

The benefits of place-based education include powerful learning; a healthy, supportive school culture; sustainable partnerships between schools and communities; a greater appreciation of the environment; and more frequent and effective acts of stewardship.

EXISTING INITIATIVES AND POTENTIAL OUTCOMES (Outcomes #2, #3)

There are many published examples of PBE: for the purpose of this study, we focused our survey on those related to natural resources or environmental issues. Owing to a lack of time, capacity or support, the majority of PBE initiatives are fleeting, disconnected attempts to engage young people in “real world” studies through single field trips or exchanges: these brief and isolated efforts rarely have long-term impacts on students.

PBE initiatives that are sustained over time are usually limited in scope to a single class (as opposed to an activity conducted by most or all classes in a grade level or school). This limited nature of PBE can isolate both the teacher and his or her students from the school-based community and the larger, local community.

More unusual and noteworthy are projects that continue over time and engage students in various, community-based studies, including:

- Investigating lead levels in ground, well, and municipal drinking water (Parrish, Alabama)
- Preserving forest landscapes (Harlan, Kentucky)
- Investigating plant species distribution in Yosemite National Park (Mariposa, California)
- Flood-plain conservation (Ducktown, Tennessee)
- Study of changes in the flow rate, volume, and drift of the Kickapoo River (Kickapoo, Wisconsin)
- Community-wide asset surveys (Edmonton, BC, Vancouver, BC, and Wood County, Wisconsin)
- Creation of an aquaculture and hydroponic vegetable business (Lubec, Maine)

From our survey of existing initiatives, we learned that in operation, PBE about the environment and natural resources is a loosely defined endeavor. Many projects met part of our definition of PBE but fell short of completely satisfying it. For example, some projects featured curricula or instructional materials designed to engage students in hands-on, community-based learning but these materials lacked the hallmarks of true inquiry. In other projects, students were engaged in community-based studies but there was no involvement by other community members. Very few projects offered sustained and customized support for teachers and key leaders beyond an initial orientation or training phase. More often, the form of professional development was traditional (e.g., written manuals or brief workshops with little or no follow-up) and did not include any work with building administrators, whose support for innovative education is critical.

In the realm of environmental studies, PBE is often implemented as a hands-on, field-based endeavor undertaken for the primary purpose of introducing students to issues or data-gathering in the “real world.” It is rare for the students, themselves, to identify the focus of PBE: more commonly, this focus is determined by the teacher or by an external organization that creates and distributes “pre-packaged” PBE modules.

One national project — GLOBE —contains elements of PBE but illustrates a shortcoming shared with many initiatives that are commonly viewed as models of PBE. In GLOBE (co-sponsored by the National Science Foundation, the National Aeronautics and Space Administration, the State Department and other government and academic institutions), students act as proxies for distant researchers. Students collect data in their communities, submit those data to a web site, and write about their findings.

The good news about GLOBE is that students gather data in their local communities, and that some GLOBE projects address either directly or indirectly the issue of stewardship. However, the local community is rarely involved in GLOBE projects and the students, themselves, have a limited opportunity to define the focus, methodology and parameters of the research they undertake. Thus, while GLOBE provides ample evidence that young people are capable of participating in meaningful and important research, the program’s structure is missing several key elements of our working definition of PBE.

Importantly, despite the rarity of PBE initiatives that fit our definition, we found plenty of evidence to suggest that PBE, in and of itself, is a powerful and effective strategy and holds much promise. The State Education and Environmental Roundtable, a consortium of education agencies from 16 states working to integrate environmental education into K-12 curricula and school reform efforts, identified 40 schools in 12 states in which the environment was an integrating context for learning. They evaluated the performance and behavior of students in these schools and concluded (Leiberman and Hoody, 1998) that this type of education:

“... improves student achievement in social studies, science, language arts and math. Students, teachers and administrators also reported other significant effects including: development of problem-solving, critical thinking and decision-making skills; increased enthusiasm and engagement in learning; and gains in summative measures of educational achievement such as standardized test scores and grade point averages.”

Students involved in these projects also had better attendance and fewer referrals for discipline problems.

Another study by the National Environmental Education and Training Foundation examined five schools in Texas, North Carolina, and Wisconsin, five schools in Florida, and a statewide program in Kentucky, all of which employed PBE. Many of these schools were located in urban areas and served populations that were culturally and racially diverse. According to the results of standardized tests, students who participated in PBE exhibited:

- improved scores on reading and math tests;
- better performance in science and social studies;
- an ability to make connections and transfer knowledge from familiar to unfamiliar contexts;
- an ability to “do science” rather than simply learn about science;
- better behavior in their classrooms.

More generally, outcomes evident for students involved in PBE programs include:

- the combination of experience and intellect; the application of effort toward direct, tangible effects; the ability to make linkages across disciplinary concepts (Annenberg Rural Challenge, 1997);
- increased motivation linked to academic performance, enthusiasm, and desire to stay in school (Athman & Monroe, 2004; Bartosh, 2004; Lieberman & Hoody, 2004; Bain & Anderson, 1974);
- a feeling of empowerment and responsibility for their own learning (Ernst & Monroe, 2004);
- the ability to precisely observe, record, and analyze data; an intellectual balance between openness and skepticism; selection of strategies appropriate to problems; tenacity in learning and acting; the ability to draw conclusions independent of authority (Lewicki, 2005);
- the development of intuition and deduction; understanding of dynamic systems; the ability to address knowledge to specific audiences (Lewicki, 2000);
- the ability to conduct risk assessment and scenario planning; the ability to recover from short-term failure and setbacks (Haas & Lambert, 1995); a realization that

- problems can be solved rather than sidestepped (Annenberg Rural Challenge, 1997);
- an understanding of careers (Sipe, 2001)
 - the ability to work both independently and collaboratively (Levine, 2002)
 - an ability to communicate and present findings (Lewicki, 2000 and 2005)
 - cooperation, trust, and mutual respect (Wilson, 2001)
 - an understanding of complex causality (McKersie, 1993);
 - the development of leadership skills and attitudes (Vermont Rural Partnership, 2001)

Based on our research and interviews, we identified seven “lessons learned” that related specifically to PBE. The most important of these appear again later in our report, under the heading, “Recommendations.”

Lesson 1: PBE must be strongly linked to academic outcomes and achievement.

PBE that is closely linked to important academic outcomes (either at the local, state or national level through content standards and benchmarks) is more likely to be embraced by a school’s administration, successfully implemented by teachers, and sustained over the long term by partners in all quarters. In our state, the Michigan Curriculum Framework defines standards and benchmarks that reflect both content and process skills in various subjects, including science. Far from being “at odds” with PBE, the Framework — which largely dictates the content of the high-stakes Michigan Educational Assessment Program (MEAP) Tests — provides ample opportunity to engage students in meaningful learning experiences in local settings.

Lesson 2: PBE must be aligned with existing curricular guidelines.

We know that high-stakes testing, federal and state legislation, and local school improvement goals make considerable demands on people who work in schools — including students. PBE must not be presented to administrators, teachers and students as an activity that “supplants” existing curricular guidelines and goals. Rather, PBE should be rightfully touted as an effective local strategy for addressing — if not strengthening — a school’s existing curriculum. Several faculty in universities who study PBE stated to us that educators find PBE especially attractive as they pursue standards-based teaching in times of limiting funding.

