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Part One: Place-Based Education in Context

Place-based Education: A Blend of Traditions

In growing numbers, schools and communities around the country are building academic curricula around the power of place. Individuals and organizations interested in school reform are utilizing place-based education as a way to improve schools and build communities. A community's surrounding landscape, the local history, the businesses, organizations, and individuals outside the school walls offer rich lessons that can help students achieve high academic standards and develop valuable citizenship skills. (ARC, 1999a). Place-based education may also provide environmental educators opportunities for valuable influence on curriculum content and development (Chin, 2001). Particularly important to the evaluation presented in the project report below is an effort to explore the underpinnings, outcomes, goals and challenges of place-based education as they relate to the goals of environmental educators.

An educational reform effort that often blends progressive teaching techniques with aspects of service learning and environmental education practices, place-based education has received increased local and national attention. Recent articles in popular magazines such as *Whole Earth* (Stone, 2001) and leading educational journals such as *Phi Delta Kappan* (Smith., 2002) and *Educational Leadership* (Smith, 2002b) have brought the discussion about place-based education into mainstream education. At the same time, national research efforts by the State Environmental Education Roundtable (SEER), a multi-state educational research, the National Environmental Education Training Foundation (NEETF), and major research and community development efforts from the Annenberg Rural Challenge (ARC) and the Rural School and Community Trust and have helped to define and refine the practice place-based education.

As practitioners and scholars discuss place-based education's merit, defining what it is proves challenging. In summary, place-based education is an educational method in which teachers, schools and community members design curricula that utilize local cultural and natural resources. The curricula may be derived with an ecological, cultural or economic lens. The academic focus and depth of project and the degree to which administrators and community members collaborate on curriculum development varies greatly. However, the common motivation is for students to meet academic and developmental goals while helping them to acquire personal and professional skills that will help them to be contributing citizens. Place-based curricula also tend to include service-learning projects in their community, or culminate in some kind of presentation (i.e. constructing a map, website, trail, brochure, radio show, drama production), positively affecting students' commitment to their work, understanding of the content and retention of what they have learned. (Woodhouse and Knapp, 2002; Haas & Nachtigal, 1998).

A closer investigation of the movement, however, makes it clear that there are multiple underlying goals in place-based education efforts. While advocates discuss the educational benefits of grounding education in the local environment, some emphasize more strongly the educational reform aspect, while others are equally concerned with building strong communities, or meeting the goals of environmental education.

The Annenberg Challenge, a non-governmental organization that supports hundreds of urban and rural school reform initiatives nationwide, is one of the nationally recognized sources for place-based education initiatives and research efforts. They were once known as the Annenberg Rural Challenge (ARC), and trained teachers, develop community networks, and provide ongoing support and teaching materials to over 700 rural schools throughout America. The Annenberg Challenge now funds the Rural School and Community Trust

(RSCT), an organization that does much of the same community development and school reform that the Annenberg Rural Challenge once did. The Annenberg Challenge continues to work towards large-scale school reform. Both ARC and RSCT believe that schools and communities must both improve conjointly; their staff members bring together community members and education leaders to initiate sustainable educational and community reform, and to build visibility and credibility for rural places and their schools¹. ARC described place-based education:

A grounded, rooted learner understands that his/her actions matter, that they affect the community beyond the school. It is out of this particular formulation that the “student as resource to the community” takes shape ...a pedagogy of place, then, recontextualizes education locally. It makes education a preparation for citizenship, both locally and in wider contexts, while also providing the basis for continuing scholarship. (ARC, 1999a, p.12)

The Rural School and Community Trust continues to work with Annenberg Rural Challenge’s mission, and defines place-based education:

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. (RSCT, 2003)

Historically, the ARC and RSCT have worked with rural communities that lack community vitality: the economic base is weak, local schools are threatened by severe financial cutbacks or closures, and citizens are leaving in search of jobs or looking for methods to rebuild their community. The ARC and RSCT believe

¹ The Annenberg Rural Challenge is now the Annenberg Challenge. To avoid confusion throughout the report, I will continue to use ARC when referring to any work done by them.

that as schools tap into community assets (i.e. the cultural and natural resources, and the heritage, ideas and vision of community members) they will be able to provide more meaningful and relevant education for students, and students will have the skills, knowledge and citizenship skills to contribute to their community. Similarly, as communities tap into the school's resources (i.e. students' inherent energy and interest; the availability of productive, learning individuals; the teachers and administrators; the school building; technological resources; etc.), the community will gain spirit, vision and oftentimes, actual products that help them to strengthen some aspect of their community. The school will then gain community support and students will gain an understanding of and appreciation for the places they live, and (ARC, 1999a).

In 1999, the Harvard Graduate School of Education evaluated ARC, and published a two part report, *Living and Learning in Rural Schools and Communities* (ARC, 1999a and 199b). The report includes qualitative case studies of how students, teachers and community members have been affected by their participation in place-based initiatives supported by ARC. While ARC believes that place-based education must be quality education and will help students achieve high educational standards, the report focuses largely upon the processes teachers and community members took to initiate place-based curricula, and the social and developmental benefits to students, teachers, schools *and* the community. Like other place-based education initiatives, they are committed to helping students achieve citizenship skills, a key characteristic to achieving environmental behavior (Hungerford & Volk, 1990).

The State Environmental Education Roundtable (SEER) is an organization involved in researching and supporting place-based education (Chin, 2001). A collaborative environmental education organization consisting of educational agencies from twelve states nationwide (e.g. the Florida Office of Environmental Education, Maryland State Department of Education and California Department

of Education), it provides opportunities for members to exchange strategies to use the environment as a tool for improving education in grades K-12. In *Bridging the Achievement Gap* (1988), SEER documents the results of schools that had met their criteria of schools that use place-based education as a basis for their curriculum. SEER, primarily concerned with student achievement and school reform, utilizes the term “environment as the integrating context for learning” (EIC) as their definition for place-based education:

EIC learning is not primarily focused on learning about the environment, nor is it limited to developing environmental awareness. It is about using a school’s surroundings and community as a framework within which students can construct their own learning, guided by teachers and administrators using proven educational practices. EIC-based programs typically employ the environment as a comprehensive focus and framework for learning in all areas: general and disciplinary knowledge; thinking and problem-solving skills; and basic life skills, such as cooperation and interpersonal communications. (p.1)

SEER’s research provides positive evidence that EIC helps schools to improve both the culture and quality of education (Lieberman & Hoody, 1988). SEER continues to contribute to place-based education research, and work with state education and environmental education departments to influence school reform. They have developed numerous training and support materials, including workshops, curriculum development guides and ongoing staff support, to help teachers and school administrators initiate school reform and design curricula that are rigorous, meet state standards and provide positive learning opportunities for students (Lieberman & Hoody, 1998).

A third study, conducted by the National Environmental Education and Training Foundation (NEETF) documents efforts at five schools that utilize environment-based education. NEETF, chartered by the U.S. Congress in 1990, advocates environmental learning at the national level, supporting partnerships between government, businesses, citizen groups and individuals. Their mission

is to improve health, education, business, and ecological protection through innovative environmental education efforts. Their report *Environment-based Education: Creating High Performance Schools and Students* (NEETF, 2000) documents the results of five schools that use environmental education as a central focus of their curriculum. NEETF believes that environment-based education (EBE) can meet educational and societal goals:

The school reform movement is calling for well-educated individuals who have a deep and abiding knowledge of the world in which they live. Society is asking for citizens who are prepared to take active roles in their communities. Business is calling for “renaissance workers,” workers skilled in the leadership competencies that will be required in the increasingly complex global environment. Environment-based education (EBE) is a maturing discipline well suited to achieving these goals...EBE holds great promise for furthering school reform goals, creating active and engaged students, and preparing citizens to live and work in the 21st century (NEETF, p. 3)

NEETF asserts that EBE is powerful education, and that national and local efforts should be taken to make governmental officials, school administrators, teachers and community members more aware of its potential. NEETF is charged by the U.S. government to provide direction to the environmental education movement, and though the report is filled with rich case studies in which students are engaged in hands-on curricula utilizing natural resources, the report provides data on students’ academic achievements, and does not present results regarding characteristics of environmentally responsible behavior (NEETF, 2000).

