
Prepared for:

COMMUNITY MAPPING PROGRAM - The Orton Family Foundation and the Vermont Institute of Natural Science

CO-SEED - Antioch New England Institute in partnership with… Appalachian Mountain Club, Boston Nature Center of Mass Audubon, Dudley Street Neighborhood Initiative, High Five Outdoor Adventure Program, Hulbert Outdoor Center, Prescott Farm of the Audubon Society of New Hampshire, and Zoo New England

FOREST FOR EVERY CLASSROOM - Shelburne Farms, Marsh-Billings-Rockefeller National Historical Park, Green Mountain National Forest, the Northeast Office of the National Wildlife Federation, the Conservation Study Institute, and the Northern Forest Center

SUSTAINABLE SCHOOLS PROJECT - Shelburne Farms and the Vermont Education for Sustainability Project

THE UPPER VALLEY COMMUNITY FOUNDATION


October 6, 2004
The Place-based Education Evaluation Collaborative (PEEC) is a unique partnership of organizations whose aim is to strengthen and deepen the practice and evaluation of place-based education initiatives. PEEC programs (and organizations) include the CO-SEED Project (Antioch New England Institute); the Community Mapping Program (the Orton Family Foundation, Vermont Institute of Natural Science); the Sustainable Schools Project (Shelburne Farms, and the Vermont Education for Sustainability Project); and A Forest for Every Classroom Project (Shelburne Farms, Marsh-Billings-Rockefeller National Historical Park, Green Mountain National Forest, the Northeast Office of the National Wildlife Federation, the Conservation Study Institute, and the Northern Forest Center). In addition, the Upper Valley Community Foundation provides funding and support for several of these programs through its Wellborn Ecology Fund, as well as financial, administrative and staff support for collaborative evaluation and research efforts.

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- Dr. Tom Marcinkowski of the Florida Institute of Technology;
- Dr. Michael Murphy of Harvard Medical School;

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Finally, we wish to extend a particular thanks to the individual teachers, students, community members, and program staff who so graciously participated in this evaluation.

NOTE:

This report was authored by PEER Associates, Inc. A more complete description of the evaluation personnel involved in this project can be found in the Introduction of this report. Evaluation Co-Directors for PEER Associates Amy Powers and Michael Duffin can be contacted at amy@PEERassociates.net or michael@PEERassociates.net.
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EXECUTIVE SUMMARY

The Place-based Education Evaluation Collaborative (PEEC) is a group of people representing more than a dozen organizations that, in various configurations, sponsor four different place-based education programs that work with K-12 schools, mostly in New England. PEEC members pool their program evaluation efforts in order to improve the quality and utility of the evaluation of individual programs, and also to collectively make a larger contribution to the field of place-based education research. This report summarizes the PEEC cross-program research agenda and findings for 2003-04, as well as comments on some of the benefits accrued from working as a collaborative. In short, the work of PEEC as a whole is much greater than the sum of its parts.

Results of this year’s evaluation, based on 338 educator surveys and 721 student surveys, suggested that participating in PEEC programs makes significant and positive contributions to:

- Teacher practice (especially teacher engagement/growth)
- Use of local places for teaching
- Student engagement in learning
- Student civic engagement
- Student time spent outdoors
- Student stewardship behavior
- Community civic engagement
- Community planning/decision making processes.

Survey data also suggested that the impacts of place-based education programs that work with an entire school for multiple years may reach a kind of “tipping point,” after which the effects of a program begin to become part of the school culture, norms, and practices, and thus become more powerful for the long term.

Reflection upon the unique structure of PEEC revealed the following benefits of collaboration during this phase of program evaluation:

- Better articulation of cross-program theory, logic, and conceptual frameworks
- Greater efficiencies in design of evaluation instruments and processes
- Shared fundraising and program promotion
- Cross-fertilization among PEEC programs.
This evaluation report also situates PEEC programs in the context of educational and research literature related to the need for a healthier environment, the connection between schools and communities, educational reform, student achievement, “diffusion of innovations” theory and research, and a recent study that synthesizes the research on environmental education, museums, health education, and social marketing.

Given these results summarized immediately above, the overall implication for practice is for PEEC to start thinking even longer term by investing in evaluation activities that:

- Build upon this year’s success with surveys
- Lay the groundwork for qualitative and quantitative longitudinal investigations
- Emphasize reflection upon the purpose, processes, and priorities of the collaborative structure of PEEC.

The main body of this report provides a more detailed presentation of all of the findings and methods described above.
INTRODUCTION

The core task of the Place-based Education Evaluation Collaborative (PEEC) is to individually and collectively evaluate four programs: the Community Mapping Program (CMP), project CO-SEED, the Sustainable Schools Project (SSP) and the Forest for Every Classroom (FFEC) program. But the work of PEEC extends beyond this formal research agenda to include several other supporting activities that exemplify the collaborative nature of PEEC. This report presents PEEC’s 2003-04 cross-program research agenda and results, preceded by a discussion of some of the collaborative supporting activities that were particularly beneficial.

OVERVIEW OF THE PLACE-BASED EDUCATION EVALUATION COLLABORATIVE

In October 2001, several New England foundations and educational organizations came together to explore how they might collectively strengthen the evaluation of their place-based environmental education programs. They each sensed that their organizations could be doing more and better evaluation of their programs by working together than by working independently, and so the group decided to join together as the Place-based Education Evaluation Collaborative (PEEC).

PEEC has three main purposes. It serves as a learning organization for program developers, fueling internal growth and program development for the individual organizations. PEEC also aims to identify, develop, and disseminate evaluation techniques, tools, and approaches that can be applied to other place-based education providers, thereby promoting better evaluation practice in the field. Finally, as a long-range goal, the collaborative intends to contribute to the research base underlying the field of place-based education and school change.

The goals of the four collaborating programs vary somewhat but common themes are:

- enhanced community/school connections
- increased understanding of and connection to the local place
- increased understanding of ecological concepts
- enhanced stewardship behavior
- improvement of the local environment
- improvement of school yard habitat and use as teaching space
- increased civic participation.
All four PEEC programs work with teachers and communities over the course of at least 12 months, and in some cases for three or more years. Two of the programs are referred to as “whole school change models.” These programs work on an on-going basis with whole schools and their local communities through in-service teacher training days, staff meeting integration, community-school forums, and other activities. The other two PEEC programs are referred to as “professional development models.” These programs work primarily with individual teachers through institutes, curriculum development, follow-up support, and other activities which support teachers’ professional growth.

**MEMBERS OF THE COLLABORATIVE**

PEEC is comprised of the following “member” organizations and programs, with the New Hampshire Charitable Foundation (Hanover, NH) operating as the fiscal agent and umbrella organization, contributing directly to PEEC’s work from its Upper Valley Community Foundation’s Wellborn Ecology Fund. The business of PEEC is carried out primarily by the individuals noted in Figure C1, who meet face to face several times per year and engage in phone and email dialogue between PEEC meetings.

**PEEC programs**

- **The CO-SEED project**, sponsored by Antioch New England Institute (Keene, NH),
- **The Sustainable Schools Project**, sponsored by Shelburne Farms and the Vermont Education for Sustainability Project (Shelburne, VT)
- **The Community Mapping Program**, sponsored by the Orton Family Foundation (Rutland, VT) and Vermont Institute of Natural Science (Woodstock, VT)
- **A Forest for Every Classroom project**, sponsored by a partnership between Shelburne Farms (Shelburne, VT), Marsh-Billings-Rockefeller National Historical Park (Woodstock, VT), Green Mountain National Forest (Rutland, VT), the Northeast Office of the National Wildlife Federation (Montpelier, VT), the Conservation Study Institute (Woodstock, VT), and the Northern Forest Center (offices in NH, ME, VT)

**Figure C1. PEEC individual members**

- Megan Camp, Shelburne Farms
- Delia Clark, Antioch New England Institute
- Bo Hoppin, Antioch New England Institute
- Nora Mitchell, Conservation Study Institute
- Kevin Peterson, New Hampshire Charitable Foundation
- Bill Roper, Orton Family Foundation
- David Sobel, Antioch New England Graduate School
- Liz Soper, Forest for Every Classroom Program
- Ned Swanberg, Vermont Institute of Natural Science
- Erica Zimmerman, Vermont Education for Sustainability Project
EXTERNAL EVALUATION TEAM

All evaluation reports prepared for PEEC were generated by a team of evaluators operating as PEER Associates, Inc. under the supervision of principal investigators Amy Powers and Michael Duffin. Both Amy and Michael are former employees of collaborating organizations of PEEC who have shifted their careers from program delivery to program evaluation in recent years. Neither of them has ever been employed directly by the particular programs involved in PEEC. Their level of previous familiarity with the evaluated programs and their staff was generally agreed to be an asset to the more participatory approach that PEEC desired. During the course of most of the evaluation efforts contained in this report, Amy operated as a private consultant and Michael was an employee of Antioch New England Institute but working under a different Center than the one that houses project CO-SEED. In the summer of 2004, PEER Associates was incorporated as a private consulting firm, and Michael ceased being an employee of Antioch New England Institute.

PEER Associates is committed to using a multiple-methods, utilization-focused, participatory evaluation process. It is our intention to help organizations better understand their programs and to help them to improve their programs based on evidence of program functioning and outcomes. We also intend to help organizations build their own capacity to reflect on and internally evaluate programs and to help to improve the evaluability of programs.

Other evaluators from PEER Associates who contribute to all reports include Dr. George Tremblay, Andrew Powers, and various Graduate Research Assistants and contractors. George is core faculty in the Clinical Psychology doctoral program at Antioch New England Graduate School, serves as the Director of Research for that program, and was brought onto PEER Associates specifically for his expertise in quantitative analysis. Andrew Powers serves as both Research Associate and Administrative Director for PEER Associates.

For this particular report, Amy Powers and Michael Duffin acted as Co-Principal Investigators, guiding the overall design and editorial structure of the narrative. George Tremblay worked closely with Michael to support all aspects of the survey portion of this report. Graduate Research Assistant Ben Skolnik provided important support with
the design and implementation of survey data entry. The Biostatistics Consulting Center at UMass Amherst and Sherman Morrison were contracted for large portions of the survey data entry.

The following measures were taken to mitigate the potential for researcher bias for all PEEC evaluations in 2003-04:

- Three nationally respected researchers were retained as advisors for the evaluation, all of whom provided interim consultation on research design as well as reviewing final reports.
- All interviews were recorded and transcribed either fully or partially.
- Field notes for interviews and observations were generally typed up within twenty-four hours or less after completing on-site work.
- The faculty of Michael Duffin’s Ph.D. program were consulted on specific aspects of research design and analysis.
- The issue of potential researcher bias was publicly and explicitly explored and discussed multiple times to the satisfaction of all members of PEEC.
- The PEER Associates team was intentionally constructed to represent complementary positivist and constructivist epistemological biases.
- Interview guides were developed and followed, and generally accepted methods for coding interview data were employed.
- All reports were circulated among program staff at the final draft stage for “member checking” of facts and analysis.
- Every effort was made to maintain high standards for methodological rigor.
BENEFITS OF COLLABORATION: PEWC’S SUPPORTING ACTIVITIES, BEYOND THE FORMAL RESEARCH AGENDA

This section of the report describes four categories of supporting activities that would be unlikely to occur in depth (or at all) if each PEEC program were pursuing its program evaluation interests individually, without the benefits of collaboration.

- At a macro level, PEEC members worked together to articulate elements of their program theory, logic, and conceptual framework which encompass their programs and could be a useful model for other place-based education work.
- Each PEEC program made unique contributions to the nuts and bolts of designing evaluation instruments and processes, the benefits of which accrued across the whole collaborative.
- PEEC members combined efforts to lay some solid groundwork in the strategic realm of program promotion and fundraising.
- The relationships and networking within PEEC also led to sharing of direct program expertise and implementation in some cases.

These four categories of activities greatly enhanced the leverage and scope of PEEC’s collective and individual program research agendas. Yet it may well be that some of the most valuable benefits of working as a collaborative will remain intangible. We are referring to the sense of collegiality and mutual support that inspires individuals and organizations to carry on and excel in a new and challenging venture. This dynamic has been quite evident amongst PEEC members during their first two years of formally working together in this configuration.

It should be noted that this section of the report is not a presentation of systematically gathered research findings. Rather, it is simply a sharing of the ongoing observations of the evaluation team, offered here as a way to document key activities and spark further reflection and growth within PEEC. The section closes with some conclusions and implications for practice that may inform the future work of PEEC at several levels.
PROGRAM THEORY

PEEC members tend to conceive of their programs as unique, locally appropriate, and adaptable instances of an overall philosophy of place-based education. During the Fall of 2003, members of the collaborative worked to create the following generalized theory of change (Figure C2) to visually articulate many of the commonalities underlying the logic of the four individual PEEC programs. PEEC members now use this working model to portray their programs in the larger context of place-based education to both internal and external stakeholders. This working theory of change also informed both general and specific aspects of the individual and cross-program evaluation plans.

Figure C2. PEEC Working Theory of Change for place-based education

It is interesting to note that this model emerged in partial response to the conceptual limitations of the linear, process suggested in the proposed theory of change that emerged in the 2002-03 PEEC evaluation reports. While this newer model more accurately captures the iterative, adaptive, interdependent systems nature of place-
based education programs as they are implemented in local contexts, it may be too
general and abstract for some uses. As of the writing of this report, PEEC members
are working on developing a “PEEC Cross-Program logic model” to complement the
theory of change depicted above with a representation that might be both more
detailed and more simplified. The process of developing these various models and
theories embodies a central tension in place-based education: simultaneous
commitment to broad overarching concepts and locally unique details.

Another product related to program theory that was developed through the
collaborative nature of PEEC was a concept paper that provides a fairly concise
introduction to place-based education in general and to PEEC in particular. The
PEEC concept paper, as well as a more detailed PowerPoint presentation of the
components of the working theory of change, is available to download from the

RESEARCH DESIGN EFFICIENCIES

Any PEEC survey currently in use draws on material from all of the individual
programs in PEEC. Each PEEC program has contributed important design,
conceptual, formatting, and/or specific language elements to the survey design
process and product. PEEC surveys are now systematically organized into a
common set of mix-and-match modules that allow new survey versions to be
created for a fraction of the effort. The coherence of design across the set of ten
current PEEC surveys also allows for far greater power and efficiency when
analyzing and comparing results of the surveys across multiple programs. The
allocation of intensive effort this year to survey design and analysis would not have
been feasible without the pooled resources of PEEC members. (The process was
further aided by the support provided indirectly by the EPA through an evaluation
team member’s doctoral fellowship.) The design of the surveys has not, however,
reached an entirely “complete” or “static” state, and will continue to
require investment of resources for ongoing refinements though probably
not at the same level as 2003-04.

The technical and methodological
evaluation needs of individual PEEC
programs have led to the development
capacities that then become available
to other PEEC programs. For instance,
the concept of combining survey items
into indices for more efficient and
reliable analysis emerged while analyzing SSP survey data during the first PEEC
evaluation cycle. Thereafter, the indices and modules concept became central to the
extensive work done during 2003-04 to refine the surveys for CMP. In another instance, the evaluation team responded to a specific and urgent need of the CMP and developed the capacity and infrastructure to administer surveys online. FFEC then utilized this innovation during the administration of their Spring surveys. And FFEC’s decision to rely heavily on a case study methodology for their 2003-04 evaluation strategy ended up greatly influencing the design of the year-end follow up interviews for CO-SEED sites by inspiring the evaluation team to frame those interviews as mini-case studies. Further, the idea for the creation of PEEC emerged from CO-SEED’s early evaluation efforts. In all of these ways, the cycle of mutual support continues.

The evaluation team feels that all of the evaluation products and processes are of higher quality simply because these products and processes have been exposed to the creativity and critique of a greater number and diversity of people (i.e. all the PEEC members, and other program staff members from PEEC organizations.)

**SHARED FUNDRAISING AND PROMOTION EFFORTS**

There are at least four ways that being part of a collaborative gives PEEC members more opportunities to promote place-based education in general and their programs in particular. First, PEEC has begun to solicit funding as a group. So far, this has taken the form of the joint submission of one grant, and the hosting of two funders forum meetings (one in New York City, and the other in Boston) to share preliminary evaluation findings and build relationships that may eventually mature into additional funding for evaluation or other program development. Second, PEEC has developed a web site which allows for easy and timely dissemination of PEEC findings and tools, as well as acting as a dynamic clearinghouse for other relevant evaluation resources. The initial development of the PEEC web site was donated by one PEEC member, but has now been successfully transferred to the care of PEEC as a whole. Third, PEEC gives its members an additional way to influence the broader professional networks they frequent by placing their evaluation findings in a context that is larger than just their own program. Lastly, PEEC’s 2002-03 cross-program report was translated into journal article format and has been accepted for publication in summer 2005 in the peer-reviewed *Journal of Environmental Education*.

**DIRECT CROSS-FERTILIZATION OF PROGRAM DESIGN AND DELIVERY**

Several interesting connections between the staff and participants of various PEEC programs occurred this year. SSP and FFEC staff met together to share ideas about aiding teachers in curriculum planning activities. CO-SEED staff also met with SSP staff, and the focus of the exchange was discussion of the ways that their whole school change models were similar and different. CMP staff members have given presentations on mapping at CO-SEED sites in the past, and this year gave
presentations to faculty at an SSP school. Furthermore, combinations of staff from various PEEC programs have teamed up to give conference presentations. In many ways, participation in PEEC becomes a type of professional development for the staff of programs involved in the collaborative.

CONCLUSIONS AND IMPLICATIONS FOR PRACTICE FROM THE SUPPORTING ACTIVITIES OF PEEC

Even though reporting on these collaborative activities is not necessarily part of the formal cross-program research agenda, there are two main conclusions and two implications for practice that the evaluation team draws from reflecting on the activities that support PEEC evaluation efforts.

The first conclusion is that PEEC provides leverage for the member programs and organizations. One obvious form of leverage is strictly financial: each PEEC program pays for only a portion of the cross-program research and supporting activities, but each program benefits from nearly the entire product of cross-program effort. The second form of leverage is in PEEC’s enhanced ability to impact the larger field of place-based education. The larger size and diversity of samples, whether for quantitative or qualitative investigations, increases the confidence in the claims that can be made about what does or does not work about place-based education. PEEC as a group is a bigger fish in the pond of environmental or place-based education than any of the PEEC member programs is on its own.

The second conclusion we draw is a direct parallel to a common theme in much of the qualitative data gathered across PEEC from program participants. Many teachers who participate in PEEC programs deny that the program makes their lives “easier,” simply because learning new ways of doing things is energy consuming. There is, nonetheless, extensive support for the notion that PEEC programs do enhance educators’ ability to meet curriculum requirements and increase the amount of interdisciplinary integration. In short, involvement with PEEC programs does tend to be experienced as ‘more work, but worth it’ because of the positive results for the students and/or because it is rewarding and engaging for the adults themselves. It seems that this dynamic is an accurate description of PEEC’s internal process as well. While it is definitely more of an effort for PEEC programs to meet and strategize together (and certainly more of a challenge for evaluators to devise measurement strategies that encompass the diversity in programs,) the numerous benefits described above seem to outweigh the costs.
As the first implication for practice, the evaluation team suggests that more overall value may be had for PEEC’s evaluation dollars by spending proportionately less time collecting data, and more time using the data. One of PEEC’s national advisors has suggested that programs engaged in a multiple-year evaluation sometimes spend one year gathering and analyzing data and the next year working with the evaluation findings to maximize the benefits in terms of program development. Acclaimed evaluator Michael Quinn Patton notes that it is quite common in successful program evaluations that “the evaluation becomes part of the programmatic intervention to the extent that the way it is conducted supports and reinforces accomplishing desired program goals” (Patton, 1997, p. 95). At a September, 2003 presentation of the Measuring Results report (Schneider & Cheslock, 2003), guest speaker Dr. George Hein claimed that “The most important effect of program evaluation is on program designers,” and that “evaluation needs to be done over and over.” Translating all this advice into the context of PEEC might mean creating evaluation plans that build in more time for regular meetings between program staff and the evaluation team to analyze data together in order to gain a deeper understanding of the formative and summative implications of the findings. It might mean rethinking the format of future evaluation products, choosing to focus on creating a couple of concise pamphlets, mini-reports, or in depth seminars targeted to specific audiences for specific purposes, in lieu of the usual thick and comprehensive annual evaluation reports. In general, the evaluation team feels that PEEC programs may be evolving to a new level in their evaluation needs, and so the research plan might begin to appropriately evolve toward spending more time analyzing, reporting, and utilizing deeper findings about fewer aspects of the programs.