Lesson 3: PBE must have clear pedagogical outcomes.

Every teacher should be able to define for each unit of instruction what students should know and be able to do when the unit’s work has been completed. This “outcome-driven” design principle can and should be applied to PBE, in terms of both content and process skills.

Lesson 4: PBE must have a positive impact on environmental attitudes and actions.

In addition to the documented, positive effect of PBE on academic achievement (Lewicki 2000; Duffin et al 2004;) and on thinking and problem-solving skills (Duffin et. al 2004;

Ernst & Monroe 2004) is PBE's power to enhance the health of the planet as a whole, and the health of organisms that live on it. Focusing solely on human health and quality of life, there is little doubt that today's inhabitants of Earth face challenges that were unimaginable just a few decades ago. Eighty percent of Americans now live in metropolitan areas, many of which lack adequate parks or other public outdoor space. A study at the University of California—Berkeley revealed that the average American devotes 19 minutes a day to physical leisure-time activities, a fraction of which occurs outdoors. According to the President's Council on Physical Fitness and Sports, over 40% of 5-8 year-olds suffer cardiac risk factors and circulation problems. Two-thirds of our kids can't pass a basic physical examination: 40% of boys and 70% of girls aged 6-17 can't do more than one pull-up. Among adults, diabetes and obesity are increasing at alarming rates (Louv 2005). Unhealthy diets and sedentary lifestyles contribute mightily to what some have dubbed "a deadly epidemic of convenience." By supporting active learning in the outdoors, PBE can allow learners to exercise both their minds and bodies, and perhaps awaken in them a lifelong interest in outdoor recreation.

According to our definition, effective PBE results in more frequent and effective acts of stewardship. By contrast, few of the PBE projects that we surveyed listed increased stewardship as a key outcome. The new Place-based Education Evaluation Collaborative (PEEC), a collaboration of northern New England place-based education programs and the Upper Valley Community Foundation, is interested in measuring and documenting changes in attitudes and behaviors and is actively cultivating this exciting new field of educational research. P.,W. Schultz, a researcher and applied social scientist at California State University, is currently studying the relationships between environmental values and conservation action. Through a pilot project at the Brookfield Zoo in Chicago, Illinois, he is developing methods to measure children's connectedness to nature. Both of these efforts may yield useful findings or tools for assessing the impact of PBE on environmental stewardship.

Lesson 5: PBE must have a positive impact on teacher motivation and retention.

The literature on "best practices" in professional development of teachers is rich and clear. The Updated Vision and Standards for Professional Learning of Michigan Educators, meant to guide all professional development activities supported by State funds, reflect this body of scholarly work. Understanding these "best practices" is one thing: implementing them in a school setting is another.

Yet because PBE has the power to meaningfully engage teachers' minds and hearts, there is great potential for PBE to be a positive force in professional development. Greater intellectual engagement in the work of teaching, expanded personal growth, an enhanced ability to meet curricular goals, a reduced turnover among teaching staffs, and improvements in school culture are among the outcomes one might reasonably expect of PBE projects (Duffin et al 2004). All of these indicators correlate strongly with the Vision and Standards document just cited.

Unfortunately, to date very few PBE projects have placed adequate emphasis on professional development. There are several notable exceptions, however, including

Project Connect, a highly successful project conducted under the banner of the Rural School and Community Trust.

Lesson 6: PBE must acknowledge a multidisciplinary world.

PBE helps students understand that their work has civic and political implications that extend beyond scientific concerns and into the fields of conservation, sustainability and community stewardship. Soule and Press (1998) contend that studies of the environment are inherently “horizontal,” with lateral connections to disciplines ranging from agriculture to economics and from Geographic Information Systems to regulatory policy. They argue that the full breadth of environmental studies can only be developed and sustained “...when there is sustained interaction on a formal and informal basis between members of different disciplines.” In PBE that involves participation by community members beyond the school, different disciplines are often represented by those who work in the civic, business and non-profit arenas.

Lesson 7: PBE must conceive of schools as “democracy in action.”

Public schools are among the last and most entrenched of traditional bureaucracies, with hierarchies of decision-making, divisions of roles and labor, significant standardization of practices and sequences, and isolation of individuals. Successful PBE initiatives are found in schools that see themselves as deeply democratic (Annenberg Institute, 1998): They involve many partners seeking consensus; they respect the wisdom that all players bring to the table; they collaborate on major decisions; they can tolerate difficulties, disagreements and tensions that are inherent in any democratic system. They recognize that place-based learning is not just a quick fix for immediate problems, but rather reflects an approach and philosophy that goes to the heart of our definitions of education and citizenship (Hatch 2001; Ernst & Monroe 2004; Howe & Warren 1989).

Lesson 8: PBE must build and exercise strong school-community partnerships.

Given the recent push for community involvement in K-12 schools, and the relatively recent interest of businesses and industries in helping to shape policies in K-12 education, there is no shortage of literature about school-community partnerships. The most successful PBE initiatives reflect a philosophy that we believe is essential to sustainability — one that underscores the need to build “social capital” in communities in order to offer truly meaningful education to young people.

Robert Putnam, a Harvard sociologist, coined this term — “social capital” — to mean the willingness and capacity of members of a community to work for the collective good of the community (Sobel 2004). The traditional view of school-community partnerships almost always (and incorrectly) casts teachers and students as the beneficiaries of social capital: that is, people from outside the school (businesses, volunteers, civic groups, non-profit organizations) are the ones who “deposit” social capital in the school, in the form of donated material, financial or human resources. If altruism would rule forever, or if our economy would prosper endlessly, this view might be sustainable. But that’s unlikely.

More viable is a view of school-community partnerships that considers all members of a community — including students and teachers — as potential generators and donors of social capital for the benefit of the community at large. In this view, students and teachers are seen as valuable resources, people who can help solve problems or accomplish work that is important to others. Gone is the notion of a one-way pipeline that “taps” (and in the process “saps”) the community and terminates in the schoolyard. Replacing it is an image of community-wide communication, collaboration, cooperation and accomplishment, wherein students’ perspectives and efforts are valued, wherein the work of teachers is deemed by other adults working outside the school to be not only important but worthy of support, and wherein community partners can work with schools in order to accomplish educational goals and missions that they and the schools have in common.

Most of the literature that addresses the outcomes of school-community partnerships focuses on gains for students. There are also, however, advantages for individual community partners and for communities as a whole. Documenting and quantifying these advantages is an emerging opportunity. The Rural Trust, through its work in the Deep South, is among the most active cultivators of this new ground. “Perks of partnership,” once identified and described, can serve as powerful incentives for building the “social capital” that a community needs in order to support PBE and, as a result, to develop residents that are knowledgeable and effective environmental stewards.

To conclude this section, we note that a complete bibliography of reviewed literature is provided in Appendix A. (Only some of these articles are cited in the report’s narrative.) Appendix B lists the most relevant place-based projects that we examined and the people we contacted or interviewed as part of this study.

COMMUNITY READINESS (Outcome #5)

Given that communities play such an integral role in effective PBE, we carefully considered the issue of community readiness. We identified six over-arching factors (each with associated questions) that planners of PBE might well consider as they assess the readiness of a community to initiate and sustain PBE. Some of these are drawn from the published literature about PBE, while others arise from our own experience.