NEETF, SEER and the ARC reports are decidedly concerned with educational reform, and in the case of the ARC, community improvement. While the programs supported by the ARC and documented by SEER and NEETF include aspects of environmental education, promoting environmental stewardship is not their primary goal. However, many advocates of place-based education use these studies to make the case that well-designed place-based

education initiatives will overcome many of the obstacles that have hindered schools from significantly incorporating environmental education into their curriculum, and will therefore more quickly achieve the goals of environmental education (Chin, 2001; Sobel, 2002).

In order to understand if place-based education can meet the goals of environmental education, it is important to identify why schools haven't historically devoted significant curricular time to environmental education (EE), and what aspects of place-based might help teachers overcome challenges teachers have faced in their attempts to bring EE into the classroom. It is equally important to discern what aspects of place-based education will be most valuable in helping students to gain the personal characteristics that may lead to environmentally responsible behavior.

Jack Chin, director of the Funders' Forum on Environmental Education, a subsidiary of the Tides Foundation in San Francisco, California, asserts that place-based education offers the proper balance of ideology, educational merit and practical application to help bring EE practices and goals into public schools (Chin, 2001). Chin (2001) and Lieberman (1995) contend that because traditional EE providers are most concerned with EE's goal of producing citizens who behave responsibly (Stapp, 1969), they do not provide ample effort to improving the overall quality of education. Therefore, they have been unable to convince teachers and administrators at the local, state or national level of EE's educational merit.

Research on the status of EE is consistent with Lieberman and Chin's assertions. The National Environmental Education Advancement Project (NEEAP), located at the University of Wisconsin-Stevens Point, supports the development and expansion of EE programs through research efforts. NEEAP reports that EE has gained some headway into mainstream education. Ruskey et al. surveyed 295 individuals connected to state-level EE programs (i.e. the

president of the state EE association; the EE specialist or person with EE responsibilities in the state’s department of education; the person with EE responsibilities in the state’s department of natural resources) and found that most states do not adequately support, either financially or philosophically, EE efforts. Comparing data from 1995 to 1998 shows that the number of states providing basic support for EE is steadily increasing. However, most states still lack EE requirements, and less than one-third have offices committed to environmental education. (Table 1).

Table 1: Change in number of state-level EE program components. National Environmental Education Advancement Project, 1998. (Ruskey, Wilke, & Beasley, 2001)

<i>Component</i>	1995	1998
Environmental education master plan	11	15
K-12 environmental education requirements	12	15
Coordinated in-service training for teachers	14	30
Environmental education training for teacher certification	3	4
Environmental education curriculum guide	14	10
Environmental education learning objectives	17	20
Environmental education grants programs	21	27
Environmental education assessments	3	19
State environmental education office	16	14
Interagency committee	23	28
Environmental education association	45	47
Environmental education on-line resources	11	22

Lieberman’s (1995) research is consistent with NEEAP’s. His survey of 43 federal, state and local agencies and non-governmental organizations found that

the vast majority of programs are grossly underfunded and understaffed, and that 70% of professional EE staff have degrees in either science or another discipline other than education or environmental education. He contends that this limits their interest and ability to convince educators of EE's educational merit. Therefore, EE professionals might not be prepared to work within the school system. Schools therefore do not significantly assimilate EE into the school system, resulting in low student exposure to EE.

While NEEAP (2001) found that the majority of students are involved in some form of EE, the content of what was being taught is questionable. Over 90% of teachers reported that the most frequent EE content they covered was recycling and waste management, as opposed to including ecological concepts or hands-on investigations. Lieberman's results were much lower; he found that about 25% of K-12 teachers are involved in teaching EE. Similarly, only about 24% of K-6 students, and about 15% of seventh through twelfth grade students are involved in EE programs. Furthermore, only a few programs that Lieberman surveyed indicated that they operated intensively at the school level; the vast majority of programs are implemented by individual teachers and are not school-wide (Lieberman, 1995). This has significant implications in how much support a teacher receives, the content they decide to include, and a teacher's ability to have long-term influence on students.

While NEEAP and Lieberman's research focused exclusively on national and state-level public and private programs and did not include the myriad of smaller non-governmental organizations and programs that influence EE, the research provides valuable insight into how much EE is being used in public schools. Because public schools receive mandates from the government, and teachers must therefore design their curricula to meet state and national standards and ensure that the majority of students pass standardized tests, many teachers and schools feel that there is little room for experimenting with activities

and curricula that they do not feel will meet their professional needs. Chin (2001) argues that EE advocates need to build effective networks and alliances, devise and implement sound public relation strategies, develop a stronger constituency base and generate the capacity to bring environmental education into policy-making domains. Capacity building would influence the amount states support EE efforts in the classroom (both financially and educationally), and a school's readiness to dedicate adequate time to EE.

If schools are going to take a leadership role and provide students the experiences they need to become environmentally responsible citizens, both pre-service and in-service teachers need training and support. Additional research on why teachers do not bring significant quantities of EE into the classroom is consistent with Chin and Lieberman's assertions. Several factors limit teachers' use of environmental education in the classroom. First, teachers are not prepared to use EE. A study of 715 institutions that have teacher education programs found that in the majority of schools environmental education is not formalized. For example, only 5% of the 424 responding schools offered a major in environmental education, and only 14% required a course in environmental education (McKeown-Ice, 2000). McKeown-Ice (2000) provides recommendations that are consistent with Lieberman's (1995) Chin's (2001) and Sobel's (2002) assertion: EE advocates need to formalize their approach and make EE an appealing educational method, and convince state and national education departments of its merit. This may trigger states to mandate aspects of EE into state standards and provide universities and other teacher training programs the incentive to proactively prepare teachers to use EE.

While numerous public and private programs provide EE training to in-service teachers, the vast majority of teachers devote minimal classroom time to EE concepts and activities. A collaborative research effort by the North American Association for Environmental Education (NAAEE), the Environmental Literacy

Council (ELC) and the National Environmental Education and Training Foundation (NEETF) found that out of 1505 public K-12 teachers nationwide, 70% included some aspect of EE in their curriculum. While this may sound promising, the quality and content of EE in the classroom varies greatly from one classroom to another. For instance, almost 90% reported that recycling and waste management is the most frequently included subject and 79.1% said textbooks were the most commonly relied upon source for teaching materials. Nearly 90% reported that discussion is the most frequent method to teach environmental topics. Interestingly, while 51.1% of teachers said that encouraging students to be active participants in protecting the environment was important, less than 20% of K-12 teachers used civic action as a method to teach about environmental issues (Disinger, McKeown, & Simmons, 2000).

There are multiple reasons for teachers to rely upon textbooks and discussion as opposed to authentic experiences in the natural world, thereby limiting the inclusion of ecology, natural history or other environmentally related topics into their classroom. The majority of teachers in the Disinger et al. (2000) report do not readily see how EE aligns with what they are required to teach, or how it can help them meet the rigors of standardized testing. Consequently, teachers have difficulty integrating EE into traditional subjects (Ham & Sewing, 1988; Meichtry & Harrell, 2002; Paul & Volk, 2002; Wade, 1996).

Many teachers perceive that environmental educators are more concerned with issues than providing quality education. EE often contains content and methodology that educators do not know and do not feel skilled to teach, and they do not feel adequately supported to overcome these challenges (Ham & Sewing, 1988). Disinger et al., (2000) found that 49% of the teachers they surveyed felt that teaching about the environment was irrelevant to their curriculum. Furthermore, pre-packaged EE curriculum guides contain isolated activities as opposed to a complete curriculum, thus inadequately teaching

concepts that need to be learned sequentially and through repetition (Van Maetre, 1999). Sobel (1998) also argues that EE programs are often issues driven and contain content beyond a child's control (i.e. rainforest deforestation), and are not easily connected to his or her home surroundings. Furthermore, while Disinger et al., (2000) found that only 1% of the teachers they surveyed cited resistance from parents or the school district as a reason for not including more EE in the curriculum, Sobel believes that teachers are apprehensive to offend parents and community members and therefore do not include local issues that might be environmentally controversial into the classroom.