A second, related implication for practice is to encourage PEEC to be increasingly intentional about the purposes and priorities of the collaborative structure of PEEC. Working as a collaborative increases the power and leverage of evaluation activities, but it also increases the complexity of PEEC’s purpose, structure, and process. This complexity is quite likely to amplify as the scope of evaluation efforts of the various PEEC programs each grow, shrink, or assume a different focus. If the evaluation priorities of individual PEEC programs shift and evolve (especially relative to each other), what will that mean for the functioning of PEEC as a collaborative? How fast and how large should the evaluation and research agendas of PEEC programs grow, both individually and collectively? How do those answers impact the specifics of future cross-program research agendas and the relative financial contributions to it from the various PEEC member organizations and programs? What, if any, useful insights might be gained from a more formal evaluation of PEEC as a collaborative? These are primarily rhetorical questions, intended to stimulate further reflection on the nature and purpose of PEEC in anticipation of an ever-changing landscape of evolving evaluation priorities.
CROSS-PROGRAM RESEARCH
AGENDA AND RESULTS

The research agendas of the individual PEEC programs are distinct but not separate from the PEEC cross-program research agenda. They feed into each other and overlap in mutually beneficial ways. The cross-program research agenda for PEEC’s first year, 2002-03, focused on strategically infusing standardized questions about changes in teacher practice into the interview component of each PEEC program’s evaluation efforts. This year’s cross-program agenda focused on changes in teacher practice as well, but surveys were the primary data collection method. This involved creating and pilot testing of a system of surveys built upon a dose-response measurement strategy. The secondary piece of the 2003-04 PEEC cross-program research agenda was to build upon previous efforts to situate place-based education in the context of the larger body of research and theoretical literature.

SUMMARY OF PEEC MEMBER PROGRAM EVALUATION ACTIVITIES

Though this report formally presents only the survey and literature components of the research agenda, it is important to briefly describe the 2003-04 evaluation activities of each of the four PEEC programs. The Evaluation Overview documents for each program show more detail and are provided in the Appendix.

The Sustainable Schools Project (SSP)

- Follow up observations, interviews, monthly reporting forms, and document review to investigate teacher- and student-level effects for this second year of a two year program at Champlain Elementary
- Four locally designed instruments to investigate the extent to which SSP’s presence at Champlain helped teachers meet existing literacy goals and requirements
- Administration of various educator and student surveys to support both SSP and PEEC cross-program research.
Project CO-SEED
- Pre- and follow up interviews at each of four new start up sites (three in Boston, one in rural New Hampshire).
- Follow up interviews and four existing sites (one alumni site, two sites just finishing up with CO-SEED’s official three year tenure, and one site that has had a slower start up period and so fits best with the other start up sites).
- Administration of various educator, student and community member surveys to support both CO-SEED and PEEC cross-program research.

The Forest for Every Classroom (FFEC)
- Case studies of two school sites with exemplary FFEC projects
- Case study of the unique partnership of agencies and organizations that collectively sponsor the FFEC program
- Administration of an educator surveys to support both FFEC and PEEC cross-program research.

The Community Mapping Program (CMP)
- Tool development (e.g. logic model, evaluation Toolkit, and Institute Evaluation survey form) to support coordinated expansion of the program to several new states across the country
- Case studies of two projects (one from the western region, one from the northeastern region) to explore the impacts of CM projects on the community
- Western region pilot test of surveys focused on student-level impacts
- On-line administration of educator, community partner and student surveys in the northeastern region to support both CMP and PEEC cross-program research.

Table C3 on the following page summarizes the data sources for all PEEC program evaluation efforts in 2003-04.
Table C3. Summary of Sources of 2003-04 Evaluation Data for all PEEC Programs Combined

<table>
<thead>
<tr>
<th>Type of data collected</th>
<th>Sustainable Schools</th>
<th>Forest For Every Classroom</th>
<th>Community Mapping</th>
<th>CO-SEED</th>
<th>PEEC total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educator surveys</td>
<td>36</td>
<td>34</td>
<td>31</td>
<td>254</td>
<td>355</td>
</tr>
<tr>
<td>Parent/community member surveys</td>
<td>-</td>
<td>-</td>
<td>10</td>
<td>113</td>
<td>123</td>
</tr>
<tr>
<td>Student surveys</td>
<td>215</td>
<td>-</td>
<td>389</td>
<td>1,271</td>
<td>1,875</td>
</tr>
<tr>
<td><strong>Total # of surveys received</strong></td>
<td><strong>251</strong></td>
<td><strong>34</strong></td>
<td><strong>430</strong></td>
<td><strong>1,638</strong></td>
<td><strong>2,353</strong></td>
</tr>
<tr>
<td>Educators/school staff/administrators interviews/focus groups</td>
<td>17</td>
<td>15</td>
<td>8</td>
<td>132</td>
<td>172</td>
</tr>
<tr>
<td>Community members/partners/parents/program staff interviews/focus groups</td>
<td>2</td>
<td>29</td>
<td>10</td>
<td>38</td>
<td>79</td>
</tr>
<tr>
<td><strong>Total # of adults interviewed</strong></td>
<td><strong>19</strong></td>
<td><strong>44</strong></td>
<td><strong>18</strong></td>
<td><strong>160</strong></td>
<td><strong>251</strong></td>
</tr>
<tr>
<td>Student interviews/conversations</td>
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<td>7</td>
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<td>Program staff monthly reflection/process watcher forms/minutes</td>
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<td>-</td>
<td>-</td>
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<td>101</td>
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<tr>
<td>Evaluator observations of participation in classes, institutes, meetings, events</td>
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<td>11</td>
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<tr>
<td>Other documents reviewed/activities include: project lists, literacy assessment questionnaires, study group reflections, quasi-experimental assessment of student literacy skills, curriculum units, newspaper articles, newsletters, planning documents, student letters, email exchanges with and between program staff, partner organization materials, school staff meeting minutes, Vision to Action Forum planning group minutes, prioritization activity results, lesson plans, SEED team observation, year end staff reflections, data on science fair, teacher involvement in hands-on science activities, and student performance on statewide standardized tests, grant reports, staff meeting minutes, partner meeting minutes, video and DVD productions, organizations’ websites, program brochures, institute plans, student PowerPoint presentation, and school district annual report.</td>
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</table>
PEEC AND THE EDUCATIONAL RESEARCH LITERATURE

The programs involved in PEEC are four of numerous educational programs emerging throughout the country that use local ecological and cultural resources as a basis for learning, often referring to their approach as “place-based education.” In this section of the report, place-based education is situated as one response to the broad call for a healthier environment, and is explored as one way to connect schools and communities. Place-based education efforts are connected to the extensive existing research on educational reform efforts and successful strategies for improving student academic achievement. Particular emphasis is given to the connection between enthusiasm for learning and academic achievement, and to the notion of classifying the factors that influence student achievement into three categories: student-level factors, teacher-level factors, and school-level factors. This section of the report closes with an overview of “diffusion of innovations” theory and research, as well as highlights from a recent and particularly relevant meta-review called *Measuring Results* (Schneider & Cheslock, 2003) that synthesizes the research on environmental education, museums, health education, and social marketing.

The next several pages present a more in-depth look at the larger educational context in which PEEC programs operate. While this review of literature is likely to be useful to some program staff and other stakeholders who require a broader, more comprehensive set of data about PEEC and its context, many readers of this report may find it more useful to simply skim or skip the remainder of this section and return to it later if a specific need arises for this type of background information.

“Place-based education is the process of using the local community and environment as a starting point to teach concepts in language arts, mathematics, social studies, science and other subjects across the curriculum.”

-Sobel, 2004

Under the banner of place-based education, many schools, nature centers, government agencies, and non-profit organizations are working to bring about educational reform by intentionally connecting schools to their communities (Chin, 2001; Smith & Williams, 1999; Stone, 2001). In order to give a flavor for the rich
educational context that PEEC programs are working in, this section of the report touches very briefly on research and theoretical literature in the following areas:

- Need for place-based education
- Connecting school and community
- Student achievement
- Educational reform
- Diffusion of innovations
- Measuring Results

Place-based education roots learning about abstract systems in the concrete experiences of the schoolyard and community. However, the term place-based education is often used interchangeably with a number of other, similar terms: community-based learning, service-learning, sustainability education, project-based learning. Each of these terms refers to an explicit connection between the school and the community in which the school resides. A broader hope is to “tear down school walls” such that the community becomes integral to all facets of student learning—the school is open and inviting to the community and the community not only welcomes, but inspires and participates in student learning.

A more detailed literature review of the evolution of place-based education and service-learning is available on the PEEC web site (Plumb, 2003).

**Need for place-based education**

This report is not the place for a litany of statistics about declining ozone and biodiversity, or increasing pollution and material consumption. Yet it warrants note that general awareness of things like the 30% decline from 1970 to 1995 in the “Living Planet Index”\(^1\), (and subsequent 3% annual drop) are clearly a driving force behind current efforts to help young people learn about and care for the environments in which they live (figures from Wilson, 2002). From Rachel Carson’s “Silent Spring” in 1962, through the first Earth Day in 1970, and continuing on into the present century, the call for environmental education has been growing steadily. A 1996 EPA report assessing the implementation of National Environmental Education Act of 1990 listed as its first recommendation to make environmental education a priority across the country (EPA, 1996). After surveying 1,500 adults every year since 1991, the NEETF/ Roper report concluded that “95% of American adults (96% of parents) think environmental education should be taught in the schools and 90% believe that people in the workplace and in other places in adult society should receive environmental education too” (Coyle, 2004, p. 4). This same study goes on to report that “while the weight of the research shows that the simplest forms of environmental knowledge are widespread, real comprehension of more complex environmental subjects is very

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limited within the public” (Ibid, p. 7). Another interesting finding is that “more children (83%) get environmental information from the media than from any other source” (Ibid, p. 7). What can schools do to address some of these broad concerns? Place-based education is one response to this question.

Rather than being a totally new approach, place-based education might be more accurately seen as an extension and refinement of environmental education. The key difference is that place-based education focuses on all aspects of the local environment by including local culture, history, social/political issues, and the built environment in its purview, as opposed to focusing more exclusively on the non-human natural world.

Connecting school and community

In place-based education, the community becomes the curriculum. One of the key ideas is that when one has developed an attachment to one’s place and the skills to act upon that attachment, an individual will become a more active participant in his or her community. This is sometimes referred to as civic engagement. When levels of civic engagement and participation increase in a community, social capital—the invisible web of relationship—is said to broaden and deepen. According to Robert Putnam (2001), author of Bowling Alone, social capital refers to features of social organization such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit. An intensification of social capital then leads, in the long run, to healthier communities, both natural and social. This construct is an essential part of the theory of change embedded in the CO-SEED logic model and the PEEC working theory of change for place-based education.

If fostering a sense of place and teaching action skills are the first steps toward the desired change, then programmatically it is the job of projects like CO-SEED to find the most appropriate leverage points in a system (or community) to initiate these first steps. Implicit in the CO-SEED mission is that educational intervention is an essential way to make change at the community level.

A program evaluation conducted by the Harvard Graduate School of Education for the Rural Trust (1999) provides case studies of schools and communities throughout
rural America that have been transformed by grounding students’ education in the local community and intentionally moving away from didactic approaches to standardized schooling. The evaluation concludes that as schools and communities work together to design curricular goals and strategies, students’ academic achievement improves, their interest in their community increases, teachers are more satisfied with their profession, and community members are more connected to the schools and to students.

Getting parents involved in the school can be a good first step. Several studies show that involving parents in regular day to day activities of the school such as helping with classroom lessons can help parents connect to the values and educational concerns of the school (Comer, 1984, 1998; Epstein, 1991; Epstein & Becker, 1982; Paulsen, 1994a, 1994b; reported in Marzano, 2003). An extensive review of research literature on community organizing for schools conducted by the Harvard Family Research Project concludes that “poor school performance, high dropout rates, lack of qualified teachers, and inadequate facilities demand new forms of parent engagement to hold schools accountable. Community organizing offers one strategy to engage parents to effect system change” (Lopez, 2003, p. 2). The suggested strategies include paying special attention to the roles, relationships, and locus of power of parents. Also developing parent leadership, mobilizing collective power, and building social capital. Such efforts can require significant investment and commitment, but the payoff can be healthy policy and system changes, stronger home-school connections, improved school climate, and increased student achievement (Ibid.). Other studies show direct evidence that parent and community involvement in school can lower absenteeism, truancy, and dropout rates (Bucknam, 1976; reported in Marzano, 2003), and spark parental interest in school governance decisions (Stallworth & Williams, 1982; reported in Marzano, 2003).

Many studies of the effectiveness of service-learning have been sponsored by the Corporation for National Service. These studies demonstrate powerful linkages between grounding the learning experience in the local context, enhanced student participation in community matters, and increased student engagement in their academic studies. In particular, service-learning experiences have been shown to promote a “pro-social, active conception of citizenship” in students (Chi, 2002, p. vi) when implemented consistently and intensively including opportunities for analysis of and reflection on the service experience and regular opportunities for teachers and students to engage in dialogue.
Connecting schools and communities is not an approach that is limited to the United States, either. Roger Hart describes several successful programs from England, Scotland, Columbia, Italy, Brazil, Nicaragua, the Philippines, and elsewhere (Hart, 1997). Denmark has a particularly strong movement toward collaboration between schools and communities around environmental and health concerns (Carlsson, 2004; Jensen et al., 2000). These references describe just a few of the many international examples of projects that share key design and implementation characteristics with the PEEC programs.

All of the programs involved in the Place-based Education Evaluation Collaborative, including the Forest For Every Classroom Project, make extensive use of community members as a core part of their program logic and implementation. Existing research suggests that this is effort well spent.

**Student achievement**

Many of the goals that place-based education strives to achieve are notably lofty and difficult to convincingly measure. Student academic achievement is an example of this. It is challenging to establish a compelling, direct causal link between a student looking for insects in a local stream or interviewing community elders and that student’s scores on standardized tests. There is, however, a noteworthy body of research that suggests that student engagement in learning or motivation can function logically as a measurable proxy for student academic achievement. The first part of this section explores that idea more fully. The second part of this section looks at some of the more general factors that are associated with improved student academic achievement.

Engagement, motivation, and achievement

A very thorough and lucidly written review of the educational research of the last thirty-five years opens chapter 15 with the following statement:

> The link between student motivation and achievement is straightforward. If students are motivated to learn the content in a given subject, their achievement in that subject will most likely be good (Marzano, 2003, p. 144).

In the next five pages, Robert Marzano cites over 40 different studies that collectively lay out the evidence that supports these opening lines. Included in his argument are references to several quantitative studies that show correlations between motivation and achievement ranging from .19 to .63, and effect sizes that range from two-thirds to one and two-thirds standard deviations of improved achievement (Schiefele, Krapp, & Winteler, 1992; Schiefele & Krapp, 1996; Geisler-Brenstein & Schmeck, 1996; Tobias, 1994; Bloom, 1976; Steinkamp & Maehr, 1983; Willingham, Pollack, & Lewis, 2002; reported in Marzano, 2003). These are very impressive findings individually, and taken as a whole they make a fairly compelling case. Please refer directly to
Marzano’s book, *What works in schools: Translating research into action* (2003), for a fully detailed argument of the research-based connection between motivation and achievement (and for several other useful, well-documented insights into the educational process as well.)

This body of evidence holds an important implication for PEEC programs. If PEEC programs can present a case to support the claim that their programs increase student engagement and motivation in the learning process, then it is logically reasonable to connect that claim to the above mentioned body of evidence about student motivation to suggest that PEEC programs are likely to positively influence student academic achievement.

Other factors that support student achievement

Some environmental education research literature advises that a conservation ethic and responsible behavior must begin with early, sustained exposure coupled with action strategies and behavioral practice (Hungerford & Volk, 1990). One of the more prominent and dramatic studies, entitled *Closing the Achievement Gap* (Lieberman & Hoody, 1998) shows broad reaching positive effects of curricula in over 40 schools nationwide that is grounded in the local environment. This 1998 study by the State Environmental Education Roundtable demonstrated that when the environment is used as an integrating context (EIC), student achievement and in-school behaviors improve. The National Environmental Education Training Foundation produced a study that also documented improved test scores in reading, math, science, and social studies for environment-based programs (NEETF, 2000) and another that highlights ten promising examples of improved student achievement (NEETF, 2002).

*Figure C4. Excerpt from: The Generally Accepted Principles of Teaching and Learning and their Implications for Local Education Support Systems*

- All children do not learn in the same ways or at the same pace. (Good instruction provides students instructional choices and multiple ways to engage with content to help them take ownership of their learning and demonstrate competence.)

- Learning is active. It requires effort and resilience on the part of the student as well as interaction (Good instruction promotes this interaction by maximizing opportunities for students to engage in their learning, rather than passively absorb information with teachers, texts, materials, and/or other learners.)

- Learning depends on a foundation of factual knowledge, the understanding of concepts in context, and the organization of facts and concepts so that they can be retrieved and applied.

- Learning is not limited to school. It can happen anywhere. (Good instruction incorporates children’s out-of-school experiences in school with lessons that have value beyond school and is connected as much as possible to settings in the community that enhance learning for children and adults both inside and outside of school.)

*Created by School Communities that Work: A National Task Force on the Future of Urban Districts (June 2002)*
There is a very strong body of general educational research evidence that suggests almost unequivocally that individual teachers make a difference in student achievement (Wright, Horn, & Sanders, 1997; Pedersen, Faucher, & Eaton, 1978; Marzano, 2003, pp. 71-105). This provides support for a key strategy embedded in both the CO-SEED logic model and the PEEC working theory of change for place-based education (and the program evaluation strategies that follow from them), i.e. that school educators serve as the first level of change. It is primarily from this leverage point that students might be reached. Additional audiences for the PEEC programs include community members, school administrators, and students, but focusing on changing teacher practice is the place to start.

One compelling set of research that supports the notion that individual teachers make a difference comes from an ongoing series of studies working with the Tennessee Value-Added Assessment System (TVAAS). In technical terms “TVAAS has been designed to use statistical mixed-model methodologies to conduct multivariate, longitudinal analyses of student achievement to make estimates of school, class size, teacher, and other effects” (Wright, Horn, & Sanders, 1997, p. 57). In other words, they use high powered math to track the way that student test scores go up or down based upon which teacher they have, and they look at large numbers of students over long periods of time.

A relatively recent study using the TVAAS (Sanders & Rivers, 1996) found that:

- Three straight years of most-effective teachers gives kids a 50-percentile point advantage on students who spend three straight years with least-effective teachers.
- The effects of teachers on student achievement are both additive and cumulative with little evidence of compensatory effects.
- As teacher effectiveness increases, lower achieving students are the first to benefit. The top quintile of teachers tend to reach students of all achievement levels.
- Students of different ethnicities respond equivalently within the same quintile of teacher effectiveness.
A very recent study of 92 elementary and middle school teachers in and around Chattanooga, TN (Public Education Foundation, 2002) is perhaps more directly applicable to place-based education efforts. This report found that the classrooms of the most effective teachers tended to be similar in the following ways:

- Student work could be found everywhere, inside the classroom, out the door and, in some cases, down the hall.
- The teachers did not stand still and lecture; they covered every part of the room and monitored every activity that took place.
- Multiple small group activities were often found in their classrooms, with the traditional arrangement of desks in rows practically non-existent.
- Students in their classes were at ease asking questions and commenting on statements made by teachers and other students.
- Expectations for the students were clearly stated and exemplars of previous years’ assignments were shown to students as models of what to produce.
- The organization of the rooms and the lessons was clearly evident. Materials were easily accessible when needed and no class time was wasted from lack of preparation.

So, if PEEC programs can demonstrate an increase in student motivation toward school work as a result of their programs, and they can also demonstrate that their programs lead to individual teachers changing their practice to be more like the characteristics described above, then the claim for a link between PEEC programs and student academic achievement becomes quite strong.

Furthermore, the Rural School and Community Trust recently released a report about their place-based education efforts in Louisiana (Emekauwa, 2004). This report documents improvements in state wide assessment test scores over several years for fourth graders in selected schools and districts with place-based education programs in place as compared to statewide averages. While the results raise some interesting and provocative questions and may well suggest a testable correlation between place-based education training and student academic achievement, the strong claims implied in this report warrant more extensive documentation of context and methodology and deeper exploration of competing explanations for these test score trends in order to improve confidence in the assertions left implicit in the report. This report does, however, add another layer of incremental credibility to the increasingly strong claim that place-based education can positively impact student academic achievement.

As the teaching strategies that are consistent with place-based education methods are increasingly shown through research to generally lead in the direction of increased student academic achievement, a new opportunity for researchers and program staff
emerges. Namely, to systematically explore the ways that specific teaching practices lead to specific types of student achievement. One example of this type of research is a recent doctoral dissertation that combined an experimental research design with in-depth qualitative interviews to investigate the effects of GIS (Geographic Information Systems) instruction on the environmental knowledge of middle school students. The study concluded that GIS can be effectively used for a wide range of classroom instruction contexts. Perhaps even more interestingly, the study also concluded that

...using GIS may aid students in constructing concepts and promoting understanding of environmental content, problem solving, experimental design and data analysis, and communicating findings to others. Using GIS in classroom instruction may be a way of incorporating spatial learning in schools (Hagevik, 2003, abstract).

