

Strand: Schools, Education, Achievement, and Literacy

Impacts of Watershed Stewardship Place-Based EE in Michigan

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ABSTRACT

Place-Based Education (PBE) is an emerging environmental education strategy offering much promise for student achievement and environmental stewardship. However, meaningfully evaluating these multifaceted and unique programs in this era of standards and accountability presents numerous challenges. This paper presents three Michigan based PBE programs and the strategies used to evaluate them in a manner both doing justice to the programs and meeting the needs of funders and other stakeholders. Evaluation successes and challenges remaining to be resolved are also discussed.

INTRODUCTION

Place-Based Education (PBE) has emerged as an important environmental education strategy in the 21st century, with potential to improve student learning and foster environmental stewardship. There are a growing number of studies which indicate that when effective PBE programs are implemented, positive student outcomes can be realized. These include improved test scores across subjects, positive changes in classroom behavior and increased academic motivation, more effective communication skills, greater ability to work independently and cooperatively, and more frequent and meaningful acts of environmental stewardship. PBE programs are complex and often unique, and their potential effects many and varied. Designing

and implementing evaluations of PBE programs that do justice to the program and address the expectations of funders and other stakeholders presents many challenges.

This paper discusses successful, but still-emerging strategies used to evaluate three different Michigan-based PBE projects. What follows is a brief conceptual background of PBE, a description of the Michigan PBE programs and associated evaluation activities, and a discussion of the challenges involved in evaluating these programs.

Conceptual Framework

Place-Based Education combines elements of several theoretical traditions, including “experiential learning, contextual learning, problem-based learning, constructivism, outdoor education, environmental and ecological education, bioregional education, democratic education, and community-based education” (Gruenewald 2003). Some of the underlying assumptions of PBE are that human-nature relationships are critical to environmental stewardship and human health; situated learning is an essential component of effective learning; and connecting place with self and community will ultimately improve the well being of both ecological and human communities. PBE offers an alternative to lock-step standardization and an educational system that increasingly focuses on compartmentalized learning. However, PBE is still an emerging educational practice which, if it is going to catch the attention of funders and other decision-makers, must justify itself in terms of standard measures of teacher, school, and student success.

In light of these issues, the question of what sort of evaluations are appropriate for PBE programs becomes perplexing. As Gregory Smith has pointed out (2002), “Because place-based education is by its nature specific to particular locales, generic curricular models are inappropriate”. By this same logic, generic evaluation models are also inappropriate for PBE. Adding to the complexity is the likelihood that different stakeholders in PBE programs are likely to have different conceptions of exactly what might constitute program success. To address these

problems, the authors have implemented evaluations that combine a variety of strategies tailored to each program and the audiences receiving the evaluation findings.

To provide a framework for identifying appropriate measures of success, the authors have adopted the PBE definition provided by the Rural School and Community Trust:

"Place-based" education is learning that is rooted in what is local -- the unique history, environment, culture, economy, literature, and art of a particular place. The community provides the context for learning, student work focuses on community needs and interests, and community members serve as resources and partners in every aspect of teaching and learning."

DESCRIPTION OF PROJECTS AND ASSOCIATED EVALUATION ACTIVITIES

Three PBE projects are the focus of this paper. They illustrate various evaluation strategies being used to determine the effects of PBE programming.

1. RIPPLE: (Research, Inquiry, and Public Partnerships for Local Environmental Education) was a pilot project of the Great Lakes Water Studies Institute (GLWSI) at Northwestern Michigan College. GLWSI's vision is to "inspire lifelong stewardship and understanding of freshwater through education and partnership." One important strategy of the Institute is to reach out to schools and teachers to provide programs and services to support locally relevant science curricula and hands-on learning experiences. RIPPLE was the first major teacher professional development effort of GLWSI, with the purpose being to build the capacities of participating teachers and their students to design and implement inquiry-focused water-related place-based projects in partnership with natural resource community organizations and agencies.

Evaluation data collection included pre- and post-program teacher and student surveys; observation of professional development activities; school site visits to observe PBE activities

“in action”; interviews with teachers, students, and community partners; and reviews of teacher and student products.