Most importantly, research suggests that students need more than traditional short-term and sporadic EE if they are gain the knowledge, skills, attitudes and beliefs to behave environmentally (Athman & Monroe, 2002; Hart & Nolan, 1999; Leeming, Dwyer, Porter, & Cobern, 1993; Sobel, 2002). Several studies have found that successful school-based environmental education contains both knowledge based workshops (i.e. natural resources, forestry and wildlife management and soil and water conservation) and some sort of service-learning or action training in which students work on issue based projects (Jordan, Hungerford and Tomera, 1986; Ramsey & Hungerford, 1989 (Kraemer, 2002). The most successful environmental education programs begin in early childhood and are developmentally appropriate (Hart & Nolan, 1999), and often contain a mix of classroom activities and outdoor activities and field trips (Wendling et al., 1989; Wendling & Wuensch, 1985).

Place-based education efforts can synthesize EE best practices with intentional school reform efforts to create dynamic schools in which teachers are prepared and supported in their efforts to teach about the local community and environment. EE advocates can utilize sound research to prove that EE can be good education, and can help teachers to effectively meet professional goals; EE

advocates may then be able to contribute to the place-based education movement while maintaining the vision and goals of environmental education.

The Development of Environmentally Responsible Behavior

The goals of EE are to produce citizens who exhibit environmentally responsible behavior. Many place-based education programs are more immediately concerned with education reform. Yet many place-based education advocates, such as Chin and Sobel, have deep roots in EE and believe that place-based education will be the key to achieving EE goals. It is important at this point in the development of place-based education to understand the characteristics present in people who exhibit environmentally responsible behavior, and what experiences have led people to behave responsibly.

Hungerford & Volk (1990) provide a synthesis of personal characteristics associated with environmentally responsible behavior. These characteristics have been utilized as a basis for assessing program efficacy (Kraemer, 2002), and as the basis for providing guidelines for developing sound EE curricula (Hungerford, Peyton, & Wilke, 1980). Kraemer (2002) summarizes and defines the characteristics as the following:

Environmental sensitivity: a personal sense of empathy toward and sense of affiliation with the natural environment (Marcinkowski, 1993).

Personal responsibility (or commitment or investment): the assumption of personal responsibility encompasses “the recognition of the internalizing of responsibility for and the willingness to address environmental problems and issues” (Marcinkowski, 1993).

Locus of control (individual and group): individuals with an internal locus of control believe that as individuals they have control over events in their lives. Group (internal) locus of control refers to individuals’ perception of their effectiveness to bring about change as a group. Other individuals with an external locus of control believe that control over what happens is beyond their grasp. (Hungerford & Volk, 1990).

Knowledge of ecology: an understanding of the ecological basis for decision-making (Hungerford & Volk, 1990).

Knowledge of environmental issues: understanding the nature of specific environmental issues and their ecological and human implications (Hungerford & Volk, 1990)

Knowledge of environmental action strategies: knowing what citizenship strategies will help solve environmental issues (Hungerford & Volk, 1990).

Skills in using environmental action strategies: ability to use environmental action strategies to help solve environmental issues (Hungerford & Volk, 1990).

Intention to act: if a person intends to take some sort of environmental action, the chances that action will occur are increased (Hungerford & Volk, 1990).

The field of EE offers research, experience and expertise that can contribute to developing place-based education techniques that may help individuals to gain a suite of Hungerford and Volk's characteristics. EE educators have long relied upon Hugerford, Peyton and Wilke's (1980) synthesis of sound EE curricular development practices that lead students through progressive levels of education, from concept to action: Level I: Ecological Concepts: include a broad foundation of environmental science and ecological concepts; Level 2: Conceptual Awareness: build an understanding of how individual and collective behavior influences the relationship between quality of life and quality of the environment, and how insightful problem solving is needed to resolve the issues resulting from human actions; Level 3: Issue Investigation and Evaluation: develop the knowledge and skills needed to investigate environmental issues and to evaluate alternative solutions for addressing them; Level 4: Environmental Action Skills: develop the knowledge and skills needed to take positive action to resolve environmental problems.

Chin (2001) contends that this hierarchical approach to EE can be equally well applied to place-based education strategies; as place-based education is

incorporated as a basis for school reform, teachers can use this method to develop school wide curricula that builds upon past learning experiences from one year to the next. Chin interweaves the framework approach (concepts → issues → awareness → action) with David Sobel's age appropriate framework of environmental education, bringing the developmental aspects of place-based education to light. Sobel (1999) suggests that in the first stages of development, children need repeated interactions with nature to develop empathy. From the ages of seven to eleven the school curriculum should expand the scope into exploration of the local neighborhood. And finally, from adolescence through adulthood children need hands-on, service-learning projects to develop citizenship skills.

A closer look at the experiences people have had who devoted their professional careers to environmental conservation and education reveals insight into what kinds of experiences lead to environmental sensitivity and environmentally responsible behavior. In addition to conducting research, Chawla (1999) reviews nearly thirty years of research to generate an understanding of situations that encourage environmental sensitivity (Hungerford & Volk's initial characteristic associated with environmentally responsible behavior). Chawla's findings are consistent with Sobel's assertion: "the roots of environmental concern may lie in young children's initial fusion of their own feelings with their sensations of the world as a living being to which they are attached" (Chawla, p. 19, 1999).

While Chawla emphasizes that research is not conclusive and that "there is no single all-potent experience that produces environmentally informed and active citizens" (Chawla, p.20, 1999), she compiles a list of experiences that may work synergistically to influence people's behavior. Chawla (2000) interviewed 56 professionals who work in a broad range of conservation efforts (i.e. urban planning, wilderness protection and environmental education) and found that

people reported the most significant experiences that resulted in personal commitment and action towards environmental protection included childhood experiences in natural areas, family influences, participation in environmental organizations, negative experiences (i.e. loss of special natural areas) and education. Most people explained that their personal commitment began with formative childhood experiences, and that later experiences helped them to gain the skills and knowledge to contribute to the field of environmental protection (Chawla, 1999). While Chawla interviewed people who work within the environmental field, people will naturally choose a wide variety of career and lifestyle paths. People without careers in conservation have also had significant life experiences and also exhibit environmentally responsible behavior. It can be concluded, however, that if more people are exposed to a combination of “significant life experiences”, the chances that they will exhibit environmentally responsible behavior - - regardless of their chosen career path - - will increase. In Chawla’s and other studies, informal outdoor experiences and experiences of natural areas have consistently outranked formal education experiences. With significant educational reform, perhaps schools can become a place where people have valuable experiences that lead to environmentally responsible behavior.

Middlebury professor and nature writer John Elder (Elder, 1998) advocates for place-based education, asserting that it can become part of the traditional school system. He writes in his preface to *Stories in the Land, a Place-based Environmental Education Anthology*:

Our pressing need now is for a pedagogy that exposes people to the range of their possible relationships in the world, and that gives them the language and models to explore and express such affiliation within a vivid community of values...loving attentiveness to one’s bioregional community is a discipline, in the sense of being a life’s study (p. 12-13).

Elder provides examples of place-based curricula, encouraging educators to use interdisciplinary, hands-on activities to explore the stories of their communities and the landscape. He ascertains that schools, irrespective of their location, can ground their academic curricula into studies of local geological processes and climatic conditions, animal habitats, historical land use patterns, indigenous cultures, and agricultural and economic systems. This, he believes, will provide children the foundation to grow into compassionate individuals with an attachment to the places where they live, and the ability to communicate their knowledge and feelings about the natural world (Elder, 1998). An emotional connection with the natural world - - a connection that begins in childhood - - provides a lifetime of spiritual sustenance that helps define who we are as a species (Nabhan & Trimble, 1994) and establishes the personal grounding for behaving responsibly upon the landscape (Chawla, 1998).

Examples of Place-based Education Initiatives

Place-based education, when put into practice, may be more strongly linked to either social or ecological attributes of place. Because place-based education advocates are working towards school-reform and may not be as committed to the EE goals, elements of EE may be abundant, marginally present, absent, or interwoven throughout the curriculum. Some program examples are provided below.

Example One:

Yampa Valley, in the Northwest corner of Colorado, is an extensive watershed that extends over 165 square miles. The Yampa River connects four of the five schools participating in the Yampa Valley Legacy Education Initiative. Community interests in the Valley are often controversial; preservationists and conservationists vs. ranchers, developers and power plants. Diverse interests

have historically been competitive and resistance to environmental initiatives has been strong.