This piece of research certainly strengthens the claims of the viability of the particular PEEC program that uses GIS as one of its main tools for implementing place-based education. As more place-based education research and evaluation takes on this kind of targeted focus, the case for the overall effectiveness of place-based approaches will grow stronger.

**Educational reform**

The body of research and theoretical literature on the topic of educational reform is vast. This section of the report touches very briefly on two concepts that may provide some useful insights for the programs involved in PEEC.

First, there is a categorization scheme that has been used extensively in the educational research literature to simply classify the various factors that affect student achievement (Marzano, 2003). **School-level factors** have to do with school-wide administrative, cultural, and/or policy decisions, initiatives, and influences. **Teacher-level factors** are the decisions and behaviors that individual classroom teachers have choice to directly affect. **Student-level factors** have to do with the unique characteristics that individual students bring to school, such as background, intelligence, and motivation.

Which of these three factors has the biggest influence on student achievement? Just nine years after Sputnik, a landmark study involving 640,000 students and entitled Equality in Educational Opportunity (but more commonly referred to as the “Coleman
report”) made the shocking assertion that student-level factors accounted for 90% of the variance in student achievement (Coleman, Campbell, Hobson, McPartland, Mood, Weinfield, & York, 1966). This report led some to believe that schools really did not make that much of a difference, so why bother, because the die is already cast by the background that a student is born into and lives in at home. A more optimistic synthesis of 10 high visibility studies (Marzano, 2000), however, suggests that schools account for 20% of the variance in student achievement, i.e. more than twice that suggested by the Coleman report. Of the 20% of influence that can be attributed to schools, about 13% comes from teacher-level factors, and 7% come from school-level factors (Bosker, 1992; Luyten, 1994; Madaus et al., 1979; Marzano, 2000; Stringfield & Teddlie, 1989; reported in Marzano, 2003). Perhaps most interestingly, if one reinterprets these statistics in terms of the percentage of students who do or do not “fail”, then a defensible case can be made that “schools that are highly effective produce results that almost entirely overcome the effects of student background” (Marzano, 2003, p. 7).

It is not immediately clear where the effects of place-based education programs show up in this 3-level classification system. One could argue that place-based education might be classified as a “community-level” factor. This would suggest that its impact on students would be even less than the 7% level ascribed to schools, since impact on students seems to decrease geometrically as the factors become further and further removed from the individual student unit of analysis. On the other hand, one could also argue that by bridging the worlds of school, home, and community, the effects of place-based education might show up as part of the 80% contribution due to student-level factors. When a student becomes actively involved in community environmental and/or social issues, would this show up in these statistical computations as a glowing, high leverage piece of the student-level factor pie, or as a muted, marginally influential piece of a diffuse community-level factor? The answer does not flow directly from the educational research. This dilemma may also be symptomatic of the general difficulty that place-based education has fitting into simplified classification schemes because of its interdependent, flexible, highly contextualized philosophy.

In any case, the convenient three level categorization scheme of factors affecting students (i.e. school-level, teacher-level, and student-level) provides a potentially useful conceptual framework for place-based education proponents to talk about the program outcomes and impacts they seek to influence. In fact, the programs in PEEC have already adopted language that speaks to this categorization scheme. The
Sustainable Schools Project and CO-SEED are “whole school change” (i.e. school-level) models, whereas the Community Mapping Program and a Forest For Every Classroom project are framed more as “professional development” (i.e. teacher-level) models.

The second concept from the educational reform literature that warrants mention is the growing influence of systems thinking terminology and conceptual frameworks. Perhaps the best illustrative example of this is a small 1993 book by Michael Fullan called Change Forces. He talks about the complexity of the school change business in terms of paradoxes that only begin to make sense when one looks at the system as a whole and see interrelationships, processes, and feedback loops instead of linear cause and effect chains and snapshots. These ideas are not so different from those that PEEC members are drawing on when they cast their working theory of change for place-based education in terms of iterative feedback loops and the stocks and flows of various types of capital.

Analyzing school reform from this global perspective leads Michael Fullan to the conclusion that teacher education is the highest leverage way to help schools (and the students within them, and the communities around them) increasingly act as “learning organizations.” This echoes much of the educational research that suggests that teacher-level factors are big in the lives of students. This also lends theoretical support to the notion that PEEC programs ought to focus their efforts on teacher practice change.

**Diffusion of innovations**

The main ideas summarized throughout this section of the report represent only a few of the many interesting ideas contained in three very different books about diffusion of innovations: a 500+ page scholarly review of over 5,200 publications aptly titled Diffusion of Innovations (Rogers, 2003); a general synthesis and extension of the key concepts, engagingly written for general audiences and called The Tipping Point (Gladwell, 2002); and an extremely practitioner-oriented application of the ideas to a specific context entitled Crossing the Chasm: Marketing and Selling High-tech Products to Mainstream Customers (Moore, 1999).

The term “diffusion of innovations” refers to the process by which a new idea or technology becomes increasingly used by a specified group of people. A tiny sampling of the list of fads, trends, policies, and revolutions whose key elements can be described by the diffusion of innovations process includes things like the
The first main idea is that people respond differently to new ideas and technologies based upon individual psychological and/or demographic characteristics. When faced with the uncertainty inherent in considering the adoption of a new technology or way of doing things, people tend to fall into one of the “adopter categories” described in Figure C5 below. The distribution of people in a given population tends to follow a normal, bell-shaped pattern with the early and late majority categories each comprising about a third of the population, and the innovators, early adopters, and laggards collectively making up the remaining third of the population.

Figure C5. Adopter Categories (Moore, 1999, p. 17)
This general idea of adopter categories leads directly to perhaps the most important overall prescription for those planning to create a change. Whether it’s a place-based education program or a fashion fad, one should intentionally target their implementation/marketing strategy based upon the core wants and other unique characteristics of each adopter category.

The second main idea is that for successful innovations the rate of adoption through time in a given population tends to follow a fairly predictable S-shaped curve pattern. Diffusion proceeds very slowly at first, then reaches a “critical mass”, “tipping point”, or “take-off” period of rapid spread, then levels off at some more “permanent” level of adoption. Conceptual frameworks associated with epidemics and contagiousness are often applied to this S-shaped diffusion pattern. Rogers (2003) describes the tipping point as typically happening when the adoption rate is between 10-20% of the target population. Gladwell (2002) notes the “Rule of 150” (p. 175) which purports that innovations tend to tip after a sub-group of about 150 people in the larger social group have adopted.

![General Diffusion Curve (Rogers, 2003, p. 11)](image)

The third main idea is that diffusion is a highly subjective social phenomenon, meaning that word of mouth, reputation, and context are critical factors affecting the rate and depth of adoption of new practices. This is where some of the most useful applications of the theory come from, because it is about how the diffusion actually happens. The sustainability of a place-based education project (in an educational context) or the making of large profits (in an entrepreneurial business context) is all about breaking into the early majority and then successfully transitioning through into the late majority. Here are four things to think about:
• **Change tends to be discontinuous.** Despite the charts above, graphs of real change over time tend to look more like staircases than hockey sticks. This is largely because change happens relatively easily within adopter categories in which people tend to share the same interests, concerns, and networks, but moving between adopter categories is far more difficult. The biggest gap is the “chasm” between early adopters and early majority because the pragmatic early majority tends not to trust the judgment of the visionary early adopters. Many innovations fail to tip because they fall into this chasm before establishing a hold in the early majority. Moore (1999) suggests that the D-Day invasion of Normandy provides an effective analogy for strategically crossing the chasm. Place-based education supporters may, however, prefer to think in terms of a more nature-oriented analogy such as protecting endangered spotted owls, California gnatcatchers, or coho salmon. By focusing political advocacy and ecological restoration resources on these single keystone species, efforts will hopefully lead to preserving of habitat for the bulk of other species (i.e. the “early” and “late” majority) that depend on the same habitat. The lesson from this category is to focus all of one’s resources on a strategic “beach head” or “keystone” in the early majority, i.e. a very tightly defined sub-segment that has many connections within the larger early majority category.

• **Specific types of people tend to make an innovation tip.** These are the networkers who know and are known widely (but not necessarily deeply) within many different sub-groups. These are the opinion leaders who are esteemed because they embody the implicit cultural and group norms and so become key reference points for others in their identity group. The rare people with extraordinary depth of content knowledge and the enthusiasm to share it can also be key ingredients in the recipe for successful diffusion. Strategically, these people tend to be good targets for a “D-Day” or “keystone species” type invasion into the early majority.

• **Context matters.** How an innovation is perceived has a major impact on how likely it is to be adopted. The two most influential perceived attributes of innovations are “relative advantage” (i.e. the extent to which the new idea is thought to be better than the old way of doing things), and “compatibility” with existing values, cultural norms, and past experiences of the potential adopter. Further, when interpreting human events and behavior we tend to reach for “dispositional” rather than “contextual” explanations, overestimating the contribution of individual character traits and underestimating the influence of situation and context. This is sometimes referred to as Fundamental Attribution Error (Gladwell, 2002, p. 160). The bottom line here is to remember that diffusion is a social process, and is dependent on group social interactions.

• **“Re-invention” tends to be a good thing.** When members of a target population have the ability to change, adapt, and otherwise influence the new idea itself during the process of adopting it as their own, innovations tend to diffuse more rapidly and are more likely to be sustained.
<table>
<thead>
<tr>
<th>Adopter category</th>
<th>Descriptors from Moore, 1999 from Rogers, 2003</th>
<th>Core wants</th>
<th>Strategies for working with them</th>
</tr>
</thead>
</table>
| Innovator        | Enthusiast Venturesome                          | • Straight facts, truth, no tricks  
• Be first        | • Don’t expect immediate “profits”  
• Look for ones who can garner R&D support by virtue of being close to the “big boss” |
| Early adopter    | Visionary Respect                               | • Breakthrough technologies  
• Pursue a dream  
• Project orientation | • Maintain frequent contact  
• Manage unrealistic expectations  
• Chunk innovations into discreet products or phases |
| Early majority   | Pragmatist Deliberate                          | • Incremental, predictable, measurable progress | • D-Day analogy  
• Keystone species  
• Focus, focus, focus effort on strategic networkers and opinion leaders |
| Late majority    | Conservative Skeptical                         | • Smooth, easy change  
• Discount prices | • Work the bugs out first  
• Plan for a customer service orientation |
| Laggard          | Skeptic Traditional                            | • Keep status quo | • Actively listen for “Emperor’s New Clothes” phenomena (e.g. the Amish v. modern agribusiness)  
• Otherwise try to neutralize influence |

There are a few additional ideas that warrant mention at this point. Diffusion of innovations research has been critiqued for having a pro-innovation bias that too often assumes the perspective of the change agency rather than the individual adopter. Thus it is wise to remember that almost all innovations have undesirable, indirect, and unanticipated consequences. Additionally, innovators should be encouraged to pay attention to and mitigate for ways that the general nature of innovations can tend to widen gaps between haves and have-nots. Lastly, there could well be rich theoretical and practical grounds for combining elements of diffusion of change models with other psychologically oriented and well-tested models of human behavior such as the stages of change model developed to understand smoking cessation (see Prochaska, 1992).

**Measuring Results**

In April 2003 the CoEvolution Institute published an important report entitled Measuring Results (Schneider & Cheslock, 2003). This review of research literature focuses on the impacts of non-formal programs in environmental education, museums, social marketing, and health programs. These four domains all seek
sustained behavior change in program participants and so have some valuable lessons to share with each other.

One of the main findings of Measuring Results is that actually measuring the results of complex human behavior in response to these non-formal programs is a difficult task in and of itself. In the field of environmental education in particular, the authors note a “weak link between theory and practice” (Ibid., p. 26). Interestingly, the theory of change that has perhaps the longest tradition in the field of EE (i.e. that knowledge about the environment leads to positive attitudes about the environment which then leads to pro-environmental behavior, or KAB for short) is not very convincingly supported by the research literature. In summing up the findings of the four behavior change domains as a whole, they note:

The social science nature of evaluation and the focus on human behavior have made for a lack of systematic analysis, which is attributed at least in part to the necessary reliance on self-reported data. Tracking people’s adoption of positive behavior or retention of what they have learned is easier in some case than it is in others. Follow-up is inconsistent and longitudinal analyses are rare...[but] useful and often worth the effort and cost (ibid., p. 134).

To help strengthen the collective body of evidence for the impact of behavior change programs, the authors recommend “…systematizing evaluation strategies across the field[s]” (Ibid., p. 133) and greater dissemination of measurement strategies and findings. They also recommend rigorous articulation of program goals and mission, and the use of multiple-method research strategies and design. The work of the Place-based Education Evaluation Collaborative could well be a leading example of embodying all of these recommendations.

Beyond the “measurement challenge,” the Measuring Results report notes some exciting lessons learned about effective behavior change strategies that emerged from their review of the research literature. For environmental education in particular,

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² PEEC evaluators and members have taken to naming “The Measurement Challenge” as a kind of shorthand for all the effort (and opportunity) that is involved in doing this in depth exploration of program outcomes.
People need to know why and how to act in environmentally responsible ways. Effective programs train participants for specific behaviors. In addition...prompts or triggers [e.g. goal setting, commitment strategies, personal reminders, information feedback systems, role modeling] increase the frequency of desirable behaviors and decrease the frequency of undesirable ones (Ibid., p. 46, emphasis in original).

The summary of cross-domain lessons learned echoed the importance of targeting specific behaviors in EE and added two other recommendations. First, programs should tailor interventions to the “individual characteristics and agendas” of the specific program participant audience. Second, programs should directly address the feelings and emotions of participants in order to “instill positive attitudes toward specific actions,” help participants believe that those actions will make a difference, and help them “believe in their own abilities to engage in action” (Ibid., p. 130-131).

**Closing comments on literature review**

Place-based education is still an emerging field. It is not separate from the general awareness of ecological issues that is increasingly a part of public discourse. Programs like those in PEEC are still connected to the longer and stronger tradition of environmental education, even as they work to identify place-based education as a distinct approach. And of course, all PEEC programs operate (or at least strive to operate) in the very heart of the thing called educational reform. For instance, the established connection between engagement in learning and student academic achievement is likely to be a useful resource for place-based education programs that are taking on the burden of proof for the efficacy of their approach. PEEC is putting forth substantial effort to continually and rigorously evaluate their programs and actively seek theoretical and research-based bridges to other fields of study, including areas like psychology, behavior change, and diffusion of innovations. This effort to bridge gaps between far ranging but fundamentally connected arenas is characteristic of place-based education’s philosophical commitment to bridging the global and the local.
CROSS-PROGRAM SURVEY METHODS: BASICS

In an attempt to make this report more accessible to the non-technical reader, presentation of the survey methods used for this evaluation has been divided into two sections. This first section provides only a basic introduction to the dose-response measurement strategy, the development of which was the primary aim of PEEC’s quantitative efforts in 2003-04. It attempts to give readers without a background in statistics the minimum amount of information required to make sense of the survey findings presented later. A second section, presented after the survey findings, discussion, and implications for practice, provides a more detailed look at the rationale and other technical aspects of this survey method.

The basic idea of this “dose-response” measurement strategy is to use inferential statistics\(^3\) to test whether participating in one of these PEEC programs increases the occurrence of intended program outcomes. Or, “Is the program having an effect?” The “dose” is a number from 0 to 4 calculated for each survey respondent from survey items that ask about the number of program-related activities they participated in, and the extent to which the program is being implemented with the students they work most closely with. The “response” is a number from 1 to 4 that is the average of survey items about specific outcomes that PEEC programs are interested in, such as teacher use of local resources, or teacher engagement in their profession, or a student’s attachment to their local community. If the dose and response correlate with each other (i.e. if a change in one is accompanied by a consistent change in the other), then the program is likely to be having an effect.

The line\(^4\) on the scatterplot graphs in this report represents that statistical prediction. If the line slopes from lower left to upper right, it is essentially saying that the higher the dose of the program a participant has (e.g. dose = 4, meaning that the participant has experienced hundreds of hours of the program and is using the ideas extensively in their teaching), the higher they are likely to rate themselves on the intended program outcomes. Similarly, a lower dose (e.g. dose = 0, meaning the participant has not yet started with the program), predicts that a participant will report lower scores on desirable program outcomes. Sloping lines on graphs in this report can be broadly interpreted as evidence that the program is likely to be contributing to the desired program outcomes. For clarity’s sake, graphs are only

\(^3\) Inferential statistics deduce mathematical patterns in a given data set and then use that pattern to predict dependent variables (marked on the vertical axis of a graph) from given independent variables (marked on the horizontal axis). In the context of this report, that translates as: ‘given the responses that people actually made on these surveys, if a teacher had a given score of such and such for dose, then we would predict that they would have a score of such and such for this particular index or module.’

\(^4\) Calculated using a process called “multiple regression.”
shown if they meet additional tests for “statistical significance,” which is a fancy way of saying that it is highly unlikely that observed results are due to chance only.

The slope of the regression line represents the strength of the effect of the program. Steeper slopes suggest stronger effects of the program. This is represented in the data tables in this report by the variable $\Delta R^2$ which is directly interpretable as “percent of variance.” For example, if $\Delta R^2 = .2$ for the overall teacher practice module, that means that 20% of the variance in teacher practice can be predicted by the extent to which participants have been exposed to the PEEC program, i.e. their dose.

But what percent variance constitutes a large effect for PEEC programs? The literature review section of this report provides a couple of benchmarks for comparison. The Coleman report claimed that schooling accounted for only 10% of the variance in student achievement, or $\Delta R^2 = .10$ (Coleman et al., 1966). Marzano claims that that number is actually closer to 20%, with 13% deriving from teacher-level factors, and 7% attributable to school-level factors (Marzano, 2003). Studies asserting that motivation predicts student academic achievement show correlations (which are directly comparable to percent variance or $\Delta R^2$) values ranging from .19 to a whopping .63 (or 19% to 63%). As a final benchmark for this statistic of percent variance or $\Delta R^2$, consider “Abelson’s paradox” which applies this statistical method to the everyday world of professional baseball. “The percentage of variance in any single batting performance explained by batting skill is about one third of 1%” (Abelson, 1985, p. 131). Further, and perhaps more revealing for PEEC,

"... the attitude toward explained variance ought to be conditional on the degree to which the effects of the explanatory factor cumulate in practice. Some examples of potentially cumulative processes are educational interventions, the persuasive effects of advertising, and repeated decisions by ideologically similar policy makers. In such cases, it is quite possible that small variance contributions of independent variables in single-shot studies grossly understate the variance contribution in the long run" (Ibid., p. 133, emphasis added).
Essentially, Abelson is arguing that small statistical effects can indicate very important outcomes in educational contexts.

Here is another illustration that may provide some context for understanding this "percent of variance accounted for" (i.e. $\Delta R^2$) statistic. We are all aware that the health care profession has been widely publicizing the dangers of our culture's expanding waistlines. Being overweight is one of the most often cited risk factors that could lead to heart attacks or other cardiovascular diseases. But being overweight is just one of many factors that contribute to any one individual's risk of cardiovascular disease. Other factors include genetic predisposition, environmental insults (e.g., pollution), access to regular healthcare, etc. The percent variance statistic provides a way to begin to understand how much influence being overweight has compared to all the other factors that can lead to heart problems. It turns out that weight status accounts for some 17-19 percent of the costs of cardiovascular disease in our country (Wang et al., 2002).

Percent variance can be helpful when you have a situation in which multiple factors contribute to a common outcome, like heart disease or education. If a person's weight status predicts nearly a fifth of their chance of heart disease, then focusing health promotion efforts on weight status starts to seem like a high leverage activity. In terms of PEEC’s dose-response measurement strategy, if a person’s dose of a PEEC program predicts nearly a fifth of their likelihood of reporting favorable responses on survey questions that are important (like, say, use of local resources), then that PEEC program starts to seem like a high leverage activity.

This analogy even applies to how the percent variance figure is arrived at. In health care, the strategy is to first measure the actual risk of cardiovascular disease for large samples of people, then determine how widely that risk varies across individuals, and then measure how much of that total variability in risk is attributable to each of many potential predictors, i.e. things like income, education, genetic factors, environment, and weight status. For this place-based education evaluation endeavor, the strategy is to measure (through surveys) the reported levels of desired outcomes for large samples of educators, then determine how widely those outcomes vary across individuals, and then measure how much of that total variability in response is attributable to the predictor of program dose.

In sum, if 10% (or $\Delta R^2 = .10$) of a teacher’s attitude or behavior as reported on a PEEC survey can be attributed to that PEEC program (especially given that there are so many other factors at play) this could defensibly be interpreted that the program is almost certainly having some noteworthy effect. Correlations of $\Delta R^2 = .30$ (or 30% variance) likely represent large effects.
CROSS-PROGRAM SURVEY DATA

This section presents complete inferential and descriptive statistics for the PEEC 2003-04 cross-program survey findings. The first two tables represent the aggregate results of all four PEEC programs. A summary of the numbers of surveys from each program is provided in a previous section of this report. The third table represents data from a pre-post survey measure from the CO-SEED Malden site. Discussion and conclusions from these findings are presented in the next section of this report.