4 School culture, budget, personnel turnover and leadership Is the current culture of the school supportive of PBE?

Does the school have any prior experience in implementing innovative educational programs? In implementing PBE?
Does the school have discretionary funds to support PBE?
Are leaders of the school (e.g., building principals, curriculum coordinators, school board members) supportive of PBE?
What is the history of personnel turnover in the school?
How likely is it that PBE will become a multi-classroom or multi-grade level phenomenon in the school?
How many initiatives/special projects is the school currently managing?
Does the school's "plate" have room for PBE?

4 The community's demographics and "social capital"

What are the community's demographics?
What evidence points to potential or actual "social capital" in the community? What form of "social capital" has the community contributed when working with schools in the past? What form of "social capital" has the school contributed when working with the community at large?
Has the community recently participated in a "visioning" project? If so, were young people represented in this process? Which findings indicate areas of "common ground" (shared values) with respect to natural resources?
Does the community have volunteer-based organizations?
Does the community have a local community foundation and an associated Youth Advisory Committee?
What non-profit environmental organizations and resource-related governmental entities serve the community? Which of these entities are potential partners in PBE?
What local or regional education organizations exist? What is the capacity of their staff to provide leadership for PBE?
Is there a likely local "champion" for PBE who will have tenure beyond an initial project?
Are there larger political issues in the school or community that might leverage or dampen enthusiasm for PBE or make it easier or impractical to pursue?

4 Funding and mandates

Is there a fiscal agent willing to help support PBE in the local community?
What local or regional funding sources are available to support PBE in the community?
Is the school willing to allocate funds to PBE? If so, how much and over what period?
Are there larger fiscal issues in the school or community that might dampen enthusiasm for PBE or make it unrealistic to pursue?

What power have federal, state or local mandates had within the school and community? What does this indicate about the prospects for focus and stability for PBE in the near-term?

4 The community’s “character”

What are the community’s unique features with respect to natural resources?
Does the community have a strong “sense of place?”
Given the nature of the community, on what scale might PBE be realistically implemented and expanded?
Does the community view itself as being empowered?
Is there support for PBE among community leaders?
Is there a willingness among the local media to be active partners in promoting and documenting PBE?

4 Parental attitudes and openness to change

What roles do parents currently play in the school and community?
How aware are parents of standards-based curricula for students and standards-based professional development for teachers?
Have parents previously approved or participated in innovative school-based programs? In programs that complement PBE?
Do parent-volunteers currently work within the school?
Is there an official organization for parents in the school or community? If so, is the leadership of that organization supportive of PBE?

Several projects, most notably the Rural School and Community Trust, have developed a self-assessment instrument for communities. Rather than having someone from “somewhere else” assess the status of a community, the local people most interested in establishing PBE work with local staff employed by the Rural Trust to identify strengths and challenges and develop a plan for moving forward. This approach builds local ownership and capacity, both of which are essential for long-term viability of PBE initiatives.

**A PRELIMINARY EVALUATION OF PLACE-BASED PROJECTS
ABOUT WATER RESOURCES IN NORTHERN MICHIGAN
(Outcome #6)**

In 2004, the Great Lakes Water Studies Institute offered a pilot program designed in part to engage high school teachers, high school students and community partners in place-based education about water resources. Participants attended a four-day Summer Institute that focused on both content related to water resources and pedagogy related to

inquiry and place-based projects. The same participants gathered four times during the subsequent school year to expand their learning, to sustain the relationships forged during the Summer Institute, and to support the implementation of place-based projects in each teacher-participant’s classroom.

The program, called RIPPLE (Research, Inquiry and Public Partnerships for Local Education), was evaluated by SAMPI (Science and Mathematics Program Improvement) at Western Michigan University. Sixteen teachers completed an end-of-program survey, part of which sought data about the implementation of place-based projects during the 2004-05 school year. The compiled results of the survey are presented below:

Teachers were asked to rate the overall success of their place-based project on a 4-point scale, with 1 = low success and 4 = high success.

1	2	3	4	No Response
0	25% (4)	25% (4)	38% (6)	12% (2)

Teachers were asked to rate the value of having a community member involved in their place-based project on a 4-point scale, with 1 = low to 4 = high. Results follow:

1	2	3	4	No Response
0	12% (2)	25% (4)	63% (10)	0

Teachers were asked to rate their students’ interest in the place-based project on a 4-point scale, with 1 = low and 4 = high. Results are shown below.

1	2	3	4	No Response
0	6% (1)	25% (4)	69% (11)	0

Teachers were asked to identify the major issues or problems they encountered when implementing their place-based project. Their responses are listed below.

• Waiting for spring.
• Money and time are the two main obstacles.
• I was changed from just science teaching to science and history. And I am in 3 different rooms—2 for science alone.
• Finding time to plan!
• Transportation to site to collect data
• #'s of students/large class sizes
• At first, getting a hold of a community person to work with, then timing throughout year
• Time
• Incorporating the project into all parts of science curriculum

<ul style="list-style-type: none"> • Required cooperation from others, who did not always come through • Currently, money
<ul style="list-style-type: none"> • Finding time to network w/ community members- my project ideas have changed based upon the need of my community contact
<ul style="list-style-type: none"> • \$! And time.
<ul style="list-style-type: none"> • Administrative concerns about liability • Beetles not available for project • I was going to plant a green buffer for a new parking lot development at school—project not finished on time.
<ul style="list-style-type: none"> • Time and travel logistics.
<ul style="list-style-type: none"> • I haven't yet begun my project, but one of the possible problems might be time. I may need more than the 1.5 hours when my class meets in the field, so that will involve taking students out of other classes. If we report to the township board, getting a spot on the agenda might be a problem. Hopefully I'll be able to contact the developer of the property to have him talk to my students and let them ask questions.
<ul style="list-style-type: none"> • Money for transportation; Resources for investigations
<ul style="list-style-type: none"> • Time. The dedicated time it takes to plan and implement a new approach and develop a new connection. Also the willingness and understanding of the need to stretch out of your comfort zone. Thank you all!

Dr. Mark Jenness visited eight RIPPLE teachers in Spring 2005. The findings of these visits are preliminary in nature, but we cite them here as an indicator of progress.

All teachers did a place-based project that included creating some type of product (report, paper, student journal, poster, or display). All indicated that their place-based projects took a lot of time in and out of class, but said it was worth the effort for them and their students. In two cases, RIPPLE teachers involved other teachers in the school in their place-based projects.

All but one teacher implemented a place-based project that involved a community organization or individual, although the extent of involvement varied. Several teachers cited difficulty in coordinating their efforts with community members. Those community organizations that worked with more than one RIPPLE teacher were “stretched” in terms of available time and staff, partly because most place-based projects were conducted in spring, a busy time for environmental organizations.

All teachers indicated that they appreciated the mini-grant to support their place-based projects and indicated that they probably wouldn't have been able to do some of the activities without the grant. All appeared to be very frugal in their use of grant money.

All teachers indicated that they would likely do another place-based project next year. All teachers indicated that their students were very interested in the place-based projects. Students liked the "hands-on" activities and the opportunities to go on field trips. Students also showed an interest in the local issues related to the place-based projects.

More data from other teachers and from students will be required in order to draw firm conclusions about the impact of place-based projects on teaching, learning and stewardship. With funding from the DTE Foundation, the Great Lakes Water Studies Institute will offer at least two "duplicate" sessions of RIPPLE (now called the DTE Freshwater Institute) in each of the next five years, beginning in Summer 2005. These sessions will provide opportunities to study in more depth the outcomes of place-based education.