The Colorado Department of Wildlife worked with area students, teaching them how to collect valuable data about the river that they needed but were not able to collect themselves; students collected macroinvertebrate insects, took pH samples, and estimated water flow to determine water quality. They also research how the community uses the water, what sources of pollutions exist and how problems can be remediated. By acting as researchers, they learned valuable science skills, about human impacts on the ecosystem and how to contribute their findings to an organization outside of the school that has an authentic need. They learned through their investigations the components of an ecosystem and how humans might best be able to live more ecologically within that river system, and developed a closer connection to the river itself (ARC, 1999a).

Example Two

The Students and Teachers Restoring a Watershed (STRAW) program, a non-profit interagency program in Sonoma County, California, is partially funded by the San Francisco-based Center for Ecoliteracy. STRAW is an excellent example of a program that fosters community through service-learning. A middle school teacher started the program when she decided to focus her curriculum on a local endangered species. Since its inception in 1992, students have worked with local ranchers - - who had traditionally been resistant to ecological restoration initiatives on their land - - to restore local streams so that an endangered freshwater shrimp, *Syncaris pacifica*, might be restored. Students researched the shrimp and worked with the California Adopt-A-Species program and the Resource Conservation District to design habitat restoration techniques. They worked with local ranchers to plant blackberries and willows, and restore the stream. Students have come back to the stream every year; since then, the

streams have flourished, songbirds have returned and in one stream the shrimp has returned. Parents are strong supporters of the program, and are required to be part of the project. The Point Reyes Bird Observatory and the Marin Conservation Corps have joined the project, and multiple schools are now involved in the effort. By using good science and developing regional partnerships with multiple stakeholders, students have learned excellent ecological skills and made a significant contribution to the community (Stone, 2001).

Example Three

The ARC worked with hundreds of schools nationwide, supporting projects that are truly interdisciplinary and work closely with the community. One renowned project, the Appalachian Rural Education Network, strives to dispel negative myths about Appalachian culture and develop pride in citizens in communities throughout Appalachia. Students produce radio shows, create videos and write stories based upon interviews with relatives and neighbors. They learn about occupational and cultural history, and how, historically, businesses and corporations from outside the community have exploited natural resources and taken advantage of the rural poor. Students are taught to understand their heritage, drawing upon positive aspects and gaining the skills and confidence to create improvements. Students learn communication skills and valuable personal and professional skills from teachers and community members. Community members are brought in to start school based music programs that celebrate traditional bluegrass music, and collaborate with students to initiate community folk festivals (ARC, 1999a).

Characteristics of Place-based Education

The examples above show that there are multiple definitions and varying methodological approaches to place-based education. However, several

consistent characteristics of place-based education have emerged and are outlined by Woodhouse and Knapp (2002) in their brief overview of place-based education literature. While place-based education advocates may have a slightly different list of attributes, this provides a framework for understanding common components.

Place-based education emerges from the particular attributes of a place: the geography, sociology, politics, ecology and other dynamics of that place. This fundamental characteristic establishes the foundation of place-based education. Because place-based education is inclusive in its approach, it is inherently multidisciplinary. Students learn about their community from a variety of perspectives; students may learn about the scientific parameters that define a vernal pool, and then write poetry about their perception of the vernal pool, in either a science or an English class. Similarly, students in a Vermont French class may learn about traditional Quebecois ovens, interview their elders about their memories of using such ovens, and then build an oven. The examples provide evidence of a third characteristic of place-based education: it is inherently experiential, and may include a participatory action or service-learning component. Students may build a nature trail, learning about local natural history and land-use while providing a service to the local community. Some advocates insist that action must be a component if ecological and cultural sustainability are to result. Finally, place-based education reflects an educational philosophy that is broader than “learn to earn.” School is a place that provides valuable experiences to students, connecting self and community. This relationship is as important as academic achievement. Learning becomes a life-long experience.

Chin (2001) groups place-based education programs into categories according to whether they are used in combination with one another or may be incorporated individually. These include 1) *Cultural studies*: students conduct

investigations of local history and cultural phenomenon and identify themes that were important to the long-term viability of community; 2) *Nature studies*: students learn about unique features of their place through stream monitoring, restoration, gardening, often with emphasis on science and math; 3) *Real world problem solving*: students determine an issue that they want to explore in greater depth, participate developing curriculum, and work with the community to solve the problem; 4) *Micro- enterprises*: older students link with economic opportunities in their neighborhoods through real enterprise partnerships such as a recording studio; 5) *Community regeneration*: students learn to be citizens by being citizens, investigating issues and making recommendations to policy makers.

Place-based Education's Potential Shortcomings as a Method of Environmental Education

It is clear that place-based education may not always look like a more ecologically focused environmental education curriculum that teaches specific ecological content or promotes specific behavior. Leaders in the environmental education movement have long struggled with whether it is more beneficial to “infuse” or “insert” environmental teachings into the school curriculum and place-based education may become part of this discussion. People who are against infusing environmental education into all subject areas without including a clear mission believe that infusion weakens the goals and practices of EE. Van Maetre (1999) explains:

We believe that infusing the school curriculum with an environmental *perspective* could serve as an important supporting objective. We just disagree with the paramount status given that approach and the current benefits claimed for it. In other words, people should not confuse a general perspective or concern with specific understanding and applications (not to mention feelings). We believe that many environmental education leaders have it

backwards. The infusion approach should be the supplemental effort, not the primary learning model. (Van Maetre, p. 15, 1999).

Van Maetre continues, directly addressing what some may see as the sole purpose of place-based education:

Helping people become more humane, caring, etc., and helping them get in touch with the space they live in, are praiseworthy goals, but lumping them together with the goals of environmental education and serving up the results as the same thing just created confusion for all concerned (Van Maetre, p.15, 1999).

However, David Orr, Oberlin College professor, argues that an environmental perspective must be incorporated into all disciplines; history, ethics, sociology, political science, anthropology, economics, architecture, biology agriculture, and philosophy are all influenced by people's knowledge of and experience in the natural world. But he also argues that natural history is an essential area of study that should be valued as a discipline, like reading or math. Like traditional disciplines, natural history lessons should begin in early childhood. Studies about the local environment are intellectually valuable and stimulate the development of positive human characteristics, such as compassion and curiosity, and will lead to a society that is more ecologically literate and behaves sustainably (Orr, 1994). Age-appropriate investigations in the local landscape could give children the knowledge and skills they need to become wise, informed inhabitants and citizens in their communities.

I am not suggesting that Van Maetre or Orr are against place-based education; I am suggesting only that people who hold this viewpoint may feel that if place-based education is done without a strong intention to achieve the goals of environmental education, it may not be enough to teach students responsible environmental behavior. Place-based education may be a strong environmental education model that teaches specific, ecologically based understandings and applications. In some cases, however, it may not address

ecological concepts and concerns as strongly as some environmental education leaders might like to see, and it may result in a more “infusion” model (Chin, 2001). For example, programs sponsored by the ARC, and the Rural School and Community Trust (RSCT, 2003) are often quite humanities based and, while they are definitely place-based, they are not environmental education (ARC, 1999a).

While it is unclear exactly what processes lead to environmentally responsible behavior, place-based education efforts that contain best practices of EE may offer a well grounded approach that exposes many students to the natural world and gives them the opportunities to develop compassion within their community and understand their relationship to the earth and community members. However, if teachers do not have the proper training and support to include adequate amounts of natural history and ecological exploration in their curriculum, place-based education may not provide *enough* contact with the natural world. Studies of the natural world should be a significant part of a child’s education. There is room for both place-based education and natural history education, and environmental educators who want to use place-based education as a method for building capacity in schools will be well served to use existing research to continue promoting natural history and EE goals.

Potential Outcomes of Place-based Education

The Potential Power of Place

Thinking about place-based education is an exercise in shifting perspectives; it becomes unwieldy to pin-down a simple, all-inclusive statement that defines the goals and desired outcomes of place-based education. It’s a holistic approach to education. It’s a practical approach to environmental education. It’s also a philosophical approach to life, and a response to pervasive placelessness. Place-based education may be a potent model of education reform

that helps students - - and adult community members - - develop an authentic sense of place.

Haas and Nachtigal (1998), in *Place Value*, ask “What do students need to know about living well in their own communities? How does this affect them in the present and future?” Utilizing nonfictional and fictional literature they describe five values they believe are essential to “living well” in place that may result from place-based education: 1) *A sense of place*: education for living well ecologically; 2) *A sense of civic engagement*: education for living well politically; 3) *A sense of worth*: education for living well economically; 4) *A sense of connection*: education for living well spiritually; 5) *A sense of belonging*: education for living well in community (Haas & Nachtigal, 1998).