Table S1. Summary of 2003-04 Educator Survey Data for All PEEC Programs
Comparing the Educator’s Program Dose
and Educator Reports of Place-Based-Education-related Outcomes

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>ΔR²</th>
<th>p</th>
<th>F</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dose composite</td>
<td>338</td>
<td>.91</td>
<td>.5</td>
<td>1.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Other place-based ed. training</td>
<td>115</td>
<td>1.9</td>
<td>2.0</td>
<td>1.1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Overall teacher practice</td>
<td>342</td>
<td>2.8</td>
<td>2.8</td>
<td>.68</td>
<td>.19</td>
<td>.000**</td>
<td>80</td>
</tr>
<tr>
<td>Use of local resources</td>
<td>324</td>
<td>2.5</td>
<td>2.5</td>
<td>.82</td>
<td>.05</td>
<td>.000**</td>
<td>17</td>
</tr>
<tr>
<td>Use of local places</td>
<td>306</td>
<td>2.6</td>
<td>2.5</td>
<td>.92</td>
<td>.10</td>
<td>.000**</td>
<td>33</td>
</tr>
<tr>
<td>Use of local people</td>
<td>308</td>
<td>2.6</td>
<td>2.5</td>
<td>.87</td>
<td>.03</td>
<td>.004**</td>
<td>8.7</td>
</tr>
<tr>
<td>Service learning</td>
<td>279</td>
<td>2.3</td>
<td>2.3</td>
<td>1.0</td>
<td>.04</td>
<td>.001**</td>
<td>11</td>
</tr>
<tr>
<td>Improving teacher craft</td>
<td>295</td>
<td>3.1</td>
<td>3.3</td>
<td>.70</td>
<td>.21</td>
<td>.000**</td>
<td>76</td>
</tr>
<tr>
<td>Meeting curricular goals</td>
<td>225</td>
<td>3.2</td>
<td>3.2</td>
<td>.70</td>
<td>.14</td>
<td>.000**</td>
<td>35</td>
</tr>
<tr>
<td>Teacher engagement/growth</td>
<td>275</td>
<td>3.2</td>
<td>3.2</td>
<td>.77</td>
<td>.20</td>
<td>.000**</td>
<td>70</td>
</tr>
<tr>
<td>Reports of student performance</td>
<td>338</td>
<td>2.9</td>
<td>3.0</td>
<td>.49</td>
<td>.16</td>
<td>.000**</td>
<td>63</td>
</tr>
<tr>
<td>Student engagement in learning</td>
<td>332</td>
<td>3.0</td>
<td>3.0</td>
<td>.71</td>
<td>.16</td>
<td>.000**</td>
<td>63</td>
</tr>
<tr>
<td>Student academic achievement</td>
<td>323</td>
<td>3.0</td>
<td>3.0</td>
<td>.55</td>
<td>.03</td>
<td>.001**</td>
<td>11</td>
</tr>
<tr>
<td>Student civic engagement</td>
<td>321</td>
<td>3.0</td>
<td>3.0</td>
<td>.73</td>
<td>.16</td>
<td>.000**</td>
<td>61</td>
</tr>
<tr>
<td>Student test scores</td>
<td>113</td>
<td>2.3</td>
<td>2.4</td>
<td>.57</td>
<td>.00</td>
<td>.49</td>
<td>29</td>
</tr>
<tr>
<td>Perceptions of community improvement</td>
<td>289</td>
<td>2.9</td>
<td>3.0</td>
<td>.66</td>
<td>.13</td>
<td>.000**</td>
<td>42</td>
</tr>
<tr>
<td>Community civic engagement</td>
<td>251</td>
<td>3.0</td>
<td>3.0</td>
<td>.73</td>
<td>.13</td>
<td>.000**</td>
<td>37</td>
</tr>
<tr>
<td>Community environmental quality</td>
<td>242</td>
<td>2.8</td>
<td>3.0</td>
<td>.72</td>
<td>.07</td>
<td>.000**</td>
<td>17</td>
</tr>
<tr>
<td>Comm. planning/ decision process</td>
<td>231</td>
<td>2.8</td>
<td>3.0</td>
<td>.80</td>
<td>.12</td>
<td>.000**</td>
<td>29</td>
</tr>
<tr>
<td>General community quality</td>
<td>252</td>
<td>2.9</td>
<td>3.0</td>
<td>.70</td>
<td>.07</td>
<td>.000**</td>
<td>18</td>
</tr>
<tr>
<td>Program adds value to comm.</td>
<td>233</td>
<td>2.9</td>
<td>3.0</td>
<td>.69</td>
<td>.09</td>
<td>.000**</td>
<td>22</td>
</tr>
</tbody>
</table>

**NOTE:** Table row shading loosely represents the level of data reduction, i.e. modules are light gray and the overall module is dark gray. \( N = \) sample size; \( \bar{X} = \) mean; \( M = \) median; \( SD = \) standard deviation; \( \Delta R^2 = \% \) of outcome variability accounted for by dose composite; \( p = \) statistical significance test, threshold < .05/(# of component indices); \( * = \) significant at \( p < .05; ** = \) significant at \( p < .01; F = \) regression test; \( df = \) degrees of freedom
Table S2. Summary of 2003-04 Student Survey Data for All PEEC Programs Comparing the Program Dose of a Student's Teacher and Student Reports of Place-Based-Education-related Outcomes

<table>
<thead>
<tr>
<th>Variable (items included)</th>
<th>N</th>
<th>X</th>
<th>M</th>
<th>SD</th>
<th>ΔR²</th>
<th>p</th>
<th>F</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dose composite (calculated from = d1,d3,d4)</td>
<td>721</td>
<td>1.7</td>
<td>2.2</td>
<td>1.3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Use of local resources (L module = l1,l2,l4,l5)</td>
<td>1367</td>
<td>2.7</td>
<td>2.8</td>
<td>.85</td>
<td>.07</td>
<td>.000**</td>
<td>48</td>
<td>686</td>
</tr>
<tr>
<td>Use of local places (llp index = l1,l4)</td>
<td>1212</td>
<td>2.4</td>
<td>2.5</td>
<td>1.0</td>
<td>.04</td>
<td>.000**</td>
<td>28</td>
<td>616</td>
</tr>
<tr>
<td>Use of local people (llpeop index = l2,l5)</td>
<td>1318</td>
<td>2.8</td>
<td>3.0</td>
<td>.95</td>
<td>.08</td>
<td>.000**</td>
<td>57</td>
<td>659</td>
</tr>
<tr>
<td>Student engagement-civic, learning (C module=c1,c2,c3,c4,c5,c6,c7,c8,c9,c10,c11,c12,c13,c14,c15)</td>
<td>1461</td>
<td>2.8</td>
<td>2.9</td>
<td>.56</td>
<td>.02</td>
<td>.000**</td>
<td>13</td>
<td>719</td>
</tr>
<tr>
<td>Connection to community (ccc index = c1,c2,c7)</td>
<td>1451</td>
<td>2.9</td>
<td>3.0</td>
<td>.74</td>
<td>.00</td>
<td>.48</td>
<td>.49</td>
<td>716</td>
</tr>
<tr>
<td>Self-efficacy (cse index = c5,c8)</td>
<td>1373</td>
<td>2.8</td>
<td>3.0</td>
<td>.88</td>
<td>.01</td>
<td>.03*</td>
<td>5.0</td>
<td>669</td>
</tr>
<tr>
<td>Social responsibility (csr index = c3,c4,c6,c9)</td>
<td>1457</td>
<td>3.2</td>
<td>3.3</td>
<td>.65</td>
<td>.00</td>
<td>.44</td>
<td>.60</td>
<td>718</td>
</tr>
<tr>
<td>Enthusiasm for learning (cel index=c10,c11,c12,c15)</td>
<td>1456</td>
<td>2.6</td>
<td>2.5</td>
<td>.73</td>
<td>.02</td>
<td>.000**</td>
<td>16</td>
<td>717</td>
</tr>
<tr>
<td>Stewardship behavior (csb index = c13,c14)</td>
<td>1391</td>
<td>2.4</td>
<td>2.5</td>
<td>1.0</td>
<td>.08</td>
<td>.000**</td>
<td>60</td>
<td>687</td>
</tr>
<tr>
<td>Program helps me get better grades (item=x10)</td>
<td>922</td>
<td>2.6</td>
<td>3</td>
<td>1.1</td>
<td>.02</td>
<td>.006**</td>
<td>7.6</td>
<td>471</td>
</tr>
<tr>
<td>Student attachment to place (N module=n1,n2,n3,n4,n5,n6,n7,n8,l1,l2,l4,l5,c1,c2,c7)</td>
<td>1459</td>
<td>2.7</td>
<td>2.7</td>
<td>.63</td>
<td>.06</td>
<td>.000**</td>
<td>42</td>
<td>719</td>
</tr>
<tr>
<td>Learning through local resources (nlr index=l1,l2,l4,l5)</td>
<td>1367</td>
<td>2.7</td>
<td>2.8</td>
<td>.85</td>
<td>.07</td>
<td>.000**</td>
<td>48</td>
<td>686</td>
</tr>
<tr>
<td>Time spent outdoors (nto index = n1,n2,n6)</td>
<td>1372</td>
<td>2.5</td>
<td>2.5</td>
<td>.86</td>
<td>.11</td>
<td>.000**</td>
<td>87</td>
<td>692</td>
</tr>
<tr>
<td>Understanding of place (nup index = n3,n5,n7)</td>
<td>1318</td>
<td>2.6</td>
<td>2.7</td>
<td>.95</td>
<td>.02</td>
<td>.000**</td>
<td>13.7</td>
<td>669</td>
</tr>
<tr>
<td>Overall affect about place (noa index=n4,n8,c1,c2,c7)</td>
<td>1456</td>
<td>2.8</td>
<td>3.0</td>
<td>.73</td>
<td>.01</td>
<td>.01**</td>
<td>6.7</td>
<td>718</td>
</tr>
</tbody>
</table>

**NOTE:** Table row shading loosely represents the level of data reduction, i.e. modules are light gray.

N = sample size; X = mean; M = median; SD = standard deviation; ΔR² = % of outcome variability accounted for by dose composite; p = statistical significance test, threshold < .05/(# of component indices); * = significant at p < .05; ** = significant at p < .01; F = regression test; df = degrees of freedom
Table S3. Summary of Average Pre-Post Survey Gains Between 2000 and 2004 for CO-SEED Educator Surveys from the Malden Site

<table>
<thead>
<tr>
<th>Variable (items included)</th>
<th>N pre</th>
<th>N post</th>
<th>( \bar{X} ) pre</th>
<th>( \bar{X} ) post</th>
<th>( \Delta \bar{X} )</th>
<th>SD</th>
<th>z</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall teacher practice (overall module = em... 2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17)</td>
<td>39</td>
<td>34</td>
<td>2.8</td>
<td>3.3</td>
<td>.5</td>
<td>.42</td>
<td>1.2</td>
</tr>
<tr>
<td>Use of local resources (L module = em... 13,15,16,17)</td>
<td>39</td>
<td>34</td>
<td>2.1</td>
<td>2.5</td>
<td>4</td>
<td>.57</td>
<td>.70</td>
</tr>
<tr>
<td>Use of local places (llp index = em... 13,17)</td>
<td>39</td>
<td>34</td>
<td>2.2</td>
<td>2.7</td>
<td>.5</td>
<td>.65</td>
<td>.77</td>
</tr>
<tr>
<td>Use of local people (llpeop index = em... 15,16)</td>
<td>37</td>
<td>34</td>
<td>1.9</td>
<td>2.3</td>
<td>.4</td>
<td>.70</td>
<td>.57</td>
</tr>
<tr>
<td>Improving teacher craft (P module = em... 2,3,4,5,6,7,8,9,10,11,12)</td>
<td>39</td>
<td>34</td>
<td>3.0</td>
<td>3.6</td>
<td>6</td>
<td>.42</td>
<td>1.4</td>
</tr>
<tr>
<td>Meeting curricular goals (pcg index=em... 5,6,8,14)</td>
<td>39</td>
<td>34</td>
<td>2.9</td>
<td>3.6</td>
<td>7</td>
<td>.58</td>
<td>1.2</td>
</tr>
<tr>
<td>Teacher collaboration (item = em7)</td>
<td>39</td>
<td>34</td>
<td>2.9</td>
<td>3.8</td>
<td>9</td>
<td>.82</td>
<td>1.1</td>
</tr>
<tr>
<td>Teacher engagement/ growth (pteg index=em... 23,4,10)</td>
<td>39</td>
<td>34</td>
<td>3.2</td>
<td>3.5</td>
<td>3</td>
<td>.40</td>
<td>.75</td>
</tr>
<tr>
<td>Progressive instruct. strategies (pis index=em... 9,11,12)</td>
<td>39</td>
<td>34</td>
<td>3.1</td>
<td>3.6</td>
<td>5</td>
<td>.51</td>
<td>1.0</td>
</tr>
<tr>
<td>Student engagement in learning (xsel index=em... 21,22)</td>
<td>39</td>
<td>34</td>
<td>3.0</td>
<td>3.5</td>
<td>5</td>
<td>.52</td>
<td>1.0</td>
</tr>
<tr>
<td>School culture, people (wpeop index=em... 18,19,20)</td>
<td>38</td>
<td>34</td>
<td>2.9</td>
<td>3.5</td>
<td>.6</td>
<td>.55</td>
<td>1.1</td>
</tr>
</tbody>
</table>

**NOTE:** Table row shading loosely represents the level of data reduction, i.e. modules are light gray and the overall module is dark gray. N = sample size; \( \bar{X} \) = mean; \( \tilde{X} \) = median; \( \Delta \bar{X} \) = change in mean between pre- and post- measures; SD = standard deviation from pooled pre- and post- cases; z = standardized effect size
CROSS-PROGRAM SURVEY CONCLUSIONS AND DISCUSSION

Because the survey method itself was a major object of investigation, the “conclusions” from the PEEC cross-program research agenda are more effectively presented here as findings with expanded discussion. This section presents a discussion of three main findings that emerged from analysis of the PEEC cross-program survey data presented in the preceding section:

- Dose-response measurement strategy pilot was successful
- Teacher-level outcomes are strongest and/or best suited to dose-response measure
- Program dose appears to be operative at a whole school-level as well as at an individual teacher-level (whole school-level “tipping point” hypothesis).

Dose-response measurement strategy pilot was successful

The primary purpose of the survey portion of PEEC’s research agenda for 2003-04 was to pilot test a new dose-response measurement strategy. Essentially, the pilot was a success. The dose-response strategy allowed for several potentially useful inferences to be drawn within and across PEEC programs while sidestepping many logistical and conceptual challenges associated with a pre-post measurement strategy.

Table S1 shows that, for educators involved in PEEC programs, all outcomes of interest (except one) were significantly and positively correlated with an educator’s overall dose of a PEEC program. The largest effect sizes ($\Delta R^2 = .10$ or greater) were associated with the following outcomes:

- Overall teacher practice (contributed to in particular by the index for teacher engagement/ growth)
- Use of local places
- Student engagement in learning
- Student civic engagement
- Community civic engagement
- Community planning/ decision making processes.
Using the student ratings of outcomes (Table S2) produced similar results again with nearly all of the target outcomes significantly correlated with the program dose of a student’s teacher. For the student ratings, the effect sizes were consistently smaller (but still statistically significant) than those found for teachers. The largest effect sizes ($\Delta R^2 = .11, .08, \text{ and } .07$ respectively) were associated with the following three outcomes:

- Student time spent outdoors
- Student stewardship behavior
- Learning through local resources.

Nearly all the outcomes tested for students showed significant, positive correlation with program dose. The generally smaller size of the effects is interpreted below.

The dose-response measurement strategy was perhaps most successful at the cross program level of analysis. The effect sizes detected for individual PEEC programs were usually larger than those detected for PEEC as a whole, but the results from the cross-program PEEC analysis are more transferable and perhaps even generalizable because they include a broader diversity in the sample. The PEEC cross-program aggregate samples of educators ($n = 342$) and students ($n = 1,461$) includes a very wide range of demographic characteristics (urban, suburban, rural), grade ranges (educators K-12, students 4-12), and program intensity (first year, single project professional development through multi-year, whole school change.) Yet all PEEC programs share a mutually accepted core philosophy of place-based education.

Thus, the findings from this PEEC cross-program survey analysis can begin to represent place-based education in general because the observed effects are less likely to be a function of unique features of the local program context. In this way they make a greater contribution to the field than the more context-specific claims resulting from analyzing any of the PEEC programs individually.

It is important to note that while the dose-response measurement strategy has been successful this year, it is not yet perfect by any means. Some of the limitations are discussed in this section below, and several warranted refinements are summarized in the implications for practice section of this report.
**Teacher-level outcomes are strongest and/or best suited to dose-response measure**

One of the most striking features of the PEEC cross program survey analysis is the strong correlation detected between program dose and the overall module for teacher practice, as shown in Figure S4. The effect size it shows ($\Delta R^2 = .19$, or percent variance = 19%) is substantial. The overall module of teacher practice is an aggregate of average scores for items about teacher collaboration, extent that curricular goals, confidence, energy, and growth as a teacher, and use of local people and places. This graph shows that the more an educator participates in and uses the tools of a PEEC program, the more likely they are to report high levels of these desired teacher practice outcomes. The idea that an external program could account for nearly a fifth of the variance in scores about important aspects of teacher practice in a school suggests that place-based education programs like those in PEEC do make a positive difference, even amidst all the other factors influencing teachers.

Figure S4 also represents the most reliable claim resulting from any PEEC survey analysis made to date. This is because it represents a broad range of survey items (12) responded to by the most representative sample of educators possible within PEEC, with the end result that many inherent measurement, instrument, and sample bias errors are likely to have cancelled each other out. Further, there is virtually zero chance that the survey responses could have ended up in this configuration by chance ($p = .000$). Something systematic is going on here, and there are no immediately obvious competing explanations other than participation in a PEEC program. Additional compelling support for this

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5 Please see the methods section of this report for a full discussion of effect sizes and other important notes for interpreting these graphs.
First, it makes sense that program effects become increasingly diluted as the number of steps in the logic chain increases, just like the heat felt from a fire diminishes with distance from the source flame. Results from the portions of the PEEC survey finding is provided by the noteworthy amount of qualitative data which describe the same teacher practice outcomes embedded in this measure of key features of teacher practice.

Figure S5 also depicts a highly reliable claim (for many of the same reasons). It shows the relationship between the program dose of a student’s teacher and student reports of their own attachment to the place where they live, as determined by fifteen survey items about things like time spent outdoors, use of local places for learning, connection to community, and knowledge and attitudes about their local community. The positive and significant correlation but relatively small effect size shown here ($\Delta R^2 = .06$, or percent variance = 6%) suggests two interpretations. First, despite the relatively small effect size, it provides empirical evidence of an essential link in PEEC’s theory of change for place-based education. PEEC is justified in claiming that their programs are likely to help students feel and act more connected to the community in which they live. Second, student-level outcomes of PEEC programs are notably smaller than teacher-level outcomes, at least as detected by PEEC’s dose-response measurement tools and analysis. This pattern is highly consistent across all outcomes measured for both educators and students. We offer two potential explanations for the smaller effect sizes observed for student-level outcomes as opposed to teacher-level ones.

For PEEC, the most basic logic chain is: Place-based education programs $\rightarrow$ (lead to) changes in teacher practice $\rightarrow$ student-level outcomes $\rightarrow$ community impacts.
instruments directed at measuring student academic achievement are consistent with this assertion. Educator reports of student enthusiasm for learning (a precursor to academic achievement as identified by the research literature) correlate well with program dose ($\Delta R^2 = .16, p < .01$), but reports from the same educators reveal a statistically significant but smaller magnitude correlation for the index about student academic achievement itself ($\Delta R^2 = .03$). Moving down the logic chain even further we find that student responses do not correlate well with program dose either ($\Delta R^2 = .02$ for both the index of enthusiasm for learning and the item about program helping with test scores on the student surveys).

Second, there are inherent limitations to the instrumentation and analysis of the dose-response measurement strategy. For instance, the effects described in the preceding paragraph do not mean that educators and student think place-based education is useless for impacting student academic achievement. The observed effects are positive and statistically significant. Further, most educators and students circled the “tend to agree” or “strongly agree” responses for the survey items associated with the enthusiasm for learning and academic achievement indices, as evidenced by the mean and median scores hovering right around the value of 3. This highly important descriptive statistical finding can easily get lost in all the inferential, predictive statistics of the dose-response measurement strategy. Another limitation of the strategy is that the challenges associated with reliance on self-reported data as opposed to more empirically verifiable observations are amplified when asking for yet higher levels of inference. Surveying people about their own experiences (e.g. asking an educator how much s/he collaborates with colleagues, or asking a student how often they visit parks or natural areas) introduces some measurement error. But asking people to report about other peoples’ experiences (e.g. teacher reports of student enthusiasm as opposed to student reports of their own enthusiasm) compounds that measurement error even more. Thus, the further from the “splash” of the place-based education intervention, the more difficult it is to measure the effects.