A FOCUS ON PROFESSIONAL DEVELOPMENT **(Outcomes #6 and #7)**

The Great Lakes Water Studies Institute is keenly interested in professional development. Through the grant from the Great Lakes Fishery Trust, we not only studied the impact of our current work in this area — the results of which are reported above — but also worked to organize an infrastructure and course offerings that would sustain professional learning for our teacher-partners. To that end, Dr. Mary Whitmore met with education professors of member-institutions of the University Center at Northwestern Michigan College, which offer courses to pre-service and in-service educators throughout the state. Representatives from Michigan State University, Eastern Michigan University, Grand Valley State University and Central Michigan University attended the meeting and were invited to collaborate with the Great Lakes Water Studies Institute to expand professional

development opportunities about water resources, environmental science, inquiry-based instruction and place-based education. Discussions with members of the University Center will continue as our work progresses.

Dr. Whitmore met with Dr. Knute Nadelhoffer, Director of the University of Michigan Biological Station, to discuss the Station's role in hosting the DTE Freshwater Institute in Summer 2005 and thereby using the Station's facilities and faculty to enhance the professional development of secondary teachers. Dr. Nadelhoffer offered the Station's facilities (including boats and vans) for use at a reduced rate. Two professional staff (a biologist and a chemist) and five faculty at the Station (representing four universities from around the country) guided teachers through hands-on investigations about water resources. The DTE Freshwater Institute was conducted at the Biological Station in June 2005 and represented a significant expansion of GLWSI's professional development portfolio. Staff of WSI will meet with Dr. Nadelhoffer in November 2005 to discuss future partnerships.

GLWSI is committed to sustaining our support for and relationships with teachers who implement place-based education projects as a result of working with us. To that end, GLWSI made a small grant to Inland Seas Education Association to offer a course on Invasive Species. This course carried graduate credits through Central Michigan University, involved teachers in hands-on learning in Grand Traverse Bay, and received positive evaluations from participants.

RECOMMENDATIONS (Outcome #8)

We believe that this is the most important section in our report. As we understand it, one of the Great Lakes Fishery Trust's most important goals for its education mission is to develop stewards of the natural resources of the Great Lakes Region, and through a grant to GLWSI, the Trust has sought information and advice. We have taken that responsibility very seriously. The recommendations we make here relate to the

challenges of 1) achieving the Trust’s goal, 2) making best use of the Trust’s funds, which are limited in both amount and availability over time, and 3) advocating for complex work that is clearly defined, sustainable and far-reaching in scope. Our hope is that these recommendations, considered together, will be useful to the Trust as it weighs its options for future efforts in education, evaluates proposals, or develops a formal Request for Proposals. The recommendations fall into four categories:

- Primary Recommendations
- Recommendations Related to Schools
- Recommendations Related to Communities
- Recommendations Related to Project Administration

These headings appear below in red boxes as organizers. Within each of these categories, the specific recommendations are shown in blue boxes.

PRIMARY RECOMMENDATION

Our first and most important recommendation defines the nature of work we believe is most likely to achieve the Trust’s goal of developing environmental stewards. If we had any doubt at all, this study quickly convinced us that there are many places where one could invest dollars in support of environmental education. For example, one might fund 1) the design or dissemination of instructional materials for students, or 2) professional development for teachers of particular grade levels, or 3) the publication of posters about habitats or organisms, or 4) mini-grants to schools or community groups. Our review of the literature, our interviews with key staff of projects and our conversations with experts in the fields of education and community development have convinced us that none of these options, undertaken as an isolated effort, has sufficient impact or longevity. We believe that the most promising investment is involves a model — an infrastructure, if you will — that integrates place-based education, professional development and school-community partnerships. Therefore, we recommend that the Trust:

Wholeheartedly embrace an integrated model of place-based education as the one most powerful strategy for cultivating in learners the knowledge, sense of personal responsibility, connectedness to community, and willingness to act that characterize effective environmental stewards.

The very best place-based environmental education initiatives use the “local” environment (built, natural and social; urban, suburban and rural); involve true inquiry and firsthand experiences; reconnect people with processes and cycles in nature; spotlight employment opportunities; and suggest opportunities for active stewardship. Place-based education of this type occurs only rarely in the Great Lakes region. There is currently no structure or system in place to support it.

What needs to happen in order for Recommendation #1 to be enacted? What sort of vision drives this type of work? What sort of infrastructure and activities are involved? We discovered that in addition to working with students and educators in schools, the most successful and sustainable place-based education initiatives actively engage local communities as true partners. That is, successful initiatives focus on the needs and work to build the skills and capacities of **both** schools **and** communities. First, we consider the schools.

RECOMMENDATIONS RELATED TO SCHOOLS

The next set of six recommendations relates to local schools, the setting in which holds teaching and learning have traditionally occur. While place-based education extends learning beyond the classroom and into the community, local schools still have a critical role to play. In fact, place-based education cannot survive over the long term in a school that doesn't support or endorse it. Therefore, we recommend that the Trust:

Ensure that a place-based education initiative reflects plans to build credibility in local schools.

Adoption by the school is the first step down the road of implementation and institutionalization. In order to be adopted by schools, especially in the current climate of high-stakes, standardized testing, place-based education must be clearly linked to 1) specific learning objectives within a classroom, and 2) the school's over-arching curriculum. The Michigan Curriculum Framework and the national documents that underpin it provide many "entry points" for the study of the environment, including water resources. Connections to standards and benchmarks in earth science, physical science and life science are obvious, as are links to standards and benchmarks in other subject areas.

National studies of place-based education verify that students can learn important content and process skills through studies conducted in their own communities. Some studies attribute gains in scores on standardized achievement tests to students' work in PBE. Other studies document gains in students' understanding of important and complex concepts, as evidenced by performance-based assessments of students. The Rural School and Community Trust encourages its partner schools to use multiple forms of assessment to gauge the impact of PBE on students' learning. The bottom line is that there are many ways to assess the impact of place-based education on students' knowledge, attitudes and actions. Hence, there is no reason to exempt place-based education initiatives from the burden of accountability. Therefore, we recommend that the Trust:

Ensure that the impact of place-based education on students' knowledge, attitudes and actions is thoughtfully assessed and — given the Trust's goal of developing environmental stewards — that part of such an evaluation specifically addresses the impact on stewardship.

Accountability in the form of thorough and thoughtful evaluation will serve to enhance the credibility of a place-based initiative.

Credibility makes it possible for a school to endorse/adopt place-based education as an instructional model. To sustain place-based education, however, requires a larger commitment on the part of the school. To that end, we recommend that the Trust:

Ensure that the design of a place-based education initiative acknowledges the importance of school culture and provides for its development.

A supportive school culture is geared to students who are active and inquisitive learners, teachers who have access to adequate resources and professional development, and administrators who value relevant, real-world learning and understand that communities are partners rather than adversaries in the fragile process of educating of children. Culture in a school is played out through policies, procedures and relationships, and these policies, procedures and relationships — for better or worse — have an impact on place-based education.

In particular, the professional development and on-going support of participating educators (meaning teachers, building administrators and district-level leaders) is critical to the long-term success of place-based education. In this vein, we recommend that the Trust:

Ensure that the design of place-based education includes a coordinated plan for the professional development of all involved educators in participating schools.