Haas and Nachtigal use writings by prominent nature writers, philosophers, and educational reformers concerned with society’s need to become more aware of and grounded in place. Many “values” that may result from place-based education are found in the values that arise from having a sense of place. Discerning what values may arise when people have a sense of place may help clarify how place-based education may influence students in their personal development. Below, I use some examples from *Place Value*, and draw from numerous other sources to substantiate the meaning of those values.

Value 1: A Sense of Place: Education for Living Well Ecologically

Living well ecologically requires at least a basic understanding of the natural systems that support life on earth. Young people should be encouraged - - and given the skills and knowledge - - to investigate their immediate surroundings and in later years apply those concepts and experiences to places beyond their home environment. Living well ecologically implies that citizens are ecologically literate: people have an understanding of how natural systems work, our place within the evolution of the earth, our dependence upon

ecological systems, and an understanding of how we are destructive to those systems (Orr, 1992).

By being “ecologically literate” Orr suggests we are able to “observe nature with insight, a merger of landscape and mindscape” (Orr, 1992, p.86). By combining knowledge with emotion, we have an understanding of our relationship with and dependence upon ecological systems. He further argues that, “the goal of education is not the mastery of subject matter but mastery of one’s person...” and continues, “I propose that knowledge carries with it the responsibility to see that it is well used in the world...” (Orr, 1994, p. 13).

People who live well ecologically understand that the land is a part of their lives, and knowledge of natural systems is valued and promoted as the very foundation for understanding ecological systems and issues (Thomashaw, 2001). As Aldo Leopold writes in *A Sand County Almanac*, we develop an ethic that is derived from realizing that “The individual is a member of a community of individual parts,” (Leopold, 1966, p.203) and that having a land ethic (living well ecologically) “changes the role of *Homo sapiens* from conqueror of the land-community to plain member and citizen of it. It implies respect for fellow-members and also respect for the community as such.” (Leopold, 1966, p. 204). Humans who live well ecologically also have personal restraint from consumptive desires and are aware of how we can live and use resources wisely (Nash, 1987). If people are ecologically literate, they will therefore use knowledge and skills to make wise decisions about personal lives, work, and communities, and use political, educational and economic arenas to create changes that benefit the environment. Living well ecologically, with a sense of place, means living within the earth’s limits (Orr, 1994).

Value 2: A Sense of Civic Engagement: Education for Living Well Politically

Living well politically happens when citizens of all ages practice true, participatory democracy in their local place and make political choices that are attuned to the local environment (Haas and Nachtigal, 1998). Orr (1994) asserts that “We need an ecological concept of citizenship rooted in understanding that activities that erode soils, waste resources, pollute, destroy biological diversity and degrade the integrity and beauty of landscapes are forms of theft from the commonwealth” (p. 168). Living well politically - - practicing citizenship - - needs to be grounded in the local community, and a patriotic life must include how society uses natural resources (Orr, 1994) and treats fellow humans:

Genuine Politics...is simply a matter of serving those around us: serving the community, and serving those who will come after us. Its deepest roots are moral because it is a responsibility, expressed through action, to and for the whole. (Havel, p. 150 in Orr, 1994).

Schools that encourage citizenship at the student level, allowing students to contribute to the curriculum and classroom rules, encouraging them to participate in community processes such as participating on watershed or recreation councils, investigating issues of local concern and writing letters to local media and representatives are all examples of students participating in the local political landscape (Smith, 1999).

Value 3: A Sense of Worth: Living Well Economically

Living well economically means that economies are community-scaled and that people do not have to flee the places in which they live to find employment that serves their basic human needs (Orr, 1994). Unfortunately, our education and economic system is based upon *individuals* achieving their own personal successes often without regard for how achieving their highest financial potential will impact local economies, community structures and individual lives: “Construing life is an individual enterprise...necessitates a government

based on rights, an economy based on accumulation, and an educational system that reifies the notion that life is an individual enterprise” (Theobald, p. 31). Conversely, a locally based economy that respects the limits of natural resources and fragility of natural systems, and provides jobs for local people, creates a healthy and vibrant community.

In a sustainable society with a local economy, land and people are no longer seen as a commodity to be sold for corporate gain, and management decisions can no longer exclude the ecological health. Size and scale of local economies becomes manageable by local people, and when based on a natural resource, involving environmental ethics in economic decisions becomes paramount for long-term viability. Berry (1993) explains why it is important to shorten our “economic boundaries”:

The standard by which we choose must be the health of the community - - and by that we must mean the *whole* community: ourselves, the places where we live, and all the humans and other creatures who live there with us. In a healthy community, people will be richer in their neighbors, in neighborhood, in the health and pleasure of neighborhood, than in their bank accounts. It is better therefore, even if the cost is greater, to buy near at hand than to buy at a distance. It is better to buy from a small, privately owned local store than from a chain store. It is better to buy a good product than a bad one...do everything you can to see that your money stays as long as possible in the local community. (p. 40)

Living well economically is inextricably linked to living well politically and living well in community. Informed, wise decisions about how to live in one area of our lives feeds systematically into other parts of our lives. It gives true “value” to our individual and communal financial means and improves the lives of those around us (both ecological and human resources) (Berry, 1993; Orr, 1992, 1994).

Value 4: A Sense of Connection: Education for Living Well Spiritually

A connection with other organisms, plants, animals, human or other, is a part of a meaningful life (Elder, 1998). Developing compassion for others and taking pleasure in the world around us, and feeling like we are part of something beyond and outside of ourselves is part of the essence of being human. Writer Gary Snyder (1990) demonstrates how place-based, or bioregional living supports this value:

The bioregional undertaking, for us here and now, is to learn our region; to declare that we are going to stay here and be at home in it; and to declare that we're going to take responsibility for it and treat it right. And then to take pleasure in that and find what poems and songs, what art forms, what drama, what operas we can come up with...an old place-based culture has a lore, a body of literature, songs, a kind of weaving, sculpture, a design on pots, that speak in subtle ways about the land. (p. 14)

Snyder believes that having compassion for life other than our own is necessary for meaningful and sustainable, bioregional lives. Through his spiritual perspective, he shows that humans are part of a larger whole and for the well being of all life we cannot separate ourselves from this whole; there is no longer "a hierarchy of dominance" that ultimately leads to environmental and human destruction (Snyder, 1990).

Ecologist E.O.Wilson's (1984) passionate description of "biophilia" is another example of a spiritual perspective on living more intimately with the earth:

Biophilia is...the innate tendency to focus on life and lifelike processes." He continues, explaining the value of biophilia, "I will make the case that to explore and affiliate with life is a deep and complicated process in mental development. To an extent still undervalued in philosophy and religion, our existence depends upon this propensity, our spirit is woven from it, and hope rises on its currents. (p.1)

When considering what it means to be human, hope, compassion, biophilia, love and other expressions and definitions of spirituality become worthy outcomes of a life well lived. Intentional experiences with the natural world help us develop into compassionate beings with an understanding of our connectedness to the rest of the world. Gary Snyder (2000) believes that knowing place is a physical, mental and spiritual exercise that takes practice and discipline, and starts in early childhood.

We learn a place and how to visualize spatial relationships, as children, on foot with imagination. Place and scale must be measured against our bodies and their capabilities. Automobile and airplane travel teaches us little that we can easily translate into a perception of space (Snyder, 2000).

While a thorough exploration of spirituality is beyond the scope of this paper, it is certainly plausible that an education that presents mindful, reflective opportunities for truly knowing the places we live contribute to people's spiritual development and awakening.

Value 5: A Sense of Belonging: Education for Living Well in Community

Living well in a community means that we work in concert with fellow citizens and intentionally create the place where we live. We tell and retell the stories of the people who have lived in our communities before us. Through our work, our spiritual lives, and in our choices of how we spend our free time we contribute to the well-being of others (Haas & Nachtigal, 1998).

Being "in community" does not mean that everyone will agree upon a common goal or how to achieve that goal. It does mean, however, that people see themselves as part of a larger system: a natural system, a political system, an economic system, and a social system:

A good local culture, in one of its more important functions, is a collection of the memories, ways, and skills necessary for the observance of preserving the local soil. A human community, if it is

to last long, must exert a sort of centripetal force, holding local soil and local memory in place. Practically speaking, human society has no more work important than this. (Berry, 1990, 154-155 as cited in Haas & Nachtigal, 1998p. 22).