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7 There are even more extreme examples of this “ceiling effect” in the analyses for individual PEEC programs.
To summarize, the consistently lower effect sizes detected in this analysis for students as opposed to educators do suggest that other evidence besides survey results should be sought. The survey analysis already provides significant evidence that program effects on desired outcomes are clearly visible in both teacher and student reports, but additional types of evidence will triangulate and strengthen the existing claims about the positive student-level effects of place-based education. Two obvious strategies are the use of standardized test scores to assess relationship between program dose and educational achievement and the use of student stories about educational impacts. Each of these strategies, however, has their own group of stanch adherents and equally resolute critics. A third, perhaps more optimal approach for PEEC programs is to develop a series of small scale experimental or quasi-experiment investigations that test student-level effects of specific, locally appropriate place-based education teaching strategies.\(^8\)

Although the dose-response measurement strategy does not generate a perfect, complete case for student-level impacts of place-based education, it does demonstrate significant impacts. Given the inherent limitations of the instruments and analysis, this is probably all that can be reasonably expected.

**Whole school-level “tipping point” hypothesis**

The following graphs and text describe how educator survey data from the two whole school change model programs in PEEC (CO-SEED and the Sustainable Schools Program or SSP) combine to show that program dose may be operating at the level of the whole school as well as at the level of the individual teacher. Further, it seems that teacher level dose has the most influence for the first year or two of a program, and that school level dose eventually becomes the stronger predictor of desired outcomes.

**Two views of teacher-level effects at Malden**

The Spring 2004 educator survey instrument for the Malden site of project CO-SEED was modified to include 22 items from a survey that had been administered four years prior. Thus, the Malden educator sample allowed for the comparison of results from two different measurement strategies, i.e. a pre-post measure spanning four years versus the newly developed dose-response measure.\(^9\)

The findings from the two measurement strategies appeared to conflict at first. The results of the pre-post analysis are summarized in Table S3 in the preceding section.

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\(^8\) Perhaps similar to the investigation into the effects of sustainability-oriented curriculum units on literacy skills piloted by the Sustainable Schools Program. The SSP 03-04 Evaluation Report has more details and is available on the PEEC web site at http://www.PEECworks.org/PEEC/PEEC_Reports.

\(^9\) A more detailed discussion of the Malden pre-post survey and related analyses can be found in the 03-04 CO-SEED Evaluation Report, available from the PEEC web site at http://www.PEECworks.org/PEEC/PEEC_Reports.
of this report. They show remarkably consistent and large gains (most greater than a full standard deviation) from pre- to post- on every single index. This provided compelling evidence of positive changes in teacher practice during the four years of CO-SEED’s formal tenure at Malden. But the dose-response analysis suggested that the newer teachers at Malden (i.e. lower values for the CO-SEED dose variable) were reporting just as high or higher scores for teacher practice outcomes. This occurred despite a clear trend of positive correlations between CO-SEED and most outcomes across the full sample of seven CO-SEED sites. As an illustrative example, a slightly negative correlation of $\Delta R^2 = -.01$ ($p > .05$, $n = 52$) was found for the ‘improving teacher craft’ module at Malden, whereas a clearly positive correlation of $\Delta R^2 = .19$ ($p < .01$, $n = 201$) was found across CO-SEED as a whole. This pattern was typical.

Part of the potential conflict in the findings from Malden/CO-SEED surveys was resolved by realizing that nearly all survey item responses from Malden, whether from staff who were new to the school and CO-SEED or from Malden/CO-SEED veterans, were near the upper limit of the response scale on most items. “Ceiling effects” like this can functionally obscure any dose-response correlations that might exist.

**Figure S6. School-level Dose (hypothesized)**
*From PEEC educator surveys, 2003-04*

The school-level dose hypothesis then emerged as a solution with far more explanatory power. Could it be that CO-SEED had somehow impacted the norms and culture of the Malden site, so that the newer teachers began exhibiting the outcomes desired by CO-SEED, even though they had, as individual teachers, experienced less direct dose of CO-SEED? If so, then the data reviewed thus far would cease to be contradictory. If so, then

Figure S6 might represent the relative impacts of two different dimensions, or factors, of the program dose construct.

**Further tests of the school-level dose hypothesis**

This school-level dose hypothesis was then tested with available educator survey data from the other whole school change model program within PEEC, the Sustainable Schools Project (SSP). The SSP data showed the same pattern, in an even more pronounced way. The improving teacher craft module for SSP as a whole yielded a positive correlation with a very large effect size of $\Delta R^2 = .32$ ($p < .01$). The
same module, when analyzed with only the data from the veteran site of Champlain Elementary (i.e. the SSP analogue of CO-SEED's Malden), returned a slightly negative ($\Delta R^2 = -0.01, p > .05$ because there was no correlation), just as it had for the Malden site within CO-SEED.

Based on the above analysis, we predicted that we would find a similar pattern when the educator survey data from the Gilford CO-SEED site was entered and analyzed. Gilford was also a veteran site that had had multiple years of CO-SEED working in the school, establishing a culture of support for place-based education. Once again, the hypothesis was supported.

A further test of this hypothesis was made by aggregating educator survey data from both whole school change model programs within PEEC and looking at the index that was designed specifically to test for possible changes in the culture of a school. Figure S7 shows a small, positive, statistically significant correlation between program dose and teacher responses to two survey items about their school's culture. This same index for just the Malden CO-SEED site or just the Champlain SSP site exhibited the now familiar pattern of no correlation. The hypothesis was supported again.

The last piece of supporting evidence presented here in this report may be one of the more compelling ones. In short, qualitative interview data generally support the notion that the PEEC whole school change model programs end up creating a culture which eventually has perhaps more impact on teachers than the direct services of the program itself. As one specific instance to illustrate the point, below are quotes from an exchange during a June, 2004 evaluation interview with a group of teachers at the Gilford CO-SEED site. This group consisted of teachers who had a low dose score on their CO-SEED survey but very high outcome scores. These teachers were all from the same
grade level and had talked about how they had not interacted with CO-SEED much until this year because they were more focused on organizing other aspects of their curriculum and grade level team.

“I see more and more every year, teachers that are sucked in [to CO-SEED] because it’s fun.”

“I felt a strong enthusiasm from the people who have been involved, an enthusiasm that obviously hasn’t diminished, it’s flowered. You catch the fever. Definitely people’s interest and enthusiasm is what hooks people, especially community members. The learning process for the students and teachers has been exactly the same thing. There are still some teachers that are kind of dabbling, but then we might say ‘well, come along with us.’ It snowballs.”

“It started out as being just a couple of people, then quickly spread to maybe 10 people, now probably three quarters. Everybody’s been involved now at some level.”

Overall, the implications of this hypothesized interaction between teacher-level and school-level dose for whole school change models are substantial. That is why utmost care should be taken to rigorously critique, test, and refine the measurement strategy. Further investigation into direct measures and analysis of school-level dose factors is clearly warranted for subsequent years of CO-SEED and PEEC evaluation. It is conceivable that further quantitative analysis could begin to make more detailed inferences about the nature of the “tipping point” when school-level dose begins to take effect in a potentially sustainable way. Interviews or other qualitative methods could perhaps begin to discover what conditions are most likely to lead to this whole school “tipping point” phenomenon.
CROSS-PROGRAM SURVEYS, IMPLICATIONS FOR PRACTICE

Analysis of the successful dose-response measurement strategy pilot led the evaluation team to the three implications for practice discussed below.

Continue to explore 2003-04 survey data

The individual and cross-program analyses of survey results presented in this year’s evaluation reports capture the findings and patterns in the data that are most obvious and perhaps most useful, but do not represent a fully exhaustive analysis. There is so much quantity and diversity of survey data has been collected that there is almost certainly more to be learned from creative exploration of the existing data set. Further analysis of existing data is clearly warranted.

There are several forms this continued analysis could take. One activity that could yield valuable results for PEEC programs is in-depth, reflective conversations between evaluators and program staff to maximize the formative learning from existing survey data. Another potentially valuable utilization of existing survey data might be the preparation of customized pamphlets or mini-reports targeted to the decision making needs of specific program stakeholders. Finally, there are many dimensions of the existing data set that can and should actively inform the current project to translate the PEEC working theory of change into some kind of logic model format.

Refine the measures for program dose

The positive findings from this year’s pilot of the dose-response measurement strategy suggest that further investment in refining the measurement tools is warranted. The following bulleted items are several of the directions that could be followed:

- Factor analysis and extensive testing of internal reliability of the indices and modules could result in substantially streamlined survey instruments, and increasingly confident claims about the validity and transferability of the measurement strategy.

- The development of a measure of school-level dose could further validate (or refute) the school-level tipping point hypothesis. If such a statistically defensible tipping point exists, that information could be very valuable to funders looking to maximize the impact of their investment in place-based education programs. It could also help program staff to more precisely align their program delivery strategies based upon where the particular audience happens to be at the moment on some tipping point continuum.
• The student-level dose calculations remain conceptually and logistically problematic. Although on one level it may not even make sense at all to pursue individual student-level measures of dose if the unit of place-based education interventions is really the classroom, not the individual student, the importance of student level outcomes and the fact that significant positive relationships were found argue for their continued inclusion, at least for the coming year. The fact that teacher-level outcomes were consistently stronger than student-level outcomes in this year’s survey analysis is further support for the need to continue to find appropriate, viable, and more direct measures of student performance to triangulate and strengthen claims of the effect of place-based education on students. The methodological and political challenges associated with measuring student performance are formidable and probably ought not to be underestimated.

• It remains unclear how to treat community partner data within the dose-response measurement strategy, since program dose is less straightforward for this audience and since many of the outcomes are primarily educator-focused as currently constructed. Perhaps community impacts are better measured with qualitative methods, tracking of other/ existing indicators of community health and vitality, or pre-post survey measurement strategies. None of these methods is obviously superior to the others, and so further strategizing and prioritizing in this realm is warranted.

• Initial attempts to control for the influence of other place-based education training besides PEEC have yielded some potentially useful results. For instance, there is preliminary (though inconclusive) evidence to suggest that PEEC programs may be sparking individual teachers to seek additional place-based education training. Perhaps the tipping point idea explains something about teacher-level effects as well as school-level effects. The survey items designed to capture this information warrant expansion and refinement in order to more credibly test for such effects.
Invite critique and dissemination of the dose-response strategy and tools

This report has mentioned several times that the pilot dose-response measurement strategy was successful, but that it is still far from perfect. A critical piece of testing the credibility and intended transferability of the approach is to actively encourage other program evaluation efforts to adapt and test the strategy and tools in their own program settings. This could be done through personal and professional networking of PEEC members and evaluators, through investment in efforts to present the methodology and findings at professional conferences, and also through publication in the popular and academic literature. It is conceivable that the value to PEEC programs of having developed this measurement strategy will increase faster if other programs utilize it than if PEEC programs themselves simply continue to utilize it for themselves. Embracing this approach, however, could require a rethinking or evolution of PEEC’s evaluation strategy priorities in the near future. It may be that exposing the strategy to the rigors of public scrutiny\(^\text{10}\) will reveal minor and/or fatal flaws in the strategies or tools. If so, sooner is better than later to find that kind of information out. In the meantime, the findings can stand on their own merits.

CROSS-PROGRAM SURVEY METHODS: DETAILS

Administration

PEER Associates encourages program staff to be involved in the administration of evaluation instruments to the greatest reasonable extent. This includes securing permission from appropriate school authorities in all cases. Written guidelines for survey administration are provided to program staff. Evaluators oversee program staff as they download, copy, distribute, confidentially collect, and remit all survey instruments.

By the end of the evaluation period, the opportunity existed for most surveys administered by PEER to be taken by participants in an on-line format, rather than as a hard copy piece of paper. Many of these can be previewed by following the links at \text{http://www.peecworks.org/PEEC/PEEC_Instr/}. However, in each case during 2003-04, CO-SEED staff and evaluators decided together that the logistics would be easier for PEEC surveys to continue to be administered in paper format.

Pilot measurement strategy

Following the 2002-03 evaluation cycle, the members of the Place-Based Education Evaluation Collaborative wished to strengthen the quantitative elements of their evaluation strategy. Emerging from the September 2003 PEEC meeting, the top priority

\(^{10}\) i.e. the very source of the credibility of scientific discourse!
for the 2003-04 PEEC cross-program research agenda was to develop a way to measure the extent to which outcomes of interest varied consistently with degree of program exposure. By demonstrating the effectiveness of this pilot measurement strategy in 2003-04, PEEC has created a very solid methodological foundation for on-going evaluation in years to come.

The evaluation team settled on a “dose-response” measurement strategy, adapted from concepts in the field of behavioral psychology. From this frame, the question becomes: Do participants exposed to a higher “dose” of a program systematically report higher levels of behaviors and attitudes that the program is trying to impact? To the extent that relevant outcomes vary with dose, assertion of program impact becomes increasingly credible (Strosahl et al., 1998).

A primary benefit of this dose-response measurement strategy for PEEC is that evidence of program impact can be assessed using survey data collected at any point before, during, or after program completion, provided there is enough variation of dose among program participants. This sidesteps numerous conceptual and logistical obstacles to pursuing strict pre- and post-program measurement efforts, and also allows a relatively standardized set of surveys to be more easily used across the diverse program designs in PEEC.

The main thrust of all the survey-related sections of this report is to present the findings of the effort to pilot a dose-response measurement strategy. Thus, this report takes an educative approach to presenting statistical findings. We omit some of the more descriptive statistical representations (e.g. simple bar graphs) in favor of putting more focused effort into helping the reader understand the meaning and power of the inferential statistics that undergird this dose-response measurement strategy. It will substantially increase the long term value of this pilot measurement strategy effort if key program staff have a solid understanding of the significance of the statistical foundation upon which it is based. There are, however, additional questions that could be explored with the existing data, beyond the scope of the current report. It is possible that PEEC programs might individually or collectively find it useful to more exhaustively analyze some of the survey data already collected, in order to produce a supplementary “quantitative only” evaluation report or pamphlet targeting specific decision-making needs of priority stakeholders.

Another consequence of this focus on piloting a measurement strategy is that some of the most important evaluation “findings” are actually presented here in the “methods” section of the report for the sake of coherence of the narrative. Testing the method was the finding.
**Instrument design strategy (indices and modules)**

Much of 2003-04 was spent developing and refining a set of survey modules that were standardized for use across all PEEC programs. Design elements were drawn from previously implemented surveys from several PEEC programs, as well as from individual program logic models and the PEEC cross program theory of change. This standardization process allows for much larger samples and more varied comparison groups over longer time periods. Further, it is hoped that the place-based education philosophy that is shared by all PEEC programs and designed into the fabric of these surveys will make the instruments transferable/ modifiable for use in other place-based education programs. All survey instruments are available for free distribution (citation requested) on the PEEC web site.

The design process began by grouping items from existing surveys into broad conceptual categories, and adding additional categories to the list where needed. This resulted in a list of eight core ideas for potential inclusion across all PEEC surveys. We call these “modules.” Each module was then broken down into two to five constituent “indices,” each intended to capture a distinct element of the idea represented by the module. Similarly, two or more “items” (i.e. individual survey questions) were developed for each index, taking care to use items from existing surveys whenever possible in order to maximize the possibility of comparing current and future results to previously collected data. Finally, because changes in teacher practice are at the heart of many PEEC interventions, we grouped several modules together to form, at the highest level in this scheme, an “overall module” construct representing all survey elements that reflect teacher practices targeted by the PEEC program.

Several design guidelines were used in the construction of survey items. Most modules have one negatively worded item as a way to help keep respondents focused on the meaning of the response options. Extreme wording was avoided while constructing the phrasing for items. Response scales for all Likert items were standardized with four interval points (either agreement or frequency) in order to oblige respondents to choose either the top half or the bottom half of the scale (or else the systematically included option for “n/a, don’t know”).

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Billings Trees from 1880-1944

Kind of tree
From what might be regarded as a "test bank" of survey components, program-specific surveys were then compiled by choosing the highest priority modules and indices for each program and audience (i.e. community member/partner, educator, or student). Drafts were compiled by evaluators and shared with program staff, with each instrument going through multiple rounds of editing and/or field testing (sometimes more than dozen!). Many of the surveys were converted into on-line versions through the commercial software package, Survey Monkey. By 2004-05 the evaluation team intends to have on-line administration options for all survey versions.

There are three important reasons for using this indices and modules design approach. The first is that the survey design begins with relatively broad questions or concepts. Although it proceeds to more intricate items, the "answers" we're interested in are usually not focused on the item level, and we want our analytic strategy to be consistent with our primary interests. The second reason is that each time one conducts a statistical test, there is a small probability of reaching an erroneous conclusion on the basis of that test (think of the "margin of error" reported with polling results). That probability of error compounds with multiple tests, and for this reason it is common practice to minimize the number of tests by reducing the number of "scores" one has to work with--a process referred to as data reduction. Conducting our analyses at the level of indices instead of individual survey items reduces the risk that we will be attempting to extract meaningful interpretations from what are, in fact, chance arrangements of the data. Finally, the third reason for this approach is to stabilize the construct being analyzed. Individual survey items can be modified slightly without having to change the index.

This was crucial during 2003-04 because different versions of surveys needed to be administered (even within the same PEEC program) as a consequence of the iterative design process. This also allows for the refinement and evolution of the wording of survey items. Finally, it is hoped that this indices and modules design approach increases the transferability of surveys to other place-based education programs.
The resulting indices and modules are summarized in Figure M1 below. See Appendices D and E for samples of surveys used for SSP this year. A complete list of all survey items used for PEEC surveys is available on the PEEC web site.

It was conceded at the beginning of the design phase that any measurement of the “dose” of a program would be necessarily imprecise. PEEC programs are not simple training seminars that are over and done with in two hours. Rather, they are multi-faceted, highly adapted to local conditions, take place over extended periods of time, and intentionally rely on informal diffusion throughout the school and community in which they take place. These factors make it difficult to definitively determine even who is an official “program participant.” Still, any measure of dose would likely be more accurate than no measure of dose, and so the number of hours of direct, personal contact with formal program elements was taken as the starting target for measurement. Comprehensive lists of the core activities for each PEEC program were developed, and survey respondents were asked to estimate the number of times that they had participated in each activity over the years of their involvement with the program (see item D1 on the survey in Appendix D).

Separately, program staff generated estimates of the average duration of a typical example of each activity in the list. From this information it was possible to calculate a rough estimate of the total number of hours of participation. Additional multiple choice items were created which asked participants for overall estimates of: the number of hours of participation (item D2); the frequency with which they were implementing the program in their classrooms (item D3); the extent to which the program is embedded in their curriculum (item D4); and the amount of effort they expended on this program relative to other aspects of their teaching (item D5). During the Spring of 2003 we realized that it was also critical to find out the amount of training participants had received in place-based education prior to involvement with PEEC programs, and so an additional question to that effect (item D12) was added for later versions of the surveys.
**Figure M1. Modules and Indices for Community, Educator and Student surveys**

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<td>value to community</td>
<td>meet nat'l standards</td>
<td>project sustainability</td>
<td>world in spatial terms</td>
<td>planning for the future</td>
<td>problem-solving</td>
<td>interdisciplinary utility</td>
<td>mapping mastery</td>
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<tr>
<td>Community Mapping Program (CMP) specific</td>
<td>project implementation</td>
<td>use of GIS</td>
<td>value to community</td>
<td>meet nat'l standards</td>
<td>project sustainability</td>
<td>world in spatial terms</td>
<td>planning for the future</td>
<td>problem-solving</td>
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<tr>
<td>Forest For Every Classroom (FFEC) specific</td>
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<td>value of public lands</td>
<td>misc. items</td>
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<td>value of public lands</td>
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PEEC Cross-Program Evaluation Report 2003-04

PEER Associates, Inc. 57
Analysis strategy for Likert scale data

Assumptions

First, it is important to reiterate that the entire dose-response measurement strategy is built upon the assumption that program dose is, in fact, a latent construct that can sensibly and accurately describe the experience of an individual participant in one of these PEEC programs. If one does not accept this assumption, then one should disregard all reported survey results involving inferential statistics.

Second, there is debate in the academic community about the validity of applying parametric statistical tests to data from Likert scale type sources (see Newton & Rudestam, 1999, pp. 179-187). We are convinced by the side that argues that such tests are appropriate due to the assumption that the latent constructs being measured are continuous in nature, despite being manifested in the data as ordered categories.

Third, because the primary goal was to pilot a measurement strategy, a broadly exploratory approach was taken during the first stages of data analysis. In order to protect against over-interpretation of correlations between dose and program outcomes at multiple levels of analysis (i.e. item level, index level, module level, and overall module level), or the critique of going on a “fishing expedition” for affirming results, stricter criteria for statistical significance were assumed prior to analysis. The Bonferroni correction stipulates that for aggregate categories of analysis, the p value statistical significance threshold should be divided by the number of component constructs. In our case, this means that the p value threshold for modules and overall modules is closer to .01 than the typical .05.