Such a plan should address the roles/responsibilities of 1) the project's staff, 2) key administrators and leaders who work at local schools, and 3) participating classroom teachers.

Teachers who embrace place-based education as an instructional strategy need a specific sort of professional development. The nature and extent of professional development varied greatly among the projects we surveyed — more than any other feature we studied. Few place-based projects that we examined provided adequate — much less exemplary — professional development. The few that did were highly successful, leading us to conclude that professional development is one of the most important design

elements in place-based initiatives. In light of that, we recommend that the Trust:

Ensure that professional development for classroom teachers in support of place-based education be viewed as an on-going endeavor that builds teachers’ 1) content knowledge, 2) skill in facilitating students’ inquiry and 3) ability to work collaboratively and effectively with community organizations.

This is a tall order and one that many providers of traditional professional development may be hard-pressed to fill. However, there are many examples of effective programs of professional development that systematically attend to one or more of these elements of a teacher’s practice. Leaders of place-based initiatives face a special challenge because they must address all three in their work with teachers.

A considerable body of research has documented best practices in professional development. To a large extent, these practices are reflected in a document endorsed by the Michigan State Board of Education, which is intended to define the nature of acceptable professional development in our state. Therefore, we recommend that the Trust:

Ensure that professional development in support of place-based education reflects the Michigan Standards for Professional Development.

Engaging teachers in peer-group processes (e.g., learning communities, lesson study groups, or case study groups), establishing an organized sequence of learning opportunities for teachers, and offering accredited courses or entire programs of study leading to advanced degrees are among the strategies that are compatible with these Standards.

Next, we turn our attention to communities — the “place” in place-based education.

RECOMMENDATIONS RELATED TO COMMUNITIES

The next set of three recommendations relates to communities. The most effective place-based education initiatives are characterized by strong school-community partnerships. Healthy partnerships with schools are possible only when communities have both the inclination and the capacity to collaborate with teachers and students. Assessing a community's "readiness" to partner and participate and responding with prescriptive support as a community needs it are important first steps in any place-based education initiative. We recommend that the Trust:

Ensure that the design of a place-based initiative includes a significant element focused on formally assessing and responding to a community's readiness to participate.

The literature from community development projects and school-community partnerships is rich and provides ample criteria for such an assessment. More problematic is the challenge of developing and implementing prescriptive strategies that build the capacity of communities that are not yet "ready" to host place-based studies. Yet if place-based studies are to be disseminated widely and equitably, the challenge posed by "unprepared" communities must be addressed by the designers of place-based initiatives. Again, the field of community development in both urban and rural areas provides a variety of proven strategies, including mentoring, shadowing and partnering among community leaders.

What is studied in a community — and the process used to decide what is studied — speaks volumes about the philosophy of a place-based education initiative. Too often, we encountered examples of place-based studies in which teachers worked in isolation to define the topic that their students explored. Instead, based on our review of the literature, we recommend that the Trust:

Ensure that the design of a place-based education initiative leads to studies that are

defined collaboratively and relate clearly to real needs or problems in a community.

This requirement increases the probability that place-based studies will be mutually beneficial for and therefore supported by all concerned: students, teachers, schools and the community as a whole. It also supports the notion that students and teachers are active and contributing members of a community, people who can contribute information and help solve problems that exist beyond the physical boundaries of the school.

School-community partnerships require careful attention and nurturing in the form of skilled, on-the-ground facilitation. Sadly, in most localities, schools and communities lack a history of collaboration. However, there is reason for hope: most schools in Michigan have a formal School Improvement Goal that involves making connections to the community, many non-profit organizations in Michigan communities have as their mission some degree of educational outreach, and every research scientist who obtains funding from the National Science Foundation must implement a plan of outreach to K-12 schools. Today, there are very few local or regional entities that exist primarily to support school-community partnerships. Instead, it seems as though each community organization, school or researcher that seeks a partner in the other has to reinvent a process for engagement. Given this “disconnect,” we recommend that the Trust:

Carefully scrutinize a place-based initiative’s plan for initially establishing and then nurturing school-community partnerships.

As is the case with professional development, much of this work requires the capacity to build productive and satisfying relationships among people. In the case of professional development, the task is a bit easier because the people involved are working in one setting — a school. In the case of school-community partnerships, however, the people involved are working in many settings (e.g., a school, a business, a governmental organization, an informal education organization, a civic club, a university). Providing leadership and vision for such a disparate group is a challenge that every facilitator of a successful school-community partnership has managed to overcome. It can be done. Once it has been done, the next challenge is to sustain the momentum by continuing to build the collaborative capacity of schools and communities, such that one successful effort leads to another.

RECOMMENDATIONS RELATED TO PROJECT ADMINISTRATION

The final set of three recommendations relates to important issue of project administration.

Each of the fields of place-based education, professional development for educators, and school-community partnerships is fertile ground for study, and there are few people who have expertise in all three areas. The model that we recommend — one that integrates these three fields — is relatively complex and requires leadership from those who have experience, intellect and vision. But the model also requires significant and equally important contributions by other people who work at the local level. Thus, we recommend that the Trust:

Ensure that the staffing and administrative structure for a place-based initiative addresses the need for both strong leadership and local engagement; and that the qualifications listed for various staff positions reflect rigorous expectations for candidates' knowledge, skills and attitudes.

The success of the model hinges on the ability of people working at both levels to communicate and collaborate, so that a new and enlarged vision of teaching and learning can be created and played out, literally, in community.

Just as accountability is important in the context of teaching and learning and collaboration, it is also a critical element in the overall administration of a place-based education initiative. During our review, we were struck by the duplicative nature of work being undertaken in various place-based projects, particularly related to forms, templates, products, and resource materials. Leaders of initiatives should be accountable not only to the Trust but also to others in the field, and should agree early on to carefully document and disseminate not only the results of project-level evaluation and assessment but also key products generated through the work. Given the magnitude of the Trust's

investment, the availability of proven strategies of assessment and evaluation, and the ease of sharing information within a field, we recommend that the Trust:

Require 1) a plan for formative and summative evaluation, including at a minimum an analysis of impact on intended audiences (students, educators, community), a documentation and assessment of implementation strategies, and an identification of contextual factors affecting programming, and 2) a plan for disseminating to the Trust and others in the field any key products and processes that are developed.

If an initiative can document its success, there is often interest in a) continuing the work that is already underway, and/or 2) disseminating or expanding the work beyond its current scope or locality. As is often the case with funded projects of any kind, some successful place-based initiatives that we studied fell or are falling victim to a “sunset” phenomenon, primarily because leaders failed to plan for continuation/institutionalization beyond an initial grant. Given the Trust’s limited lifespan, the magnitude of its investment, and its interest in making a real difference in the long term, we recommend that the Trust:

Require that a place-based initiative present an “exit strategy” that will result in the continuation of work that is in place at the end of funding by the Trust, or the further expansion of work beyond the end of funding by the Trust. That exit strategy will depend largely on the nature of the initiative. If the work of an initiative reflects the spirit of the recommendations in this report, we believe that sustainability will be a likely outcome.