To become a “healthy” community, people take into consideration the well-being of all inhabitants and are-informed by their own complex connections to other humans and all other life forms. A healthy community is “self-sustainable” and “self-supported” because it maintains healthy economic, cultural and ecological systems (Berry, 1993).

School can provide an active environment in which students, neighbors, educators and parents share in the needs of the community (Theobald, 1997).

Dewey’s (1915) almost century old philosophy is powerful, even today:

The school itself shall be made a genuine form of active community life, instead of a place set apart in which to learn lessons. A society is a number of people held together because they are working along common lines, in a common spirit, and with reference to common aims. The common needs and aims demand a growing interchange of thought and growing unity of sympathetic feeling. The tragic weakness of the present school is that it endeavors to prepare future members of the social order in a medium in which the conditions of the social spirit are eminently wanting ((Dewey, 1915).

Providing people opportunities to become valued, active members of their communities is perhaps one of the most discussed outcomes of place-based education (ARC, 1999a). Intentionally breaking down the barriers between self and other, school and community, teacher and parent, land-owner and conservationist builds relationships. Providing more avenues for people to have conversations with one another, learn from one another, share in each other’s work, and take leisure time with neighbors, builds a strong foundation from which community members can make wise decisions about their future and celebrate their past.

Evidence From the Field

Place-based education has the potential to achieve broad societal goals while meeting specific academic demands. While many people advocate the potentials of place-based education, only a handful of studies exist as a testament to its strengths and weaknesses as an educational reform method or as an approach to EE. However, the research that does exist is overwhelmingly positive, particularly in its effectiveness as an educational strategy, and indicates noteworthy impacts on students, teachers, schools and community members.

I have summarized outcomes from existing research into the same categories that exist in my research: teacher and school outcomes, student outcomes, and community outcomes. In any place-based education initiative, these are the most likely stakeholders concerned with place-based education processes and outcomes. This summary will help people interested in place-based education to understand its potential power and its possible shortcomings.

Teacher Outcomes

Teaching place-based curricula is not easy. Not all schools are immediately convinced of its potential; teachers must have faith in a flexible curriculum that responds to their class's explorations in the community. For example, if a chemistry teacher decides to collaborate with a local watershed organization and have her students research water quality in the local stream, she is no longer teaching in a contained environment and cannot rely upon preexisting lesson plans and textbooks. Students' interests and the results of their sampling may dictate that they research causes of stream pollution. Teachers in this situation may not feel comfortable doing outside fieldwork, and may feel exposed and vulnerable to their students and the community (ARC, 1999a; ARC, 1999b). Developing ongoing, professional relationships with community

members also stretches teachers to use skills they may not have previously developed (Kesson & Oyer, 1999) in their career.

Undoubtedly, not all teachers are persuaded to change and many teachers who are part of place-based schools incorporate little or no place-based activities in their school. Teachers who use place-based education, however, are often convinced of the benefits and despite a steep learning curve that puts extra demands on their time and energy, report never wanting to go back to their previous teaching practices. They find a renewed sense of commitment to and engagement in teaching (ARC, 1999a).

A summary of Lieberman and Hoody's research is persuasive. Many of the 250 educators who were part of the study reported that using Environment as an Integrating Context for Learning (EIC) approaches has been the highlight of their career. In particular:

- ◆ *Teachers had increased engagement in and enthusiasm for and commitment towards teaching (95%).* Adopting EIC revitalized their profession.
- ◆ *Teachers had improved interactions and developed working relationships with students and colleagues (94%).* Because students' interest increased, teachers and students became more of a team, developing a positive learning environment.
- ◆ *EIC expanded opportunities for professional development and opportunities to explore new subject matter (95%).* Teachers learned new content matter and teaching skills and developed interdisciplinary curricula.
- ◆ *Teachers exhibited a greater willingness to use innovative instructional strategies (96%).* EIC uses problem-solving, project-based teaching strategies. Teachers enjoyed using these approaches, and incorporated alternative teaching strategies, authentic assessment, team teaching and cross-disciplinary instruction more than they had previously.

Qualitative evaluations of the programs funded by the ARC offer similar evidence; teachers found place-based education to be professionally and personally engaging and intellectually stimulating. Despite the ARC's attempt to

work with whole schools and communities, they are quick to admit that the vast majority of their sites are still skeptical of making place the center of curriculum (ARC, 1999a). Efforts are largely increased as teachers communicate with one another and with their administration, voicing concerns, working through challenges and celebrating successes. Teachers are accustomed to working in isolation and do not readily work with their colleagues. As teachers using place-based approaches invite their colleagues to see student work, however, more faculty shift to using place-based education practices.

Both the SEER (1998) research and the ARC (1999) evaluation found that administrative support is paramount to bringing more teachers into the process and improving the quality of place-based programs. As administrators are brought into the process, they understand its value and are more willing to shift schedules and allocate school resources to teachers' efforts.

Despite the positive teacher outcomes documented by SEER and Annenberg evaluations, there is little additional research to help advocates understand how teachers can be better trained and supported to conduct place-based education activities. My research investigates how the Community Mapping Program (CMP), a place-based education professional development model based at the Vermont Institute of Natural Science in Woodstock, Vermont and funded by the Orton Family Foundation of Rutland, Vermont, affects educators' teaching practices and discerns how CMP could better provide teachers with the tools and support necessary to utilize local resources in their classroom. Identifying the challenges teachers face incorporating place-based education into their classrooms will help inform the process and the practice of place-based education.

Student Outcomes

While promoting the theoretical benefits of place-based education provides hope, it is critical for advocates to substantiate the potential power of

place-based education with evidence from the field. Again, SEER's (1998) groundbreaking report points to exciting outcomes. They found that students attending schools using the environment as an integrating context for learning (EIC) were academically successful and often exceeded their peers. In particular, interviews with over 250 teachers and administrators, four different surveys with teachers, and interviews with over 400 students, as well as comparative studies of standardized test scores, grade point averages and attitudinal measures, provided positive evidence of the benefits EIC. A summary of academic and behavioral student outcomes is provided below.

Fourteen of the 40 schools in the study used quantitative assessment measures to compare students' achievement who are involved in EIC curricular against those who are not. Ninety-two percent of these comparisons indicate that in traditional academic subjects, students outperform their non-EIC peers. In particular comparative studies of achievement data and interviews with teachers and students in EIC classes found that (percent of survey respondents):

- ◆ *EIC students had an improved development of language arts skills (93%)*
- ◆ *EIC students had greater enthusiasm for language arts (94%)*
- ◆ *EIC students had more success in communicating with others (94%) and with public and private agencies (91%).*

Research was consistently positive in social studies, math and science. In particular, EIC students had:

- ◆ *An improved understanding of mathematical concepts and content (73%)*
- ◆ *A better mastery of math skills (92%)*
- ◆ *More enthusiasm for studying math (89%)*
- ◆ *Greater enthusiasm and interest in learning math (98%)*
- ◆ *Greater comprehension of social studies content (95%)*
- ◆ *More advanced skills in applying civic processes to real-life situations (97%)*
- ◆ *Growing enthusiasm for social studies (95%)*

- ◆ *Increased knowledge and understanding of science content, concepts, processes and principles (99%)*
- ◆ *Better ability to apply science to real-world situations (99%)*
- ◆ *Greater enthusiasm and interest in learning science (98%)*

SEER also found that students developed reasoning through environment-based learning. Educators reported that EIC influenced students' ability to think through problems and develop strong reasoning skills. In particular, teachers felt that students:

- ◆ *Increased their ability to think creatively (98%)*
- ◆ *Had greater proficiency in solving problems and thinking strategically (97%)*
- ◆ *Were better able to apply systems thinking (89%)*

SEER attributes the positive results to numerous factors that are common to many place-based education initiatives. Place-based models engage students in real-world learning. Students utilize their own minds for authentic purposes in real-world settings; utilizing the surrounding landscape and community provides a rich learning experience. As students gather and analyze data pertinent to their studies, they gain awareness, knowledge and skills that are immediately applicable. In addition, students in EIC programs often work together, learning to work with one another and treat each other with respect, together postulating and formulating ideas and conclusions about what they are experiencing. This combination of experiences creates a positive learning atmosphere and contributes to students believing school is a meaningful experience, a critical component of their personal lives as opposed to something outside of their own immediate experiences.