Fourth, PEEC programs share enough of a common philosophy (generally described in the working theory of change for place-based education) to justify aggregating samples across programs. Thus, any of the findings from cross-program multiple regression analyses only make sense to the extent that the programs are believed to be specific cases of place-based education. The calculation of the dose composite variable includes one factor for total hours of program exposure (which is affected by relative intensity of a three year whole school change model versus a more focused professional development model), and two factors for extent of program implementation. So the dose variable does not mean exactly the same thing for each program, which somewhat weakens the justification for direct comparison across programs. However, the net effect should be to dampen observed correlations and so this issue simply results in a more conservative claim. Thus, any effects that are observed are more likely to represent an actual empirical phenomenon.

The final and most general assumption is that deep methodological rigor in statistical analysis was extremely important for PEEC. In the highly politicized arena
of education, quantitative evaluation and research findings are at a premium, even though many consumers of the findings may not be substantially trained in critically examining the math and philosophy underlying statistical presentations of data. Thus, the evaluation team took the position that PEEC members (i.e. our clients) need to be entirely confident that any statistical evaluation findings they present to stakeholders are thoroughly defensible on methodological grounds.

**Tools**

Since the number of surveys collected for PEEC during the 2003-2004 evaluation cycle was fairly large (i.e. over 2,100 total), most of the survey data entry was outsourced to professional data entry sub-contractors or completed by graduate research assistants for PEER. In all cases, data entry specialists were provided with a detailed data entry protocol and database (SPSS) template files that were already configured for the specific surveys. Responses to open-ended questions were typed into MS Word documents and analyzed separately. Additionally, a journal was kept that documents the key junctures in the exploratory process of coming to a viable analysis strategy.

**Survey analysis process findings**

In short, the dose-response measurement strategy tested this year has generated defensible inferences about program effects. Refinements are certainly warranted, but overall the pilot test can be considered to have been “successful.” The paragraphs that follow describe process findings for the measurement of dose at the teacher, student, and school levels.

The measurement of dose at the teacher level was the first and most intensely investigated element of the strategy to be pursued. In the first step, a data set was constructed that included educator data from three of the four PEEC programs\(^\text{11}\). Bivariate correlations between each of the potential dosage items (D1-D5), and

\(^{11}\) Administration of the educator survey from the fourth PEEC program and subsequent data entry were not yet complete. These data became available within two weeks and were immediately incorporated into the analysis.
program outcome indices were analyzed\textsuperscript{12}. As new data sets became available from all PEEC programs, interpretative hypotheses were continually generated and tested on the aggregate data sets and also on individual program data sets.

Eventually, items D2 (participant estimate of overall hours of exposure to formal program elements) and D5 (amount of effort put into the program relative to other teaching activities) were excluded from subsequent analyses, due to low and/or highly variable correlations with other data. A composite dose score was then calculated by scaling the raw score for item D1\textsuperscript{13} and averaging that result with the average of the scores for item D3 (frequency of program activities in the classroom curriculum) and item D4 (extent to which the program is embedded in the year-long curriculum). The resulting dose composite score was a number between 0 and 4.0. This dose scale score was then successfully cross-validated with various combinations of the original data set and with all new data sets as they became available.

Measurement of dose at the student level was more problematic. Many of the student survey instruments contained student versions of items D3-D5 with the intent of corroborating educator reports of program implementation. Averaging the scores on these items into a student dose variable did, indeed, reveal statistically significant correlations between dose and selected program outcomes (which were typically higher than those obtained by simply assigning students the same dose composite score as their teachers), but this approach was considered problematic on conceptual grounds. We realized that this measure of student dose is not likely to be independent of student engagement. Students who were engaged in the program are likely to systematically remember more and/or overestimate the amount that the program was a part of the experienced curriculum. We thus settled for assigning students with the composite dose score of their teacher whenever that data was available. This raised three important implications:

1. Does it even make sense to conceptualize dose as varying among students in a given classroom? This question needs to be explored further with program staff to determine whether or not to continue efforts to find a suitable student-level dose measure other than that of the student’s teacher.

2. Since student dose is determined to be rationally derived from the dose of their teacher, it becomes essential that student and educator surveys be administered at the same time. There were several cases in 2003-04 where this

\textsuperscript{12}... by calculating Pearson correlation coefficients and also by systematically viewing bivariate scatter plots and frequency distributions for outliers or other confounding anomalies.

\textsuperscript{13}Item D1 generated an estimate of the total number of hours of exposure to formal program elements. The raw scores ranged from 0 to over 500. Assigning a cumulative value of .5 for each 1/3 of a standard deviation in the raw score range generated a scale of 0-4 that is compatible with the scale of items D3 and D4.
did not happen. For example, the dose-response statistical analysis could not be run for the situations in which the student surveys were administered in the spring while the educator surveys were administered in the fall.

3. It is critical that educators put their names on the surveys. Otherwise there is no way to assign a dose to students. This approach, however, will require extra effort from evaluators and program staff to create administration procedures that assure educators of the sanctity of keeping their survey responses confidential.

Perhaps the most far-reaching results of PEEC’s pilot of a dose-response measurement strategy comes from looking at dose at the school level. It appears that, at least for whole school change model programs within PEEC, teacher level dose begins to be superseded by a school level dose after a program has been involved with that school for a year or more. It seems that as programs become an accepted part of the school culture and norms, duration of the program at the school becomes a more accurate predictor of program outcomes for an individual participant than the individual’s own teacher-level dose. This argument is discussed more fully in the PEEC 2003-04 Cross-Program Evaluation Report (PEER, 2004) and provides striking support for the educational impact model proposed by Marzano (2000, 2003) that was discussed in a previous section of this report.

The “response” side of the pilot dose-response measurement strategy findings was considerably more straightforward than the “dose” side. Only one potential challenge with using the above described indices and modules system for measuring program outcomes was found. Educator responses to many of the questions tended to be skewed toward the “agreement” side of the scale. This “ceiling effect” imposes limits on both the power of statistical analyses with this data, and relatedly, on the sensitivity of these measures to program effects. Some suggestions for identifying and interpreting this ceiling effect are provided in the next

14 This general approach was loosely tested in the 2002-03 evaluation of CO-SEED, a program in PEEC, with inconclusive results (Powers & Duffin, 2003, p. 61).
section. One implication of skewed distributions for the dose-measurement strategy is that simple averages (means) may not accurately describe the central tendency of responses, so we have reported medians in addition to means. Another implication is that it may be advisable to explore ways of rewording many of the survey items to push the average response lower on the agreement scale.

The distribution of student responses, however, was almost perfectly normal (i.e. a bell-shaped curve) for all indices and modules across all programs. This supports a claim for a relatively high degree of instrument and/or construct validity for the student survey items.

**Survey administration process findings**

On-line and paper administration of surveys each have their advantages and disadvantages. Paper administration tended to work better in situations where surveys were administered at a school-wide staff meeting or in-service day. As availability and comfort with internet access increase, this advantage may slowly erode over time. Additionally, data entry for on-line survey administration becomes incrementally less expensive in terms of both time and money as each sample becomes larger than a dozen or so.

More importantly, the sample of educator and student surveys collected across PEEC was large enough in 2003-04 that continued increase in sample size will not necessarily lead to increases in statistical power or significance. This is especially true for the larger programs in PEEC (i.e. CO-SEED and CMP), and less true for the smaller programs (i.e. SSP and FFEC). With each succeeding year of evaluation efforts, a cost-benefit analysis of survey administration is likely to favor on-line administration to a randomly or purposefully sampled set of participants instead of paper administration to all participants. This does not, however, take into account the less tangible benefit of having participants fill out surveys as a way to engage them with the intended outcomes of the program.

As mentioned above, one of the primary advantages of this dose-response measurement strategy is that the measurement event can take place at any time in the program cycle. This provides an excellent opportunity to avoid administering surveys during the end of the school year rush in April and May. We recommend that programs work to create a culture and expectation of a regular time of year (e.g. mid- or late winter) as the “survey season.”
**Closing comments on survey methods**

This section closes with two important caveats. First, the number values of the dependent variables (i.e. program outcomes, on the vertical axis) shown in any graphs in this report should not be interpreted as corresponding to any direct physical reality. In actuality, they are averages of averages for groups of self-reported responses. Statistics do enable us to identify systematic patterns in the data which can be broadly connected to observed phenomena, and which can be very helpful in making important programmatic decisions. But it is not defensible to assert that a “3.5” on, say, the student academic achievement index, corresponds directly to a certain test score or any other isolatable empirical event.

Second, we encourage the reader to heed the old admonition that “correlation does not equal causation.” The statistical data presented here (and in almost any other piece of social science research with statistics) are correlational. They say that one thing is more likely to be observed when another thing is also present. That is it. The notion of what constitutes “causation” has been, and continues to be, hotly debated in academic and political circles. In a recent paper, Michael Scriven, a very well-respected educational researcher/evaluator notes that, “This concept [causation] has had a stormy history, from which it has not yet emerged” (Scriven, 2004, p. 1). Generally speaking, and for program evaluation in particular, this evaluation team proposes that “validity” is in the eye of the stakeholder.
OVERALL CROSS-PROGRAM CONCLUSIONS AND IMPLICATIONS FOR PRACTICE

The results of the formal PEEC cross-program research agenda and informal reflection upon the benefits of the collaborative structure of PEEC both provide clear support for the notion that PEEC as a whole is much greater than the sum of its parts.

Some of the most important results of the PEEC’s 2003-04 cross-program effort include...

Benefits of collaboration:

- Articulation of cross-program theory, logic, and conceptual frameworks
- Efficiencies in design of evaluation instruments and processes
- Shared fundraising and program promotion
- Cross-fertilization among PEEC programs.

Extension of place-based education related literature review

Cross-program survey findings show many significant, positive outcomes for educators. The largest effects were for:

- Overall teacher practice (contributed to in particular by the index for teacher engagement/growth)
- Use of local places
- Student engagement in learning
- Student civic engagement
- Community civic engagement
- Community planning/decision making processes.
Cross-program survey findings show many significant, positive outcomes for students. Although effect sizes were generally smaller than those for educators, the largest effects were for:

- Student time spent outdoors
- Student stewardship behavior
- Learning through local resources.

Overall conclusions from the cross-program surveys:

- Dose-response measurement strategy pilot was successful
- Teacher-level outcomes are strongest and/or best suited to dose-response measure
- Program dose appears to be operative at a whole school-level as well as at an individual teacher-level (whole school-level “tipping point” hypothesis).

Given the results summarized immediately above, the overall implication for practice is for PEEC to start thinking even longer term. One strategy to actively consider is building upon the success of this year’s pilot of the dose-response measurement strategy by further refining and testing the approach and attendant instruments. But the dose-response approach is not likely to fully meet the needs of PEEC on its own. A long term strategy for PEEC probably should include implementation of some longitudinal investigations, both qualitative and quantitative. Further, continued support for a multiple-methods approach in which various qualitative and quantitative strategies feed each other in iterative cycles is also a key ingredient in the long term recipe. Integrating these approaches with continued refinements of program theory and logic will allow for steady, incremental progress toward increasingly causal claims of impact. The continued synergy of this integrated approach will most likely require deep, on-going reflection on the purpose, processes, and priorities of the collaborative structure of PEEC.
LITERATURE CITED


Marzano, R. J. (2000). A new era of school reform: Going where the research takes us. Mid-continent Research for Education and Learning, Aurora, CO.


Place-based Education Evaluation Collaborative (PEEC) website: http://www.peecworks.org


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## APPENDIX A: PLANNING EXERCISE FROM JUNE 26, 2003 AT SHELBURNE FARMS

Laying the foundation for PEEC’s cross-project research agenda

<table>
<thead>
<tr>
<th>Possible approach</th>
<th>Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A- Program-based</strong> (15 dot votes)</td>
<td>• Strong communication of what programs actually do</td>
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<tr>
<td>• Adding and/or standardizing a few strategically chosen questions in each program’s existing evaluation plans</td>
<td>• Fewer risky predictions... always some story to tell</td>
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<tr>
<td>• Content might focus on changes in teacher practice student civic engagement (questions that emerged from the charrette)</td>
<td>• Explores “why” and “how”</td>
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<td>• Content might focus on special education (or other questions that emerge from various parts of the 02-03 evaluation effort)</td>
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<td>• We’re loosely talking about a qualitative focus here</td>
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<tr>
<td><strong>B- Test Scores</strong> (B1: existing metric 4 dots, B2: design own metric 3 dots)</td>
<td>• A more risky use of PEEC evaluation resources because results take more effort to get and are less likely to be clearly positive</td>
</tr>
<tr>
<td>• Try and develop some replicable way of correlating student or teacher exposure to PEEC programs with some specific standardized test scores</td>
<td>• Instrument validity will be a threat because any standardized test will not measure exactly what the PEEC program does</td>
</tr>
<tr>
<td>• Content might focus on student writing</td>
<td>• Test scores have increasing impact on decision making in schools (despite instrument validity questions)</td>
</tr>
<tr>
<td>• Probably best to focus on getting access to existing test scores for statewide standardized tests</td>
<td>• Relatively large sample size is possible by aggregating all PEEC program... which increases credibility but also increases design and logistical challenges (and thus the time and energy to implement)</td>
</tr>
<tr>
<td>• Could consider trying to seek or design some standardized test that is consistent across all PEEC programs (but this might not be realistically possible)</td>
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<tr>
<td>• Could try and find some other standardizable measure of student achievement besides test scores</td>
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<tr>
<td>• We’re talking about a more quantitative emphasis here</td>
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</tr>
<tr>
<td><strong>C- Theory Building</strong> (23 dot votes)</td>
<td>• Investment of resources in reviewing/linking to published work (model building)</td>
</tr>
<tr>
<td>• Focus on testing a specific part of the Place-Based Education theoretical model as represented in Figure 1 or a more developed cross-project logic model</td>
<td>• Corresponding reduction in focus on PEEC programs</td>
</tr>
<tr>
<td>• Would rely on existing research literature to support other links in the theoretical model</td>
<td>• Ties PEEC program evaluations to broader educational theory</td>
</tr>
<tr>
<td>• More about improving the field and less about improving the PEEC programs per se</td>
<td></td>
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<tr>
<td>• Refining and synthesizing existing literature and research that makes the case</td>
<td></td>
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### APPENDIX B: SSP LOGIC MODEL

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Resources/Inputs</th>
<th>Activities/ Strategies</th>
<th>Short Term Outcomes</th>
<th>Long Term Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using Sustainability as an Integrating Context will improve student learning &amp; community engagement, teacher leadership &amp; parent/community involvement.</td>
<td>Shelburne Farms: science, agriculture &amp; environmental education resources; project direction; &amp; partnerships</td>
<td>Teachers’ collaborative planning of curriculum, stewardship projects &amp; community partnerships</td>
<td>Teachers coordinate &amp; collaborate more on curriculum planning &amp; instruction.</td>
<td>More decision-making &amp; actions that lead to sustainable communities</td>
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<td>VT EFS: project coordination; curriculum design; place-based &amp; embedded proof. development models; network of EFS/place teachers &amp; organizations</td>
<td>Concept-based curriculum units/courses related to sustainability for all students.</td>
<td>Teachers &amp; students demonstrate increased understanding of sustainability.</td>
<td>More integration of place-based EFS in curriculum</td>
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<td>School District: Administrators’, specialists’ &amp; teachers’ planning &amp; in-service time</td>
<td>Workshops on sustainability issues related to campus &amp; community.</td>
<td>Teachers include more community-based &amp; schoolyard learning opportunities in curriculum.</td>
<td>Ongoing school-community engagement</td>
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<td></td>
<td>Local community’s sustainability initiatives/ network: information &amp; coordination of community partners</td>
<td>Community partners’ ongoing collaboration with teachers, supporting place-based &amp; sustainability education</td>
<td>More teachers engaged in more extended community partnerships.</td>
<td>More schools engaged in EFS</td>
</tr>
<tr>
<td></td>
<td>Research: best practices for professional development; service learning; &amp; place-based education</td>
<td>School/ Community Stewardship projects as opportunities for school-wide interaction, improved sustainability practices, &amp; service-learning.</td>
<td>Increased student engagement in community</td>
<td>Systemic school improvement</td>
</tr>
<tr>
<td></td>
<td>Funding: private; local &amp; national government; in-kind</td>
<td>Integration of SSP strategies &amp; other professional development/student learning priorities</td>
<td>Teachers &amp; students demonstrate more enthusiasm for teaching &amp; learning.</td>
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<td></td>
<td>Evaluation: Shared learning of PEEC</td>
<td>Teacher study groups on developing curricula/projects, expectations/ assessment of student learning</td>
<td>More parents involved in school &amp; community projects</td>
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<td>Increased attention to sustainability practices in school building &amp; grounds.</td>
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**PEER Associates, Inc.**

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APPENDIX C: SSP EVALUATION OVERVIEW 2003-04

Sustainable Schools Project
Evaluation Methods 2003-2004
September 16, 2003
Amy Powers, Michael Duffin, George Tremblay

Project evaluation will:
- Evaluate effectiveness of the SSP model in terms of process (program implementation)
- Evaluate effectiveness of the SSP model in terms of outcomes (results)
- Provide useful information for project coordinators and funders to assist with program development, justification and refinement

Evaluators’ Roles
- Meet with project staff to develop evaluation plan, and make modifications as needed
- Data collection including site visits to schools, interviews, photo documentation
- Data analysis
- Report writing (to be completed by August 31, 2004)
- Provide planning and/or recommendations for Year Three evaluation (as appropriate)
- Areas of Focus: Amy will focus on areas 1 and 3 below; Michael will focus on area 2. Amy is contact person for SSP.
- Estimated number of days to complete SSP evaluation products: 30

SSP Staff Roles in evaluation process
- Develop Year Two evaluation plan with evaluators
- Provide input throughout the year via meetings, phone and/or email on evaluation direction and appropriateness of instruments
- Liaison between evaluators and school (e.g. setting up interview schedule)
- Collect and share observation notes, project documentation, photos with evaluators as designated
- Assist in administration of surveys, including data entry (organizational capacity of Shelburne Farms)
- Provide data such as test scores as designated
- Provide incentives for participant participation in evaluation process
- Meet with evaluators to consider needs assessment for Year Three
### Evaluation Strategies for SSP Evaluation 2003-2004

<table>
<thead>
<tr>
<th>Area of focus</th>
<th>Strategies</th>
<th>Timing</th>
<th>Evaluation Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. SSP One-Champlain Elementary</strong> (Amy, evaluation contact)</td>
<td>a) Re-establish in-school process-watcher(s)—SSP staff (JC, TT) checks in with process watchers and provide written record to evaluators monthly</td>
<td>Begin Fall ‘03</td>
<td>• What evidence is there that SSP work is or will be sustained in a school after year one and two?</td>
</tr>
<tr>
<td></td>
<td>b) Monthly monitoring/observations/reflections by SSP staff provided to evaluators (EZ will record at monthly meeting)</td>
<td>Begin Fall ‘03</td>
<td>• In what ways is teacher practice changing and sustained as a result of involvement with SSP?</td>
</tr>
<tr>
<td></td>
<td>c) Teacher post-post survey (slightly modified from ’02-03)</td>
<td>May ‘04</td>
<td>• As the model develops, what are the strengths and challenges faced by SSP staff and participants?</td>
</tr>
<tr>
<td></td>
<td>d) Teacher/school staff/community partner/SSP staff interviews (1-2 day site visit)</td>
<td>April ‘04</td>
<td></td>
</tr>
<tr>
<td></td>
<td>e) Student survey 4/5 team (cross-project survey module modified from CO-SEED’s) to measure community engagement/stewardship</td>
<td>September ‘03 &amp; May ‘04</td>
<td>• What effects does SSP work have on students’ awareness of places and people in their community?</td>
</tr>
<tr>
<td></td>
<td>f) Analysis of standardized test scores (if they are provided to us). Suggested comparison between SSP One, SSP Two, district and state reading and writing scores for second, 4th and 5th grade.</td>
<td>When available (probably July ‘04)</td>
<td>• What effects does SSP work have on students’ engagement in their community?</td>
</tr>
<tr>
<td></td>
<td>g) Analysis of student writing portfolio scores (if they are provided to us). Suggested comparison between SSP One, SSP Two for selected grade(s), with a focus on writing genre.</td>
<td>&quot;</td>
<td>• In what ways do the data from standardized test scores, locally scored portfolios and teacher perceptions triangulate to suggest effects of SSP on student literacy?</td>
</tr>
<tr>
<td></td>
<td>h) Teacher survey or interviews (as d. above; appropriate interviewees will include questions about literacy)</td>
<td>April ‘04</td>
<td></td>
</tr>
<tr>
<td></td>
<td>i) Use data from f. and g. above as SSP two baseline</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2. Literacy</strong> (Michael, evaluation contact)</td>
<td>f) Analysis of standardized test scores (if they are provided to us). Suggested comparison between SSP One, SSP Two, district and state reading and writing scores for second, 4th and 5th grade.</td>
<td>When available (probably July ‘04)</td>
<td>• How is the presence of SSP helping teachers meet existing literacy goals and requirements?</td>
</tr>
<tr>
<td></td>
<td>g) Analysis of student writing portfolio scores (if they are provided to us). Suggested comparison between SSP One, SSP Two for selected grade(s), with a focus on writing genre.</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>h) Teacher survey or interviews (as d. above; appropriate interviewees will include questions about literacy)</td>
<td>April ‘04</td>
<td></td>
</tr>
<tr>
<td></td>
<td>i) Use data from f. and g. above as SSP two baseline</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>3. SSP Two-Barnes School</strong> (Amy, evaluation contact)</td>
<td>j) Teacher/staff pre-surveys (as c. above)</td>
<td>Fall ‘03</td>
<td>• Gather baseline data for process and outcome questions</td>
</tr>
<tr>
<td></td>
<td>k) Establish in-school process-watchers (as above)</td>
<td>Fall ‘03</td>
<td></td>
</tr>
<tr>
<td></td>
<td>l) Student survey 4/5 grade (as e. above) (To serve as control group for Champlain’s 4/5 survey as well)</td>
<td>Sept ‘03, May ‘04</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX D: FFEC LOGIC MODEL