2. DTE Freshwater Institute: As a result of the experiences with RIPPLE, a major five-year grant from the DTE Energy Foundation was secured to enhance the PBE programming. The DTE Freshwater Institute for Teachers is a statewide effort, sponsored by the Great Lakes Water Studies Institute, with summer workshops and school-year follow-up activities for cadres of teachers from various regions throughout Michigan. Following a summer institute, teachers begin a planning process for their PBE projects, meeting periodically throughout the year. They are supported by an on-site coordinator who assists with planning, resource acquisition, and helps coordinate the community-school partnerships. Major collaborative efforts have been established between natural resource/environmental/conservation organizations/institutions and schools/teachers/students.

Evaluation strategies included pre- and post-program teacher surveys, pre- and post-program assessment of teacher subject-matter knowledge and stewardship attitudes, pre- and post-project student assessments of content knowledge and environmental awareness/attitudes, on-site visits to schools and field sites when students are involved in PBE activities, interviews with teachers, students, and community partners, review of teacher and student products, and observation of professional development activities.

3. Translating Information Technology into Classrooms (TITiC): This is a collaborative three-year project between Wayne State University and Monroe Public Schools. It is one of several projects across the country funded through the NSF Information Technology Experiences for Students and Teachers (ITEST) Initiative.

TITiC is designed to improve knowledge and skills to use Information Technology (IT) to support science and mathematics curriculum by applying it to issues related to the Lake Erie

watershed. Each year, a cadre of 15 high school teachers is recruited to participate in a three-phase process. Phase I: Summer Institute; Phase II: Student-Teacher Research; Phase III: Infusion in the Classroom.

Evaluation activities have included: Pre- and post-program teacher surveys, pre- and post-program teacher assessment of knowledge, site visits, student surveys, interviews with teachers and students, end-of-PD session evaluation questionnaires, observation of professional development activities, systematic assessment of student presentations, and systematic assessment of student research papers.

LESSONS LEARNED ABOUT ASSESSING PBE

Because of the interdisciplinary and integrated nature of place-based education programs, potential impacts are broad-ranging. Major challenges for evaluating place-based education programs are to 1) identify measures that adequately represent the impacts of PBE programming; 2) identify or develop appropriate instruments and procedures for gathering pertinent data; 3) analyze data in ways that assess both progress toward specific project objectives/outcomes and long-term programmatic goals; and 4) communicate evaluation results in ways that are convincing to various audiences—participants, staff, stakeholders, funders, and policy-makers. Additionally, a comprehensive evaluation requires significant financial, human, and time resources, often not available in environmental education program funding.

Successes in Assessing Impact on Teachers: A combination of methods have been successfully used by evaluators to assess effects on teachers in the three projects highlighted in this paper: pre/post surveys, pre/post teacher content/attitude assessments, follow-up interviews, site visits to schools and observation of project activities; and review of curriculum and instructional materials used during the project.

Challenges in Assessing Impact on Student Knowledge/Skills/Attitudes/Actions: Evaluators continue to work with staff and teachers involved in the PBE projects described in this paper to find ways to systematically assess changes in student knowledge, skills, attitudes, and actions. Assessing science/environmental content knowledge is being accomplished through conventional pre/post project tests. Insight into improved skills can be gained through assessment of student products and observation of students at work in the field and in lab activities.

Assessing Student Products: Evaluators have devised rubrics for student presentations and research/project reports: These assessments provide insights into the nature of the projects, the kinds of scientific skills used by students to complete projects, and the actual results of their projects. Student communications skills can also be assessed.

Challenges in Assessing Impact on Project Partner: Both the RIPPLE and DTE Freshwater Institute programs include a major community partner component. The nature and extent of community partner participation in the place-based projects is quite variable. There is a wide range of potential impacts on partners, including improved skills in working with teachers and students, increased fulfillment of organizational goals, completion or additional progress made toward completion of organizational projects, and greater visibility of organizational activities. Finding systematic ways to gather and report convincing data continues to be a challenge for evaluators.

Using Program Logic Models: The complexity of most place-based education programs lend themselves to the use of a program logic model. Logic models show the connections between available resources, identified needs, implementation strategies, short-term goals and objectives, and long-term goals of a program. They can be used by staff for program planning; managing program implementation; communicating with stakeholders and funders; and internal review,

assessment, and program improvement. For evaluators, they provide a framework for identifying key program components, potential sources of information, intended outcomes, and serve as a tool to involve staff and stakeholders in designing the evaluation. A program logic model developed by evaluators for the RIPPLE project described earlier in this paper is included in a final evaluation report for RIPPLE.

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