The National Environmental Education and Training Foundation's (NEETF) report is consistent with the SEER study. Five schools were chosen because they used environment-based education as a core instructional strategy.

Unlike the ARC's research, which focuses primarily on rural schools, most of the NEETF schools were in racially diverse, low-income urban neighborhoods. This study found that reading and math scores improved; students performed better in science and social studies; students were better able to make connections and transfer their knowledge from familiar to unfamiliar contexts; students learned to *be* scientists, not just do science; and many students who had been traditionally challenged by academics were far more engaged as school became a place of active, hands-on learning (NEETF, 2000).

The evaluations of the ARC's efforts (ARC, 1999a and ARC, 1999b) use qualitative case studies of individual schools to reveal similar results. While teachers acknowledged the challenges involved in moving away from typical didactic teaching styles, they were surprised and impressed by students' learning and achievement. Project evaluators and teachers reported that students demonstrated high levels of academic skill, content knowledge and intellectual agility in conducting research and using local resources (i.e. historical materials, research equipment, technological tools).

Place-based curricula tend to include service-learning projects in their community, or culminate in some kind of presentation (i.e. constructing a map, website, trail, brochure, radio show, drama production), positively affecting students' commitment to their work, understanding of the content and retention of what they have learned. Teachers felt that the final products students created were more thoughtfully presented because they performed an authentic function in the local community; teachers felt that students were more careful about the quality of their work and concerned about the academic and personal detail. Students were also more quickly and effectively able to apply what they learned to other subjects and areas of their lives (ARC, 199a).

When comparing place-based education outcomes to Hungerford and Volk's (1990) list of characteristics associated with people who behave

environmentally, we find a few key outcomes of place-based education that indicate that it may indeed influence a student's environmental behavior. In particular, students have authentic experiences in which they gain valuable citizenship skills and feel that they are part of a community. While it is difficult to assess the development of citizenship skills, the Annenberg reports were filled with qualitative case studies suggesting that students involved in place-based curricula wanted to learn more about the world around them, wanted to know more about local issues, and wanted opportunities in which they could influence their community. Projects that had a service-learning component were more effective than those that did not involve students in producing a practical product (ARC, 1999a; Stone, 2001). Service-learning may be one of the most powerful elements of place-based education initiatives. Service-learning teaches practical skills and promotes responsible citizenship behavior (Barber, 1992; Kesson & Oyer, 1999; ARC, 1999a; ARC, 1999b; VCW, 2002).

Service-learning is also a strong teaching technique; it facilitates positive learning experiences by providing a real-world context for difficult concepts (Bouillion & Gomez, 2001; Proctor, 1990). In addition, students learn to work together on projects, share skills, and respect differing opinions (Barber, 1992). Thousands of schools nationwide base daily curricular activities on service-learning projects (Wade, 1997).

An evaluation of the Chesapeake Bay Foundation's (CBF) environmental education programs found that including a service-learning component has also influenced CBF's programs; students who participated in short-term CBF programs that had a service-learning component gained more of Hungerford & Volk's (1990) characteristics that lead to environmentally responsible behavior. In particular, students who participated in a service-learning program showed stronger group locus of control, and increased intention to act. It is likely, therefore, that students involved in more intensive place-based education

programs that have properly designed service-learning projects will be able to achieve many of Hungerford and Volk's (1990) characteristics.

A service-learning project in an elementary school could influence a child to become an engaged citizen throughout his or her life. The project could also remain an isolated experience. At this point in the evolution of place-based education research, it is difficult to conclusively assert that place-based learning experiences will have influence children throughout their lives. But it seems likely that exposure to local communities and practical experiences in which students can act as involved citizens in their communities might result in producing responsible citizens.

Place-based educators will increase the impact of hands-on service-learning projects by taking full advantage of the expertise provided by organizations committed to the best-practices of service-learning. The National Service Learning Cooperative (1988) asserts that effective service-learning maximizes student participation. While involving students in any kind of service-learning may be a valuable experience, involving students in selecting, designing, implementing and evaluating the project will provide them the best chances for the development of academic, personal and citizenship skills (NYLC, 1998).

Community Outcomes

Place-based education efforts often utilize numerous community resources, and may combine the efforts of nature centers, historical societies, watershed organizations, arts councils, musicians, farms, businesses, and town officials who become informants, friends, mentors and educators.

Perhaps most importantly, community members may become actively engaged in the well-being of the school (ARC, 1999a). Intergenerational activity promotes civic engagement by organizations and community members who have not previously been involved in school (ARC, 1999a; Stone, 2001).

Advocates believe that a strong school-community relationship sparks interest that can breathe life into communities and renew faith in schools (Chin, 2001; Theobald, 1997; ARC, 1999a; ARC,1999b). Community involvement may also lead to a culturally literate community that is more informed about, and more openly able to discuss, local ecological, environmental and social issues (Sobel, 2002; VCW, 2002).

Limited research exists on place-based education influence on communities. The SEER report offered no quantitative evidence that EIC affected communities, though one could extrapolate that people from outside the community were involved in EIC curriculum. The NEETF report's study provided heartening case studies describing students' participation in their communities, but like the SEER report, was focused on student achievement and school change.

The evaluation of the Annenberg Rural Challenge projects (ARC, 1999a) offered the most insight into the potential impacts of place-based education upon communities. Despite the potential positive benefits of strengthened school-community partnerships, ARC found that some of the biggest constraints to developing place-based education initiatives came from the community itself. Many of the rural communities they work with are struggling to survive, and people cannot find work. Restructuring the school is not their first priority, despite the fact that the schools themselves are in the export business, producing students that will not be able to find employment within their home communities. Community members' shame, guilt and anger can get in the way of working towards change within the school system, as they feel they do not have the funding for school improvement.

There are positive examples of students involved in place-based education contributing to community improvement. In one impoverished South Dakota community, students at the local high school developed an action committee to

investigate the flow of money within their community. Students did an involved economic analysis, and provided public presentations. Because of the students efforts, community members and businesses shifted their spending patterns and business practices to stop the drain of resources and money to businesses outside of the community (ARC, 1999a). This would not have happened if students had studied traditional economics out of a standardized textbook, with no discussion of its relationship to their own communities.

Place-based education may also improve communication between students and their parents. Research suggests that students who engage in learning activities that are coupled with a service-learning component, are more excited about what they learn and eager to discuss it at home. Students may even stimulate family members to become involved in local issues (Ballantyne, Fien, & Packer, 2001). Teachers and students involved in place-based education initiatives have also convinced community members who have traditionally been resistant to environmental action to not only discuss their perspectives on personally challenging land issues with students but to help students and conservationists restore critical habitat (Stone, 2001).

The Center for Ecoliteracy, a San Francisco Bay organization committed to school and community improvement, was instrumental in the success of one school's place-based initiative, the Edible Schoolyard. The Martin Luther King Jr. Middle School ripped up its parking lot in 1995 and put in a garden that became in only a few years a focal point for the school's curriculum. Students now grow their own snacks, learn organic gardening techniques, and learn science, math, art and cultural studies in the garden. The initiative has since given momentum to the Food Policy for the Berkeley Unified School District, which is planting the seeds for school food programs to purchase locally grown produce in the district's school cafeterias. This is a rewarding educational experience for students, provides healthy nutritious meals to school communities, and equally

important, supports local farms and associated farm businesses. This tri-part mission is an excellent example of both living well ecologically and living well economically (Stone, 2002).

Community members who come into the school and share their expertise as artists, engineers, builders, historians, and scientists also enrich the educational value of schools while at the same time help stretch limited school budgets (ARC, 1999a).

School community partnerships stimulate civic engagement by community members and students, and impart feelings of pride and value among students and community members. These are important outcomes to consider when investigating the impacts of place-based education, and how to foster strong relationships between school and communities.

Research on place-based education's impact on communities is, however, limited, and ongoing research is necessary to identify long-term impacts of place-based education, improve practices and possibly convince communities, school administrators and teachers of place-based education's potential long-term impacts.