Draft: 5/02

HYPOTHESES: If we implement comprehensive educator professional development on place-based and citizenship education, people (including youth) will contribute to the stewardship of public lands and communities

<table>
<thead>
<tr>
<th>RESOURCES/INPUTS</th>
<th>ACTIVITIES/STRATEGIES</th>
<th>SHORT TERM OUTCOMES</th>
<th>INTERMEDIATE OUTCOMES</th>
<th>LONG TERM OUTCOMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical Assistance from experts/contractors</td>
<td>Collaborative Partnerships</td>
<td>Develop and pilot a professional development model in place-based education and citizenship education.</td>
<td>Students who have the knowledge, skills and motivation (social potency) to be active stewards/citizens.</td>
<td>Strengthening civil society</td>
</tr>
<tr>
<td>Partners</td>
<td>Community Forum and other community events</td>
<td>Evaluation of program including:</td>
<td>Teachers/schools are committed to and have the capacity to create and implement place-based learning that fosters student participation in the community.</td>
<td></td>
</tr>
<tr>
<td>• National Park Service</td>
<td>Sustained and embedded professional development</td>
<td>• Assessment in student learning and stewardship activities</td>
<td>Social Capital increases in the community demonstrated by increased interaction between school and community and stronger sense of place</td>
<td></td>
</tr>
<tr>
<td>• Conservation Study Institute</td>
<td>Ongoing support for educators</td>
<td>• Teacher practices in place-based education pedagogy and service learning</td>
<td>Government and non-government organizational effectiveness and capacity is increased by working together in partnership.</td>
<td></td>
</tr>
<tr>
<td>• National Wildlife Foundation</td>
<td>Standards based curriculum development (instruction and assessment)</td>
<td>• Community involvement / investment</td>
<td>Learning Organizations</td>
<td></td>
</tr>
<tr>
<td>• National Forest Service</td>
<td>Peer coaching</td>
<td>• Partners’ capacity</td>
<td></td>
<td></td>
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<tr>
<td>• Shelburne Farms</td>
<td>Network building (sustained over time)</td>
<td>Resource development for replication in other communities</td>
<td></td>
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</tr>
<tr>
<td>Teachers/Educators</td>
<td>Service Learning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community</td>
<td>Access to resource specialist and community resources</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forest Stewardship Network</td>
<td>Mini grants</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Funding</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>National Parks Service</td>
<td></td>
<td></td>
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<tr>
<td>JL Foundation</td>
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<tr>
<td>Ittleson Foundation</td>
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<tr>
<td>Wellborn Fund</td>
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<tr>
<td>Promising Practices/Research Evaluation</td>
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<tr>
<td>Graduate Credit</td>
<td></td>
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<tr>
<td>Resource Materials</td>
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<td></td>
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</tr>
</tbody>
</table>
APPENDIX E: FFEC EVALUATION OVERVIEW 2003-04

A Forest for Every Classroom
Evaluation Methods 2003-2004
September 5, 2003
Amy Powers, Michael Duffin, George Tremblay

FFEC Common Vision and Project Goals

FFEC Common Vision:
- If today’s students are to become responsible environmental decision makers, they must understand the local ecosystems in which they live and they must have educational opportunities based on real life issues that encourage them to practice citizenship in their own communities.

FFEC’s goals are to:
- Cultivate an understanding of place by working with teachers and their students to experience and understand local forests as complex and dynamic systems of natural and cultural resources and increasing interaction between the school and community, building a stronger sense of place and stewardship of public lands;
- Provide resources for educators to meet state and national education standards while effectively integrating stewardship, citizenship and a sense of place into their curricula;
- Foster a strong network of teachers, partners, community members and natural and cultural resource specialists that will ensure an ongoing relationship of sharing of information, materials, and resources.
- Promote a balanced view of forest stewardship that not only teaches about the forest ecosystem, but also includes the spectrum of stewardship challenges faced by land management agencies (federal, state, local) and private forest landowners
- Build a strong partnership that helps to increase institutional capacity and further program needs.

Program evaluation will:
- Evaluate effectiveness of the FFEC model in terms of process (program implementation)
- Evaluate effectiveness of the FFEC model in terms of outcomes (results)
- Provide useful information for FFEC project partners and funders to assist with program development, justification and refinement
Evaluators’ Roles

- Meet with project staff to develop evaluation plan, and make modifications as needed
- Develop and refine evaluation tools and protocols
- Data collection including site visits, interviews, photo documentation
- Data analysis
- Report writing (to be completed by August 31, 2004)
- Provide planning and/or recommendations for Year Three evaluation (as appropriate)
- Amy is the evaluation team’s contact person for FFEC evaluation; Pat is the partners’ contact person.
- Estimated number of days to complete FFEC evaluation products: 30

FFEC Partner Roles in evaluation process

- Develop Year Two evaluation plan with evaluators
- Provide input throughout the year via meetings, phone and/or email on evaluation direction and appropriateness of instruments
- Liaison between evaluators and school (e.g. setting up interview schedule)
- Provide incentives for participant participation in evaluation process
- As available organizationally, assist with administrative work such as survey administration (copying, mailing, collating); data entry; and provision of incentives for evaluation
- Provide data such as test scores as designated
- Meet with evaluators to consider evaluation needs for Year Three, as appropriate

See below for evaluation strategies
### Evaluation Strategies for FFEC Evaluation 2003-2004

<table>
<thead>
<tr>
<th>Areas of focus</th>
<th>Evaluation Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Comprehensive Teacher Survey</strong></td>
<td>• Process/ model effectiveness</td>
</tr>
<tr>
<td>• Telephone, in-person or paper TBD based on availability of graduate students, time allocation, etc.</td>
<td>a) What is the impact of FFEC sustained professional development on teacher practice and community involvement? Do teachers who choose to participate in FFEC beyond one year of training demonstrate stronger or more lasting impacts to their teaching?</td>
</tr>
<tr>
<td>• all FFEC 1 and 2 teachers</td>
<td>b) In what ways has the existence of this unique partnership contributed to teachers' involvement and/or implementation of their units?</td>
</tr>
<tr>
<td>• see notes on page 3</td>
<td>• Teacher outcomes</td>
</tr>
<tr>
<td>Timing: Early Spring 2004</td>
<td>c) How has teacher practice changed, and been sustained? (draw from stages of change literature)</td>
</tr>
<tr>
<td><strong>2. Case study of 2-3 excellent examples of FFEC in action</strong></td>
<td>d) Did teachers implement units resembling what they proposed in their initial application?</td>
</tr>
<tr>
<td>Visit selected ideal sites to record implementation, make observations, take photos, interview students, parents, administrators, teachers about teacher and school practice change, community impacts, perceptions of public lands, student achievement. Enlist key teachers in collecting evidence throughout the year.</td>
<td>e) Are teachers using more community partners, and in what ways?</td>
</tr>
<tr>
<td>Timing for 2 and 3: Fall and Spring: Site visits, observations, doc review, in-person interviews and/or phone interviews, (may involve grad student help)</td>
<td>f) Are there notable personal changes in teachers such as engagement in community?</td>
</tr>
<tr>
<td><strong>3. Case study of FFEC Partnership</strong></td>
<td>g) How does FFEC type teaching affect student learning?</td>
</tr>
<tr>
<td>Interviews with and observations of all four partner organizations (NPS, USFS, NWF, SF), including interviews with individuals directly involved and not involved with FFEC. Gathering pertinent documentation and materials pertinent to partner relationships. Enlist partners in collecting evidence throughout the year.</td>
<td>h) Is there a shift in teachers' perception and use of public lands?</td>
</tr>
<tr>
<td>• Partner outcomes</td>
<td>i) Are teachers, parents and students more involved in public land use and decision making as a result of FFEC?</td>
</tr>
<tr>
<td>j) How are FFEC partners—individuals and organizations—changing the ways in which they operate as a result of involvement in FFEC? (roles, budget allocations, program decisions, etc.)</td>
<td>• Partner-reported community outcomes</td>
</tr>
<tr>
<td>k) In what ways are partners facilitating relationships between schools and communities?</td>
<td>l) In what ways has this partnership contributed to changing relationships between public lands and communities (via the training of teachers to help students attach to place)?</td>
</tr>
</tbody>
</table>
APPENDIX F: CMP LOGIC MODEL

Community Mapping Program (CMP) Logic Model

Premise: When students, educators, and community organizations engage in a planned process of local investigation to create a product needed by the community, then participants will increase their connection to where they live; knowledge; skills; and capacity to create community sustainability and well-being.

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Activities</th>
<th>Outputs</th>
<th>Outcomes</th>
<th>Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local stakeholders willing to act on community model(s)</td>
<td>Exemplary projects publicized via newsletters, web site, case studies, &amp; public presentations</td>
<td>New projects identified via community needs assessment and planning process</td>
<td>Project participants increasingly comprehend and care about the complex social and natural elements that make up their community</td>
<td>Increased community sustainability and well-being</td>
</tr>
<tr>
<td>Funding from a mix of national, regional, and local sources, in-kind support, tuition, volunteer services</td>
<td>Project participants gain a coherent set of skills in GIS/GPS/spatial tools, place-based education methods, project planning and assessment through CM institutes</td>
<td>Project participants translate CMP learning into a project plan that addresses local community and curricular goals</td>
<td>Students increasingly master skills for engaging with their community</td>
<td></td>
</tr>
<tr>
<td>Access to technical resources including spatial data, GIS receivers, digital cameras, scanners, map printers, GIS &amp; other software</td>
<td>CMP staff provides for initial support services, including helping to identify/build suitable educator-community partnerships, leveraging local financial support, designing feasible projects, acquiring/preparing spatial and other data, creating custom maps, and integrating projects with local/state/natl curricula</td>
<td>Students do field work and research, including using spatial tools</td>
<td>The community increasingly values students as active, informed, contributing citizens</td>
<td></td>
</tr>
<tr>
<td>CMP staff experience, skills, and overall capacity to offer resources/support for place-based education curriculum planning and assessment, &amp; development and implementation of CM projects and methods</td>
<td>CMP staff provides for ongoing support services including site/field/class visits, phone/email support, technical assistance, refining plans mid-project, follow up training, and promoting effective team communication</td>
<td>Students work together with community partners and other resource people</td>
<td>Educators increasingly use place-based education to meet curricular goals in the areas of problem-solving, inquiry, geography, critical thinking, technology and others</td>
<td></td>
</tr>
<tr>
<td>Optimal graduate credits and other incentives for project participants</td>
<td>Program evaluation toolkit and evaluators to help improve program, document program results</td>
<td>Students create and refine draft products</td>
<td>Students create final maps and/or other informational products that are valuable to the community</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CMP staff continuously refines program model based on evaluation and other feedback</td>
<td>Students create final maps and/or other informational products that are valuable to the community</td>
<td>Project participants organize public community forum for students to share and celebrate project results</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CMP staff continues to support ongoing, multi-year projects</td>
<td>Project participants organize public community forum for students to share and celebrate project results</td>
<td>Mapping projects build social capital that helps community decision making become more collaborative</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proposals for project success and plan for project continuation</td>
<td>Mapping projects are increasingly initiated and supported by local and regional stakeholders on an ongoing basis</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX G: CMP EVALUATION OVERVIEW 2003-04

October 8, 2003
Amy Powers, Michael Duffin, George Tremblay

Community Mapping Program Goals
If we implement school-community investigations of a natural or cultural resource of local concern using spatial tools and field experience, participants will gain:

- a deeper understanding of community systems (ecological, social, economic, cultural).
- increased capacity to use visual tools for problem-solving.
- products of real community value.
- new opportunities for connecting learning to real world uses.
- expanded capacity for school-community collaboration.

Project evaluation will:

- Evaluate effectiveness of the CMP model in terms of process (program implementation).
- Evaluate effectiveness of the CMP model in terms of outcomes (results).
- Provide useful information to assist stakeholders with program development, justification and refinement (including ample information for CMP's National Geographic Society reporting needs).

Evaluators' Roles

- Meet with project staff to develop evaluation plan, and make modifications as needed.
- Data collection including survey administration, and some site visits
- Data analysis
- Report writing (to be completed by August 31, 2004)
- Provide planning and/or recommendations for Year Three evaluation (as appropriate)
- Estimated number of days to complete CMP evaluation products: 60

CMP Staff Roles in evaluation process

- Develop Year Two evaluation plan with evaluators
- Provide input throughout the year via meetings, phone and/or email on evaluation direction and appropriateness of instruments
- Liaison between evaluators and school (e.g. helping coordinate site visit schedule)
- Collect and share observation notes, project documentation, photos with evaluators as designated
- Aid in administration of surveys, including data entry

The degree to which the Orton Family Foundation's Ends are met through CMP projects will be addressed in the development of evaluation tools. The four ends are:

1. Citizens young and old are re-engaged in land use decision making
2. Citizens, including elected officials, have a heightened understanding of land-use choices and consequences.
3. Relationships between citizens and elected and appointed decision-makers are more collaborative.
4. Sustainable planning processes produce results intended by communities on an ongoing basis.
- Provide incentives for participant participation in evaluation process
- Meet with evaluators to consider needs assessment for Year Three

**Evaluation Questions/Strategies for Year Two Evaluation:**

1. **Process**
   a) What tools can be modified/created to create a streamlined toolkit to use in evaluating varying CMP programs across the country? (students, teachers, community partners)
   b) What logic model elements can represent both the overall CMP theory of change as well as regional program variations?

2. **Teacher outcomes (surveys)**
   a) How does involvement with the CMP affect a teacher’s utilization of the local community and ecological resources in their curriculum?
   b) What other effects does CMP have on teachers’ pedagogy or teaching practice?
   c) To what extent does CMP help teachers address existing curricular goals and requirements (e.g. local, state or national standards)?

3. **Student outcomes (surveys)**
   a) Are students more aware of community organizations as a result of participating in a CMP project? (survey part I)
   b) Are students better able to solve a resource or planning problem as a result of participating in a CMP project? (survey part II)
   c) Do students acquire useful communication, problem-solving and civic skills as a result of participating in a CMP project? (survey part III)
   d) How does participation in CMP affect students’ level of civic engagement? (cross program module)

4. **Community Partner outcomes (survey)**
   a) What types of relationships develop between community partners, schools, teachers and students as a result of the CMP collaboration?
   b) Are the results of CMP projects useful for partners and their organizations/communities?

5. **Place-Based Learning Portfolio**
   a) What aspects of the Rural School and Community Trust place-based learning portfolio model make most sense for adapting to CMP?
   b) Would it be useful for CMP to try and incorporate some kind of learning portfolio process into the program model in a consistent and replicable way? If so, does it make more sense to focus primarily on student, teacher or community outcomes (or perhaps a little bit of each)?
### Evaluation Strategies for CMP Evaluation 2003-2004

<table>
<thead>
<tr>
<th>Areas of focus</th>
<th>Notes</th>
<th>Timing</th>
<th>Contact Person</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Development of an Exportable Toolkit: This toolkit will utilize revised/modified teacher and student survey(^{16}) instruments (both Sally’s and Amy’s), a community partner survey, protocols and recommendations for use, plus general CMP support materials such as logic models and maybe PowerPoint presentations.</td>
<td>As part of the creation of this toolkit, data will be collected this year from Northeast CMP and CMP West and findings will be reported in the final report along with the streamlined toolkit.</td>
<td>Year-long; data collection will begin in Fall</td>
<td>Michael</td>
</tr>
<tr>
<td>2. Qualitative place-based learning portfolio/case study process. This will generate current year findings as well as be exportable as a process between an evaluator and a site person to collect on-going data. Could focus on student OR teacher OR community outcomes.</td>
<td>Final report will include two portfolios or case studies (adapted from the RSCT model to fit CMP program structure and evaluation resources) plus the recommendation for how to go about collecting this information in the future. Design may include one portfolio from Northeast CMP and one from CMP West.</td>
<td>Year-long</td>
<td>Amy and graduate student</td>
</tr>
<tr>
<td>3. Facilitation of a process and creation of a Logic Model that represents the core CMP program across geographic boundaries while honoring local variations.</td>
<td>Sept ’03 meeting w/ all CMP stakeholders</td>
<td>George</td>
<td></td>
</tr>
</tbody>
</table>

**General note:**
With this plan, the final report for 2003-2004 will be considerably different in its content and format from the 2002-2003 report. Sections will include: a discussion of survey data (mostly quantitative) from Northeast and West students, teachers and community partners; presentation of student learning portfolios and process discussion; and a comprehensive presentation of refined instruments and protocols for on-going use at all sites. Since this plan does not involve comprehensive qualitative/ethnographic evaluation methods such as in-depth interviews, site visits, photo documentation, etc. the discussion will not include the same emphasis on representative quotes, photos and case studies.