Appendix A

Literature Review

- American Institutes of Research. 2005. *Effects of Outdoor Education Programs for Children in California*. Sacramento. (available from: www.sierraclub.org/insidetheoutdoors/downloads/outdoorschool_finalreport.pdf)
- Annenberg Challenge. 2004. "Instructional coaching: Professional development strategies that improve instruction." Providence RI: Annenberg Institute for School Reform.
- Annenberg Challenge. 2000. "Students solving community problems: Serious learning takes on a new look." *Challenge Journal*, 4:1. Providence RI: Annenberg Institute for School Reform.
- Annenberg Challenge. 1997. "What rural schools can teach urban systems." *Challenge Journal*, 4:1. Providence RI: Annenberg Institute for School Reform.
- Annenberg Institute. 1998. *Reasons for hope, voices for change: Report of the Annenberg Institute on Public Engagement for Public Education*. Providence RI: Annenberg Institute for School Reform.
- Athman, Julie & Monroe, Martha. 2004. "The effects of environment-based education on students' achievement motivation." *Journal of Interpretation Research*, 9(1), 9-25.
- Bain, Robert K., and Anderson, James G. 1974. "School context and peer influences on educational plans of adolescents." *Review of Educational Research*, 44:4, 429-445.
- Bartosh, O. 2004. "Environmental education: Improving student achievement." Unpublished master's thesis, The Evergreen State College, Olympia, Washington. (available through peecworks.org)
- BayCES. 1998-2001. TREK summer institute training manuals. Oakland: Bay Area Coalition for Equitable Schools.
- BayCES. 2001. *Demonstration School Rubric*. Oakland: Bay Area Coalition for Equitable Schools.
- Beadie, Nancy. 2000. "The promise and perils of community-based schooling." *American Journal of Education*, 109:1, 112-124.
- Bowman, Richard F. Jr. 2002. "The real work of department chair." Washington DC: ERIC Clearinghouse.
- Brennan, Carrie. 2005. "Tucson as textbook: New school engages teens in linking school and community." *Rural Roots*, 6:1. Washington DC: Rural School and Community Trust.
- California Student Assessment Project. 2000. *The Effects of Environment-based Education on Student Achievement*. San Diego, CA: State Education and Environment Roundtable.

- Carroll, Grace, LaPoint, Velma, and Tyler, Kenneth. 2001. "Co-construction: A facilitator for school reform in school, community, and university partnerships." *The Journal of Negro Education*, 70:1/2, 38-58.
- Chawla, Louise. "Childhood place attachments." *Place Attachment*. New York: Plenum Press, 1992.
- Chawla, Louise. 2002. *Growing Up in an Urbanising World*. London: Earthscan Publications.
- Childress, Herb. 2005 (in press). "Experts, Kids and Design: The Uses and Limits of Expertise in Designing for Young People." in A. Bernier (ed.), *Creating a Geography of Yes! Young Adult Spaces in Libraries*. New York: Greenwood Publishers.
- Clandinin, D. Jean, and Connelly, F. Michael. 1998. "Stories to live by: Narrative understandings of school reform." *Curriculum Inquiry*, 28:2, 149-164.
- Cochran-Smith, Marilyn, and Lytle, Susan L., 1999. "Relationships of knowledge and practice: Teacher learning in communities." *Review of Research in Education*, 24, 249-305.
- Cohen, Stewart, and Horm-Wingerd, Diane. 1993. "Children and the environment: Ecological awareness among preschool children." *Environment and Behavior*. 25:1, 103-120
- Corcoran, Thomas, and Goertz, Margaret. 1995. "Instructional capacity and high performance schools." *Educational Researcher*, 24:9, 27-31.
- CUR. 2005. "Institute on mentorship, collaboration and undergraduate research in the social sciences and humanities" summer institute training materials. Washington DC: Council on Undergraduate Research.
- Delandshere, Ginette. 2002. "Assessment as inquiry." *Teachers College Record*, 104:7, 1461-1484.
- Dovey, Kimberley. 1985. "Refuge and imagination: Places of peace in childhood." *Children's Environments Quarterly*, 7:4, 13-17.
- Duffin, M., Powers, A., Tremblay, G., et al. 2004. *Place-based Education Evaluation Collaborative: Report on cross-program research and other program evaluation activities*. PEER Inc. (available on Peecworks.org website)
- Dunn, Randy J. 2001. *The Rural Education Dichotomy: Disadvantaged Systems and School Strengths*. Naperville, IL: North Central Regional Laboratory.
- Educational Resources Information Center. 1999. "A practical look at comprehensive school reform for rural schools." *ERIC Digest ED 425047*. Washington DC: ERIC Clearinghouse.
- Eisner, Elliot. 2002. "What can education learn from the arts about the practice of education?" available on-line at www.infed.org/biblio/eisner_arts_and_the_practice_of_education.htm

- Emekauwa, Emeka. 2004. *The Star with My Name: The Alaska Rural Systemic Initiative and the Impact of Place-Based Education on Native Student Achievement*. Doris Terry Williams (Ed.) Rural Trust.
- Ernst, Julie Athman, and Monroe, Martha. 2004. "The effect of environment-based education on student' critical thinking skills and disposition toward critical thinking." *Environmental Education Research*, 10:4, 507-522.
- Fuller, Tony, Guy, Denise, and Pletsch, Carolyn. 2002. *Asset Mapping: A Handbook*. Ottawa ON: Canadian Rural Partnership
- Glenn, Joanne Lozar. 2000. *Environment-Based Education: Creating High Performance Schools and Students*. Washington, DC: National Environmental Education & Training Foundation.
- Gordon, Mark. 2001. *Leadership in New Small Autonomous Schools*. Oakland: Bay Area Coalition for Equitable Schools.
- Governor's Council on Environmental Education. 2004. *Environmental Education In Washington: Status Report 2004*.
- Gruenewald, D. 2003. "The Best of both Worlds: A Critical Pedagogy of Place." *Educational Researcher*.
- Haas, Toni, and Lambert, Robin. 1995. "To establish the bonds of common purpose and mutual enjoyment." *Phi Delta Kappan*, 77:2.
- Hart, Roger. 1979. *Children's Experience of Place*. New York: Irvington.
- Harvard Documentation & Assessment Program. 2001. *Assessing Student Work*. Rural School and Community Trust.
- Hatch, Thomas. 2001. "Incoherence in the system: Three perspectives on the implementation of multiple initiatives in one district." *American Journal of Education*, 109:4, 407-437.
- Haury, David L. 2000. "Studying watersheds: A confluence of important ideas." ERIC Digest (ERICRIE0 20001201). Washington DC: ERIC Clearinghouse.
- Heenan & Bennis. 1999. *Co-Leaders: The Power of Great Partnerships*. New York: John Wiley & Sons.
- Hobbs, Vicki. 2003. "The Missouri Education Renewal Zones." In *Engaged Institutions: Impacting the Lives of Vulnerable Youth Through Place-Based Learning*. The Rural School and Community Trust.
- Huang, G. G. 1999. *Sociodemographic changes: Promises and problems for rural education*. Charleston, WV: ERIC Clearinghouse on Rural Education and Small Schools. (ERIC Document Reproduction Service No. ED 425 048).
- Hynes, Michelle. 2003. "Revitalizing economies around Cobscook Bay." In *Engaged Institutions: Impacting the Lives of Vulnerable Youth Through Place-Based Learning*. The Rural School and Community Trust.