Incorporating Place-based Education into Schools

Below, I present a summary of the challenges of place-based education, and include a discussion of best-practices related to professional development. It is admittedly difficult to discern challenges from the three reports on place-based education; they are often couched within the recommendations and referred to as "best-practices." Therefore, I have created a summary of existing research on best practices of environmental education professional development, and service-learning practices (which many place-based education projects contain). Elements of these practices are discussed below and lists of professional development best-practices and service-learning best practices are found in the Appendix of the Community Mapping Program evaluation.

Transforming traditional schools is a long and laborious task that requires time and patience. Teachers are the primary agents of change in education (Fullan & Stiegelbauer, 1991; Winther et al., 2002), and place-based education and service-learning initiatives require teachers to undertake new and complex teaching strategies. Teachers who try new teaching methods find that pedagogical change is stressful (Fullan & Stiegelbauer, 1991; Winther et al., 2002). Teachers who use place-based education techniques find that it is incredibly time-consuming, requires additional personal time to design curricula and subsequent activities, does not fit in easily with their daily schedules, and requires them to develop assessment tools that are applicable to activities yet meet state and national standards and will help students to succeed on standardized tests (ARC, 1999a). Projects that contain a service-learning component have the additional challenge of involving students in the development of the service-learning project (VCW, 2002).

But challenges should not be seen as prohibitive. When teachers exert significant effort to make change, they are more likely to sustain the change because they have come to an understanding of the new methodology; the new teaching practice has gone beyond being an occasional tool to an embodiment of a new pedagogy (Berman & McLaughlin, 1978; Winther, Volk, & Shrock, 2002). This may be especially true for place-based education initiatives that opt for whole-school reform and are able to gain collegial, administrative, and community support. The SEER and Annenberg reports reiterated the value of administrative and collegial support. EE research also concludes that teachers who are supported in their attempt to change their teaching practices will be more likely to create real change.

Successful professional development models help teachers gain the motivation, confidence, knowledge, and skills needed to design successful place-based education projects, helping teachers accomplish their personal,

professional and academic goals. Professional development models that have proven to be effective are flexible, allowing each teacher to adapt the model to his or her own uses (Winther et al., 2002). If professional development models contain new concepts (i.e. ecology, field research, etc.), they are most successful when they emphasize a small number of concepts in depth (Carpenter, 1996) and provide opportunities for teachers to apply the concepts. Most teachers, regardless of their discipline, are not trained researchers. Place-based education, however, involves field research. Whether studying the ecology of a forest or investigating local history, place-based education exposes this deficit and can be intimidating. Teachers may not be knowledgeable of the subject matter or know appropriate research techniques. Engaging teachers in research during trainings boosts a teacher's understanding of challenging concepts, issues, and methodologies. Teaching them how to conduct research will give them the knowledge and skills needed to design more effective studies with their students, and will help them to make use of local ecological resources and issues outside their classroom (Dresner, 2002; Shepardson, Harbor, Cooper, & McDonald, 2002).

Successful EE professional development programs also give teachers adequate time to plan the curriculum, discover local resources and build appropriate professional and community support. They also provide support after a workshop is over, building a working relationship between the teacher and the professional development provider (Paul & Volk, 2002; Winther et al., 2002). Programs that provide equal focus on developing rapport between teachers within a school and teachers in other schools that are trying similar techniques is also important. This provides opportunities for self and group reflection, and a place for teachers to share ideas (Dresner, 2002; Winther et al., 2002).

Service-learning efforts also offer many suggestions for professional development and support. Many of the service-learning practices presented in the Appendix come from *Vital Results Through Service-Learning* (2001), a report published by Vermont Community Works (VCW), a non-profit partner of the Vermont Department of Education. VCW researched service-learning efforts initiated by the Vermont Rural Partnership, and interviewed over 280 teachers, school administrators, students, community members, parents and school board members to discover how service-learning and community-based education affects schools and communities. While the report briefly touched upon the challenges teachers faced, they couched most of the challenges as a list of best-practices of service-learning. They combined their findings with information from the National Youth Leadership Council and the Corporation for National Service, to generate a comprehensive and informative list of best-practices that will help educators, schools and other interested programs who wish to use service-learning and community-based education (VCW, 2002). Because the Community Mapping Program contains a service-learning component, this list is found in the evaluation's Appendix.

Conclusion

Place-based education has the potential to dramatically influence school culture. Teachers who incorporate place-based education into their classroom teach from a variety of disciplines, use hands-on interdisciplinary techniques that can respond to the interplay of economic, ecological and cultural systems in their communities. Though scholars and educators have long realized the importance of bringing the classroom alive with explorations into the local communities, training teachers and working with school systems to ground their curricula in place-based education techniques is relatively new. Preliminary research provides overwhelming evidence that place-based education is sound education,

and students who participate in curricula grounded in the local gain academic knowledge and practical skills that exceed those of their peers.

Many environmental education programs and organizations, including the Vermont Institute of Natural Science's Community Mapping Program (CMP) are turning towards place-based education as an education reform model that may also achieve environmental education (EE) goals: developing citizens who behave responsibly. Critics of traditional EE argue that they have not provided the support that teachers need to bring EE into the classroom, nor have they provided ample evidence to secure the academic value of EE.

Depending upon their particular focus, programs that advocate for the use of place-based education may be interested in a historical, cultural or ecological program. In practice, place-based education projects may be quite similar to traditional EE curricula. Or, they may contain very little ecological content, and may not address environmental issues of local concern, or help students to reflect upon their relationship to the natural world. Like the use of EE, a teacher's particular curricula will most likely reflect his or her particular knowledge and interests, the administration's support and the community's characteristics and needs.

The content of the place-based education curricula, the amount that students are involved in the project's development, and the amount of service-learning in the project will most likely influence the knowledge students gain, and extent of personal characteristics associated with environmentally responsible behavior. Students involved in place-based education efforts gain an increased awareness of their community, and depending upon their project's focus, may gain an increase in their understanding of local issues. While there is currently little research to attest to place-based education's actual influence on students' behavior towards the environment, students who learn about their communities and the local landscape, and work on projects with real-world

application may gain the compassion, awareness, knowledge, practical skills, and belief in their own ability to make change needed to become informed, responsible citizens.

Place-based education advocates who wish to use place-based education as a method of achieving EE goals will benefit from learning from past EE efforts; developing professional development models that train pre-service and in-service educators to use the local natural and cultural environment may help teachers and schools overcome boundaries that have been inherent to EE.

It is important to note that place-based education advocates appear to assume that study of the local environment will be inserted into existing curricula; most teachers do not currently feel they have the training needed to teach ecology and, as they have done with traditional EE approaches, may minimize their efforts to teach natural history. Teachers still need training in natural history, and need to learn how to conduct ecological research, how to utilize natural history writings, or how to develop exercises for students to reflect upon their experiences in the natural world. If they do not have this training and support, their place-based curricula may not include adequate opportunities for students to gain the knowledge, awareness and skills to behave in an environmentally responsible manner.

Place-based education advocates who wish to use the educational model to achieve EE goals are encouraged to keep in mind EE goals and the values that may be attained when one has a sense of place. It appears that place-based education advocates are not encouraging schools to include natural history or ecology as a stand-alone discipline, as some EE advocates would like to see. Students need to be facile in ecological knowledge and environmental sensitivity to understand their connectedness to the natural world, and potential impacts of human behavior. VanMatetre and Orr believe that studies of the natural world could replace major portions of traditional science curriculum, or be taught as a

discipline, alongside math, history and English. While place-based education efforts are interdisciplinary, it is doubtful that most schools would eliminate traditional subjects. It is also implausible that without concerted effort, traditional content in science will be replaced or significantly augmented with studies of the natural world. Place-based education may indeed be a powerful tool for achieving EE goals and creating powerful learning opportunities. However, there is room for both place-based education and the development of strong natural history curricula.

It is difficult to transform schools. Numerous barriers exist, including the structure of the school day, the need to cover enormous amounts of curricular content, and the drive to make sure that students excel on standardized tests. Place-based education programs that commit to helping teachers overcome these barriers will see the strongest, most, long-lasting change in teachers' pedagogy, the school's education environment and student knowledge and behavior.

Place-based education advocates will benefit from patience and persistence. Continued research and evaluation will help programs sidestep problems that have been inherent in school reform and environmental education initiatives. Programs that bring community members, parents and administration early in the process may be able to significantly influence school curricula and achieve program goals.

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