- Jimerson, Lorna. 2004. "The Devil is in the Details: Rural-Sensitive Best Practices for Accountability under No Child Left Behind." *Rural Trust Policy Brief Series On Rural Education*.
- Johnson, Jerry and Strange, M. 2005. *Why Rural Matters 2005: The Facts about Rural Education in the 50 States*. Rural School and Community Trust.
- Keeney, Lorraine. 1998. *Using data for school improvement: Report on the second Practitioners' Conference for Annenberg Challenge Sites*. Providence RI: Annenberg Institute for School Reform.
- Kerka, Sandra. 2003. "Community asset mapping." Trends and Issues Alert #47. Available on-line at www.cete.org/acve/docgen.asp?tbl=tia&ID=170
- King, Jereann. 2003. "Crossroads: Promising Practices of Change in the Mississippi Delta." In *Engaged Institutions: Impacting the Lives of Vulnerable Youth through Place-Based Learning*. The Rural School and Community Trust.
- Knapp, Connie L. 2003. *Making Community Connections. The Orton Family Foundation Community Mapping Program*. Redlands CA: ESRI Press.
- Knopf, Richard C. 2000. "Recreational needs and behavior in natural settings." In Altman, Irwin; Wohlwill, Joachim F. (ed), *Human Behavior and Environment*. New York: Plenum Press.
- Landay, Eileen. 1997. "A traveler's tale: Possibilities and pitfalls in school reform." *The English Journal*, 86:5, 86-87.
- Levett, Roger. 1998. "Sustainability indicators: Integrating quality of life and environmental protection." *Journal of the Royal Statistical Society*, 161:3, 291-302.
- Levine, Eliot. 2002. *One kid at a time: Big lessons from a small school*. New York: Teachers College Press.
- Lewicki, James. 2005. "Measures: Producing productive place-based projects." *Rural Roots*, 6:1. Washington DC: Rural School and Community Trust.
- Lewicki, James. 2000. "100 days of learning in place: How a small school utilized 'place-based' learning to master state academic standards." Washington DC: Rural School and Community Trust.
- Lieberman, Gerald A. and Hoody, Linda. 1998. "Closing the Achievement Gap." San Diego, CA: State Education and Environment Roundtable.
- Lopez, M. (2003). *Transforming Schools Through Community Organizing: A Research Review*. Harvard Family Research Project, Harvard, MA. Retrieved August 1, 2004 from <http://www.gse.harvard.edu/hfrp/projects/fine/resources/research/lopez.html>
- Louv, R. (2005). *The Last Child in the Woods*. Chapel Hill, N.C.: Algonquin
- Lynch, Kevin. 1977. *Growing up in Cities*. Boston: MIT Press.
- Marzano, R. J. (2003). *What works in schools: Translating research into action*. Association for Supervision and Curriculum Development, Alexandria, VA.

- McKersie, William S. 1993. "Philanthropy's paradox: Chicago school reform." *Educational Evaluation and Policy Analysis*, 15:2, 109-128.
- Meyrowitz, J. (1985). *No Sense of Place*. New York: Oxford University Press.
- Mohr, Nancy, and Dichter, Alan. 2003. "Stages of Development: Lessons from the struggles of site-based management." Providence RI: Annenberg Institute for School Reform.
- Monaghan, P. 2000. "A child's place in the world: Modern places may be safe, but they're stultifying, some experts say," *Chronicle of Higher Education*.
- Moore, Robin. 1986. *Childhood's domain: play and place in child development*. London: Croom Helm.
- National Environmental Education Training Foundation. 2000. *Environment-based Education: Creating High Performance Schools and Students*. Washington, DC (available from: <http://www.neetf.org/pubs/NEETF8400.pdf>)
- Neufeld, Barbara, and Roper, Dana. 2003. *Coaching: A strategy for developing instructional capacity*. Providence RI: Aspen Institute Program on Education/Annenberg Institute for School Reform.
- Northwest Regional Educational Laboratory. 1998. "Asset mapping: A powerful tool for communities." Seattle: NWREL.
- Parker, S. and Colchado, J. Acequias. 2003. "Nourishment for People, Education and the Land." In *Engaged Institutions: Impacting the Lives of Vulnerable Youth through Place-Based Learning*. The Rural School and Community Trust.
- Perrone, V. (Ed.). 1991 . *Expanding Student Assessment*. Alexandria, VA: Association for Supervision and Curriculum Development Research Bulletin No. 28, Center for Evaluation, Development and Research.
- Putnam, R. (2001). *Bowling Alone: The Collapse and Revival of American Community*. Touchstone, New York.
- Robinson, Guy M. 1997. "Community-based planning: Canada's Atlantic Coastal Action Program (ACAP)." *The Geographical Journal*, 163:1, 25-37.
- Rural School and Community Trust. 2003. *Engaged Institutions: Impacting the Lives of Vulnerable Youth Through Place-Based Learning*.
- Rural School and Community Trust. 2000. *Standards In Public Schools: A Policy Statement of the Rural School and Community Trust*.
- Schmidt, William H, and Buchmann, Margret. "Six teachers' beliefs and attitudes and their curricular time allocations." *The Elementary School Journal*, 84:2, 162-171.
- Sipe, Rebecca Bowers. 2001. "Academic service learning: More than just 'doing time'." *The English Journal*, 90:5, 33-38.
- Sizer, Ted. 1984. *Horace's Compromise*. New York: Houghton Mifflin.
- Slater, Charles L., and Simmons, David L. 2001. "The design and implementation of a peer coaching program." *American Secondary Education*, 29:3, 67-76.

- Slater, Charles L, and Trowbridge, Steve. 2000. "Master's level cohorts combat teacher isolation." *Action in Teacher Education*, 22:1, 15-22.
- Slavin, Robert E. 1996. "Reforming state and Federal policies to support adoption of proven practices." *Educational Researcher*, 25:9, 4-5.
- Smith, Gregory. 2002. "Place Based Education: Learning to be where we are." *Phi Delta Kappan*, 83, 584-594.
- Sobel, David. 2004. *Place-Based Education: Connecting Communities and Classrooms*. Great Barrington, MA: The Orion Society.
- Soule, Michael E., and Press, Daniel. 1998. "What is environmental studies?" *BioScience*, 48:5, 397-405.
- Spencer, Dee Ann. 1996. "Teachers and educational reform." *Educational Researcher*, 25:9, 15-17, 40.
- USDA. 1997. *Children, nature and the urban environment*. Upper Darby, PA: USDA Forest Service General Technical Report NE-30; Forest Service, USDA, Northeastern Forest Experiment Station.
- Vermont Community Works. n.d. *Connecting Service Learning to Curriculum: A Workbook for Teachers and Administrators*. South Burlington, VT: Vermont Community Works
- Vermont Rural Partnership. 2001. Draft Strategic Plan.
- Wei, Shang-Jin. 1997. "Gradualism versus big bang: Speed and sustainability of reforms." *The Canadian Journal of Economics*, 30:4b, 1234-1247.
- Weiss, Carol H., and Cambone, Joseph. 1994. "Principals, shared decision making, and school reform." *Educational Evaluation and Policy Analysis*, 16:3, 287-301.
- "Wetlands Estonia saved by St. Paul Senior Ecology Class." 2001. *Rural Roots*: 2, 4.
- Wiggins, Grant. 1993. *Assessing Student Performance: Exploring the Purpose and Limits of Testing*. San Francisco: Jossey-Bass.
- Wiggins, Grant. 1998. *Educative Assessment: Designing Assessments to Inform and Improve Student Performance*. San Francisco: Jossey -Bass.
- Williams, B. 1998. "The genius of place." In *Toward place and community*, edited by V. Perrone. Annenberg Rural Challenge, Harvard University Graduate School of Education.
- Wilson, John. 2001. "Dr. Putnam's social lubricant." *Contemporary Sociology*, 30:3, 225-227.
- Wood County (WI). 2003. *2003 Wood County Community Asset Survey: Local Indicators for Excellence*. Marshfield WI: Community Foundation of South Wood County.

Appendix B

Projects Explored and People/Organizations Consulted

Adopt-A-Watershed
P.O. Box 1850
Hayfork, CA 96041
Kim Stokely
530-628-5334

<http://www.adopt-a-watershed.org>

Teams of teachers, students and community members study local water resources

Annenberg Rural Challenge/The Rural School and Community Trust
1530 Wilson Blvd., Suite 240
Arlington, VA 22209
703-243-1487

Doris Williams

<http://www.ruraledu.org>

Antioch New England Institute and Co-SEED (Community-based School Environmental Education)

40 Avon Street

Keene, NH 03431-3552

603-357-3122, ext. 344

Email: ANEI@antiochne.edu

http://www.anei.org/pages/88_co_seed.cfm

Project of Antioch New England Institute's Center for Place-based Education--three-year collaboration with a dozen schools, six environmental learning centers and a diverse array of rural and urban New England communities to work together to develop place-based learning. CO-SEED aspires to creating a synergistic relationship between school improvement, community development and the preservation of environmental quality.

Delia Clark: delia_clark@antiochne.edu

David Sobel: dsobel@antiochne.edu

Appalachian Rural Systemic Initiative:

Project of the Kentucky Science and Technology Corporation, Lexington, KY.

Grants from the National Science Foundation to improve instruction and learning in mathematics and science in Appalachian portions of Ohio, West Virginia, Kentucky, Virginia, Tennessee, and North Carolina.

Worked with Resource Collaboratives at Ohio University, Marshall University, the University of Kentucky Community College System, the University of Virginia at Wise, and the University of Tennessee to provide direct services to principals and teacher partners at each participating school

Center for Science Education (EDC), Education Development Center, Inc.
55 Chapel Street
Newton, Massachusetts 02458-1060
800.225.4276 ext. 2430
<http://www.edc.org/CSE/index.html>

Dr. Barbara Cervone
What Kids Can Do
P.O. Box 603252
Providence, RI 02906
401-247-7665 phone/fax
www.whatkidscando.org

Child Trends
www.childtrends.org; childtrendsatabank.org
4301 Connecticut Avenue, NW, Suite 100
Washington, DC 20008
202-572-6000; Fax:202-362-8420;
Kristin Anderson Moore, Ph.D., President-----

Coalition for Community Schools
4455 Connecticut Avenue, NW
Suite 310
Washington, D.C. 20008
202-822-8405
Martin J. Blank
www.communityschools.org
The Coalition advocates for community schools as the vehicle for strengthening schools,
families and communities so that together they can improve student learning.

Community Works Journal
Vermont Community Works
PO Box 2251
South Burlington, VT 05407
802-655-5918
www.vermontcommunityworks.org
On-line journal that reviews the work of teachers and students doing service learning and
place-based education in Vermont.

Project Connect at Slaughter Elementary School, East Feliciana, LA
Dr. Daisy Slan, Superintendent
Project Connect highlights math and science and features place-based education,
professional development for educators, and school-community partnerships.
<http://www.ruraledu.org/projects/efeltxt2a.html>

The GLOBE Program
3300 Mitchell Lane

Boulder, Colorado 80301
303-497-2620
www.globe.gov

GREEN:The Global Rivers Environmental Education Network
Earth Force GREEN
1908 Mount Vernon Avenue
2nd Floor
Alexandria, VA 22301
703-299-9400
green@earthforce.org

Harvard Graduate School of Education
Appian Way
Cambridge, MA 02138
617-495-3414
Dr. Vito Perrone, Director, Teacher Education

Institute of Education Sciences
U.S. Department of Education
400 Maryland Avenue, SW
Washington, DC 20202
1-800-USA-LEARN

John Dewey Project for Progressive Education
College of Education and Social Services
University of Vermont
Burlington, VT 05405
www.uvm.edu/~dewey/

Learning Point Associates
Naperville, IL
Mr. Gary Appel
www.learningpt.org

Local Fisheries Knowledge
<http://www.st.nmfs.noaa.gov/lfkproject/>
LFKProject@noaa.gov

Michigan Department of Education
Updated Vision and Standards for Professional Learning of Michigan Educators
Ms. Cheryl Poole
www.michigan.gov/mde

Michigan Department of Environmental Quality
Michigan Environmental Education Curriculum Support (MEECS)

Mr. Thomas Occhipinti

Instructional units for middle school students on air quality, ecosystems, energy resources, individuals' impact on land, and water quality (the latter for grades 6-8)

http://www.michigan.gov/deq/0,1607,7-135-3307_3580_29678---,00.html

Michigan Sea Grant

Elizabeth LaPorte

Project FLOW

<http://miseagrant.umich.edu/flow>

North American Association for Environmental Education.

2000 P Street NW, Suite 540

Washington, DC 20036

202-419-0412

www.naae.org

National Council for Science and the Environment

1707 H Street, N.W. Suite 200

Washington, DC 20006

202-530-5810

www.NCSEonline.org

Oregon Trout

Craig Stewart (craig.stewart@ortrout.org)

117 SW Naito Pkwy

Portland, OR 97204

503-222-9091 x 25

Operates two place-based programs, Salmon Watch and Healthy Waters Initiative, with a goal of reaching every child in Oregon

www.oregontrout.org

www.healthywatersinstitute.org

The Orton Family Foundation

William Shutkin, Executive Director

128 Merchants Row, 2nd Floor

Rutland, Vermont 05701

802.-773-6336

Fax: 802.773.6602

PACERS

Program for Rural Services and Research

The University of Alabama
P.O. Box 870372
Tuscaloosa, AL 35487-0372
205-348-6432
<http://www.pacers.org>

PEEC Works
Place-Based Education Evaluation Collaborative
<http://www.peecworks.org/>
Organization of place-based educators interested in assessment of PBE programs

Rural School and Community Trust
Doris Williams
<http://www.ruraledu.org>
Organization created as sequel to the Annenberg Foundation support for rural school initiatives. Acts as a partner in developing place-based learning and other rural school improvement programs and evaluations. Increasingly involved in urban settings.

Shelburne Farms
1611 Harbor Rd.
Shelburne, VT 05482
802-985-8686
www.shelburnefarms.org
Megan Camp - Vice President and Program Director
Jen Cirillo - Sustainable Schools Project Director

Dr. Greg Smith
Professor of Teacher Education
Graduate School of Education
Lewis and Clark College
Mail Stop 14
426 Rogers Hall
Portland, Oregon
503-768-6119
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Vermont Institute of Natural Science
27023 Church Hill Rd
Woodstock, VT 0509
802-457-2779
www.vinsweb.org
Pioneered several place-based programs, including Environmental Learning for the Future