\(^{16}\) Student survey will be similar to the survey that Amy piloted in the Northeast and Sally Wither modified for Colorado, plus the addition of a PEEC cross-program module (i.e. about ten questions) to assess student civic engagement. The latter part of the student survey is intended to be part of a cross-program study. Specifically, three indices would be used to assess the components of civic engagement: connection to community, sense of efficacy, social responsibility.
APPENDIX H: CO-SEED LOGIC MODEL
APPENDIX I: CO-SEED PROJECT EVALUATION OVERVIEW, 2003-04

October 1, 2003
Amy Powers, Michael Duffin, George Tremblay

Project evaluation will:
- Evaluate effectiveness of the CO-SEED model in terms of process (program implementation)
- Evaluate effectiveness of the CO-SEED model in terms of outcomes (results)
- Provide useful information for project coordinators and funders to assist with program development, justification and refinement

Evaluators' Roles
- Meet with project staff to develop evaluation plan, and make modifications as needed
- Data collection including site visits to schools, interviews, photo documentation
- Data analysis
- Report writing (to be completed by August 31, 2004, assuming all test score data are in)
- Provide planning and/or recommendations for 04-05 evaluation (as appropriate)
- Areas of Focus: Amy and Michael split interviews geographically; Amy for ELC tracking; Michael for surveys and SEED Team tracking; Michael for Other Documentation on CO-SEED model activities
- Supervise student research assistant(s) paid from PEEC budget
- Estimated number of days to complete CO-SEED evaluation products: 85

CO-SEED Staff Roles in evaluation process
- Develop 03-04 evaluation plan with evaluators
- Provide input throughout the year via meetings, phone and/or email on evaluation direction, appropriateness of instruments, and format of final report
- Develop program benchmarks for success and stakeholder prioritization
- Liaison between evaluators and school (e.g. setting up interview schedule)
- Collect and share observation notes, project documentation, photos with evaluators as designated, including being accountable for the timely and consistent submission of SEED team tracking forms
- Assist in administration of surveys, including data entry
- Provide access to data such as test scores as designated
- Provide incentives for participant participation in evaluation process
- Supervise project assistant(s) paid directly from CO-SEED budget
- Meet with evaluators to consider needs assessment for 04-05

Priority Content Areas:
- Highest Level Priorities: changes in teacher practice, measures of impact on students (some fruitful combination of academic achievement, engagement in learning and stewardship behaviors)
- Level 2 Priorities: Sustainability of CO-SEED beyond 3 years, impact on ELCs
- Level 3 Priorities: Formative feedback on the implementation process, measures of impact on community
## Evaluation Strategies for CO-SEED Evaluation 2003-2004

<table>
<thead>
<tr>
<th>Strategy/Activity</th>
<th>When</th>
<th>Key Evaluation Questions</th>
<th>Accountable</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Site visits and interviews</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) <strong>Start-up sites</strong> (3 new Boston sites, Hinsdale, and Bradford for Spring only) - Collect baseline data on teacher and student activities to follow up on during Spr. visit.</td>
<td>2 days Fall 1 day Spr.</td>
<td>• What initial indicators do we see of student achievement, stewardship behavior, community vitality, and environmental quality?</td>
<td>Amy – Gorham, Bradford, Littleton; Michael – others; Proj. Assts. - help with on-site transcription; CO-SEED staff - help with scheduling</td>
</tr>
<tr>
<td>b) <strong>Wrap-up sites</strong> (Littleton, Gilford, Malden) – Follow up on data from monthly tracking forms.</td>
<td>1 day Spr.</td>
<td>• What evidence is there that CO-SEED has impacted teacher practice and student achievement?</td>
<td></td>
</tr>
<tr>
<td>c) <strong>Alumni site</strong> (Gorham) – Document unique perspective of this 5+ year site</td>
<td>1 day Spr.</td>
<td>• In what ways is CO-SEED successful at creating lasting change in a school/community?</td>
<td></td>
</tr>
<tr>
<td>d) <strong>ELCs</strong> – Lay groundwork for in depth study of impact on ELCs, to be implemented when funding is available.</td>
<td>as part of above</td>
<td>• How has CO-SEED impacted the way ELCs do business and meet their organizational goals?</td>
<td></td>
</tr>
<tr>
<td><strong>2. Surveys and Tracking Forms</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e) <strong>Teacher surveys</strong> - Very similar to 02-03, but revised to more clearly reflect x-program questions, including dosage. Malden uses post version of old pre survey.</td>
<td>Start-up sites: Fall; Wrap-up sites: Spr.; Alumni site: No</td>
<td>• Do changes in teacher practice correlate with pilot measures of teacher dosage of CO-SEED?</td>
<td>Michael coordinate; CO-SEED staff administer; Proj. Assts. collect and enter data</td>
</tr>
<tr>
<td>f) <strong>Student surveys</strong> - Very similar to 02-03, but revised to more clearly reflect x-program questions. Not in Malden.</td>
<td></td>
<td>• Does CO-SEED impact student civic engagement and student engagement in learning?</td>
<td></td>
</tr>
<tr>
<td>g) <strong>Community surveys</strong> - Basically same as 02-03, with slight modifications, and translation to Spanish. Not in Bradford, Gilford or Malden.</td>
<td></td>
<td>• In what ways do community perceptions of CO-SEED triangulate with student and teacher reports?</td>
<td></td>
</tr>
<tr>
<td>h) <strong>SEED team tracking form</strong> – Slightly revised from 02-03.</td>
<td>monthly</td>
<td>• What evidence is there that CO-SEED has impacted teachers, students, and/or the community?</td>
<td>CO-SEED staff email to Michael</td>
</tr>
<tr>
<td>i) <strong>ELC tracking form</strong> – Slightly revised from 02-03.</td>
<td>monthly</td>
<td>• What evidence is there that CO-SEED has impacted teachers, students, and/or the community?</td>
<td>Amy collect, distribute as necessary</td>
</tr>
</tbody>
</table>
### 3. Other documentation

<table>
<thead>
<tr>
<th>Strategy/Activity</th>
<th>When</th>
<th>Key Evaluation Questions</th>
<th>Accountable</th>
</tr>
</thead>
<tbody>
<tr>
<td>j) Subject area test score analysis - Strategic follow up on writing score investigation from 02-03.</td>
<td>Summer/Fall 04</td>
<td>• In what ways do data from MCAS and/or NHEIAP tests triangulate with interview and survey data about student achievement in specific areas such as writing or other subjects?</td>
<td>Michael</td>
</tr>
<tr>
<td>k) School aggregate test score analysis - Bird’s eye view comparison of publicly available test scores aggregated by school, compared to state and district.</td>
<td>Summer/Fall 04</td>
<td>• Are there noticeable trends in school-wide aggregate scores on standardized tests during the time when CO-SEED is present in a school?</td>
<td>Proj. Assts.</td>
</tr>
<tr>
<td>l) “Clipping Service” - Newsletters, articles, observation notes, quotes, photos, interesting memos, letters or email communications, minutes, etc.</td>
<td>ongoing</td>
<td>• What documents and artifacts show evidence of CO-SEED’s impact on teachers, students and/or community?</td>
<td>CO-SEED staff</td>
</tr>
<tr>
<td>m) Documentation of exemplar project(s) - White paper/case study write ups of particular projects.</td>
<td>ongoing</td>
<td>• What is the complete story of the Littleton sidewalk project?</td>
<td>Proj. Assts.</td>
</tr>
<tr>
<td>n) Site-specific indicators - Measures that can be easily and systematically tracked by school and/or ELC staff and then passed on to the evaluation team.</td>
<td>ongoing</td>
<td>• What quantitative measures of CO-SEED impact are unique and reasonably collected at each site?</td>
<td>CO-SEED staff</td>
</tr>
<tr>
<td>o) Student research assistant project(s) - In depth studies when/if appropriate students are available.</td>
<td>As avail.</td>
<td>• TBD, but could involve quasi-experimental designs, investigations of impact on non-traditional learners, etc.</td>
<td>Bo keeps list and coordinates with evaluation staff</td>
</tr>
</tbody>
</table>

### 4. CO-SEED model

<table>
<thead>
<tr>
<th>Strategy/Activity</th>
<th>When</th>
<th>Key Evaluation Questions</th>
<th>Accountable</th>
</tr>
</thead>
<tbody>
<tr>
<td>p) Benchmarks for success - Diagnostic/teaching tool that articulates realistic, measurable indicators for interim stages of progress toward CO-SEED goals.</td>
<td>Fall 03</td>
<td>• What does success look like at the various developmental stages of implementing CO-SEED?</td>
<td>CO-SEED staff</td>
</tr>
<tr>
<td>q) Stakeholder priority activity - To inform content focus of evaluation activities and format of evaluation report.</td>
<td>Fall 03</td>
<td>• For the highest priority CO-SEED stakeholders, what types of evidence help them make decisions related to CO-SEED?</td>
<td>CO-SEED staff</td>
</tr>
<tr>
<td>r) Prioritization activity - Used by staff for program delivery, and by evaluation staff as part of interviews when feasible.</td>
<td>Varies</td>
<td>• What aspects of the CO-SEED model are most essential?</td>
<td>Michael, Amy, CO-SEED staff</td>
</tr>
</tbody>
</table>
### APPENDIX J: SAMPLE PEEC EDUCATOR SURVEY (FFEC)

#### FFEC Educator Survey

We sincerely thank you for taking the time (approx. 30 minutes) to complete this survey. Your frank feedback is very valuable for helping us to improve the Forest for Every Classroom program. Your individual responses will be seen only by the evaluation team and program staff, and your name will NOT be used in any report, publication or discussion without your prior permission. We appreciate your best guess on any items that may seem a little broad or not directly connected to FFEC. We also recognize that FFEC is not the only factor affecting your students. You will notice that the question numbers and letters are not always in sequence. This is because this survey is an important part of a larger effort to measure the impact of place-based education programs. Please do not leave blanks. THANK YOU.

<table>
<thead>
<tr>
<th>How much do you disagree or agree?</th>
<th>Strongly Disagree</th>
<th>Totally Disagree</th>
<th>Tend to Disagree</th>
<th>Tend to Agree</th>
<th>Strongly Agree</th>
<th>Not at All</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I plan on implementing my FFEC curriculum next year.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>2. Since participating in FFEC I call on parents or other community members to assist in my teaching more often.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>3. Sustained, intensive professional development like FFEC offers is probably worth the very high program costs...</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>4. Ongoing support from FFEC partners after the series (whether formally, as in workshops, or informally as in emails or phone calls) was necessary for successful implementation of my FFEC curriculum.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>5. FFEC would be just as successful without so many partner organizations involved in its creation and delivery.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>6. Since participating in FFEC, I see public lands as more valuable.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>7. My students see public lands as valuable community resources.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

For questions F9-F11, please write your answers in the boxes (use a separate sheet if necessary).

<table>
<thead>
<tr>
<th>1. In what ways (if any) has participating in FFEC changed the way or amount you call upon community partners (whether FFEC partners or otherwise)?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. What advice would you give to FFEC partners as they try to balance the benefits of providing sustained, intensive professional development with the high program costs?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

---

#### How much do you disagree or agree?

Like the previous page, please circle only one number. NOTE: Items X1-X12 refer to the group of students that you know best or who work closely with in your school or project.

- 1. Students are enthusiastic about learning.
- 2. My FFEC curriculum may be nice, but it doesn't really improve student academic achievement.
- 3. Through my FFEC curriculum, students gain a greater sense of responsibility for improving the local community and environment.
- 4. Students prefer FFEC activities to more traditional-style school activities.
- 5. Students have a strong connection to the community where our school is located.
- 6. Standardized test scores are an accurate indicator of student academic achievement.
- 7. My FFEC curriculum helps students increase their scores on standardized tests.
- 8. My FFEC curriculum is particularly beneficial for students with learning challenges.
- 9. Students are self-directed in their FFEC-related work.
- 10. My FFEC curriculum helps me meet local, district and/or state learning standards.
- 11. I feel energized and confident while teaching about the local environment and/or community.
- 12. It is difficult to cover traditional subjects through my FFEC curriculum.
- 13. My FFEC curriculum helped me become a better teacher.
- 14. In general, people in our community are actively involved in trying to make the community a better place to live.
- 15. Our community is environmentally healthy.
- 16. The key decision makers in our community have a good plan for addressing the important needs in our community.
- 17. My FFEC curriculum gets people (young and old) more involved in solving real-life problems in our community.
- 18. The quality of the environment in our community is improving as a result of my FFEC curriculum.
- 19. Through my FFEC curriculum, students are collaborating with important decision makers in our community.
- 20. My FFEC curriculum may be nice, but it doesn't address real needs in our community.
- 21. I am (or plan to become) actively involved in projects to improve the social or environmental quality of our community.
For the following item, please write a NUMBER in the box to the right of each activity to indicate how many times you have participated in that FPEC related activity. Write 0 if you have not taken part in that activity or if it does not apply to you. If the number of times is large or hard to quantify, just put your best guess. The idea here is to try and get an overall estimate of your level of involvement with FPEC and which types of support are most used. It might help to read through the whole list of activities first to jog your memory.

- attended (Number of) days of FPEC institutes or workshops (main program)
- attended (Number of) additional FPEC presentations (i.e. Ethnography, Alumni on Forest Soil, Service Learning institutes at H.S. Brooks, etc.)
- used FPEC partners for curriculum planning assistance
- used FPEC partners for logistical and/or technical problem solving
- used FPEC partners as source of data or data-related assistance connected to your curriculum unit
- used FPEC partners to access additional printed resources and/or materials
- borrowed equipment from FPEC staff

For the remaining "D" items, please circle the one answer that most closely applies. Items D10 and D12 may refer to more than one year. The other "D" items refer to the current year of the survey.

I would guess that, over the years, the total number of hours I've spent in direct contact with FPEC staff and formal program elements is about:
- less than 5 hours
- between 5 and 40 hours
- between 40 and 100 hours
- between 100 and 500 hours
- more than 500 hours
- I'm not sure/couldn't guess

For the current school year, I have had/ or will have:
- my students working on FPEC-related activities:
  - twice per week
  - three to six times per year
  - once a week or more
  - about once a month
  - I'm not sure/ doesn't apply to me

In terms of my overall curriculum plan for the current school year, FPEC projects are:
- a very small part of it, if at all
- a significant but contained unit
- a major part of it
- the core organizing structure
- I'm not sure/ doesn't apply to me

(Complete all 6 pages of this survey)
APPENDIX K: SAMPLE PEEC COMMUNITY PARTNER SURVEY (CMP)

CMP Community Partner Survey

We sincerely thank you for taking the time (approx. 30 minutes) to complete this survey. Your frank feedback is very valuable for helping us to improve the Community Mapping Program. Your individual responses will be seen only by the evaluation team and program staff, and your name will NOT be used in any report, publication or discussion without your prior permission. We appreciate your best guess on any items that may seem a little broad or not directly connected to the CMP. We also recognize that CMP is not the only factor affecting the ideas described in this survey. You will notice that the question numbers and letters are not always in sequence. That is because this survey is a key part of a larger effort to measure the impact of place-based education programs. Please do not leave blanks. THANK YOU!

How much do you disagree or agree?
For each item, please circle only one number that best matches your opinion.

- The CMP staff has been responsive to my needs for support.
- I was able to use the skills I gained from CM workshops and training to create a solid plan for our community's mapping project.
- Communication and coordination between project participants was effective.
- The public forum organized to share the product of our mapping project with the community was successful.
- I plan on doing a CM project next year.
- I will require additional funding and/or CMP staff support in the coming year.
- CM projects are increasingly initiated and supported by local and regional stakeholders (other than CMP staff).
- GIS was an important part of our CM project this year.
- Other spatial tools such as manual mapping or map making were more important than GIS in our CM project this year.
- I want more GIS and technical skills development.
- Students who participate in CM projects are active, informed, contributing citizens of our community.
- Our CM project this year addressed a real need in our community.
- The final product of this year's CM project is being (or will be) actively used by the community or my organization.
- Participating in the CMP has furthered the goals/mission of my organization.

(Please complete all 4 pages of this survey)

How much do you disagree or agree?
For each item, please circle only one number that best matches your opinion.

- In general, people in our community are actively involved in trying to make the community a better place to live.
- Our community is environmentally healthy.
- The key decision makers in our community have a good plan for addressing the important needs in our community.
- CM projects get people (young and old) more involved in solving real life problems in our community.
- The quality of the environment in our community is improving as a result of CM projects.
- Through CM projects, students are collaborating with important decision makers in our community.
- CM projects may be nice, but they don't address real needs in our community.

Items X1-X12 refer to the group of students that you know best or work most closely with in your school or project

- Our students are enthusiastic about learning.
- CM projects may be nice, but they don't really improve student academic achievement.
- Through CM projects, students gain a sense of responsibility for improving the local community and environment.
- Through CM projects, students regularly take action to protect and improve the environment.
- Students prefer CM activities to more traditional-style school activities.
- I am satisfied with the quality of education in our school.
- Students have a strong connection to the community where our school is located.
- At home or outside of school, students regularly take action to protect and improve the environment.
- CM projects are particularly beneficial for students with learning challenges.
- Students are self-directed in their work on CM projects.

(Please complete all 4 pages of this survey)
1. I would guess that, over the years, the total number of hours I’ve spent in direct contact with CMP staff/vendors and formal program elements is about:
   a. less than 5 hours
   b. between 5 and 40 hours
   c. between 40 and 100 hours
   d. between 100 and 500 hours
   e. more than 500 hours
   f. I’m not sure/couldn’t guess

2. I would guess that, over the years, the total number of hours I’ve spent in other (non-CMP) place-based or environmental education training programs is about:
   a. less than 5 hours
   b. between 5 and 40 hours
   c. between 40 and 100 hours
   d. between 100 and 500 hours
   e. more than 500 hours
   f. I’m not sure/couldn’t guess

For the remaining questions, please write your answers in the spaces provided. Please continue your answers on an additional sheet of paper if you need more space.

What were the two or three most significant barriers you encountered in your project this year?
1. 
2. 
3. 

What were the two or three most important contributions your organization made to this year’s mapping project (e.g. leadership, time, resource people, referrals, logistics, tools, etc.)?
1. 
2. 
3. 

What else would you like to say about your experience with the CMP?

Your Organization ___________________ Your Name ___________________ Today’s Date ________________

Please return this survey in the envelope provided or by email to a CMP staff person or to:
CMP Evaluation, 836 Snipe Ireland Road, Richmond, VT 05477 or email to mduffin@phd.antioch.edu

The End. Thank you again for taking the time to fill out this survey!
APPENDIX L: SAMPLE PEEC STUDENT SURVEY (CO-SEED)

The CO-SEED Project Student Survey

We are interested in your ideas about the environment and your community. By community, we mean everything in the town or neighborhood where you live, including people, nature, and the built environment.

There are no right or wrong answers! Please answer every question and give your completed survey to your teacher. Thanks, we appreciate your help.

How much do you disagree or agree?
For each sentence, circle only the one number that best matches your answer. Please do not leave any blanks.

1. Our school is environmentally healthy.
2. Our community is environmentally healthy.
3. I feel like I am part of a community.
4. I pay attention to news events that affect the community.
5. Doing something that helps others is important to me.
6. I like to help other people, even if it is hard work.
7. I know what I can do to help make the community a better place.
8. Helping other people is something everyone should do, including myself.
9. I know a lot of people in the community, and they know me.
10. I feel like I can make a difference in the community.
11. I try to think of ways to help other people.
12. I like it when I get to be absent on a regular school day.
13. On my own time, I often study or read about the topics we're working on at school.
14. In the last two months I have done something with my classmates to take care of my neighborhood or community.
15. In the last two months I have done something on my own time to take care of my neighborhood or community.
16. I enjoy learning about the environment and my community.
17. My school is good at academics (literacy, math, science, social studies).
18. The CO-SEED program helps me do better on tests and get better grades.

How often do these things happen?
For items L11-N18, please circle only one number that best matches how often you do or see the things described. Please do not leave any blanks.

- Twice per year or less
- Three to six times per year
- About once a month
- Once a week or more
- I'm not sure/doesn't apply to me

For questions C10-D5, circle the one answer that best matches the way you feel.

This is how I feel about school:

1. I do not enjoy school and what I'm learning is not important to me.
2. Sometimes I learn useful things in school, but usually what I learn is not that important.
3. I learn something important on most days. I can usually see how much of what I learn at school will be useful in my life.
4. Almost everything I learn is important and useful. I enjoy learning at school every day.
5. I'm not sure.
6. This year, I have worked on (or will work on) CO-SEED-related projects:
   - twice per year or less
   - three to six times per year
   - about once a month
   - once a week or more
   - I'm not sure/doesn't apply to me

(please complete all three pages)
When I think of my overall learning at school this year, the CO-SEED project is:

- a very small part of it, if at all
- a regular part of it, but not too big
- a really big part of it
- the main thing we do
- I'm not sure

The amount of effort I put into doing CO-SEED-related activities this year is (or will be):

- fairly small or none
- about the same as other subjects or classes
- more than other subjects or classes
- way more than other subjects or classes
- I'm not sure

In the box below, please feel free to tell us anything else you think we should know concerning your opinions about the CO-SEED project, or learning about the environment or community.

Your Name _______________
Your Teacher's Name ________ (who gave you the survey?)
Your School _______________
Your Grade: (check one) 4 5 6 7 8 9 10 11 12
Are you: Male or Female? Today's Date ________________________

The End. Thank you for completing this survey.

(please complete all three pages) CO-SEED 3rd ed 2.1
APPENDIX M: SAMPLE PEEC LETTER TO TEACHERS (SSP)

Fall 2003

Dear Teacher,

The Sustainable Schools Project (SSP) is continuing to evaluate how the program affects schools, teachers and students, and to refine the program based on this information. Many of you were very helpful in your participation in the evaluation process last year, and we appreciate your on-going involvement.

With this letter you will find several items:

- A letter to be sent home with students for their parents. This is a passive consent form for participation in the evaluation procedures. Parents do not need to complete a form if they are comfortable with their child being part of any evaluation activities. If they do not wish to grant such permission, they are asked to contact you. We would then ask that you not administer a survey to those children and also contact us so that we can make any other necessary arrangements to insure that parental wishes are honored.

- A sheet of instructions guiding you through the process of administering the surveys to students in a systematic way.

- A survey for students to complete. At this time, we are administering PRE surveys, and hope that you will have students complete the surveys before or as close to the start of SSP-related work as possible. You will be asked to re-administer a similar survey to students this coming Spring and/or next year.

- An envelope in which to return the surveys. The sooner you can return these to us, the better. Thanks in advance for your promptness!

All evaluation materials and responses are kept private, though photos are often used in evaluation reports.

If you have any questions about SSP you may contact Erica Zimmerman at Shelburne Farms at 985-8686. If you have any questions about the evaluation, feel free to call Amy Powers at 434-4257. Thank you very much for your cooperation.

Sincerely,

Amy Powers
Michael Duffin
Program Evaluation & Educational Research Associates
APPENDIX N: SAMPLE PEEC DIRECTIONS FOR TEACHERS ADMINISTERING SURVEYS TO STUDENTS (SSP)

Teachers: Thank you for helping us to better understand the workings and impacts of the Sustainable Schools Project. The students' input is very important. Consistent administration of these surveys will assure that the information they provide is usable in our research. If different classes approach the survey in different ways, we will have results that are not comparable.

Please follow these steps when administering the enclosed surveys to your students.

1. Please administer the survey in the classroom (rather than sending it home.)
2. Please assure that students are not talking to one another or sharing answers.
3. For younger students, it may be necessary to read each question aloud as they choose an answer. If so, please use the questions as they are on the sheet without providing examples. Simple clarifications of terms may be necessary.
4. Please allow a maximum of 30 minutes for completion of the survey. (It is unlikely to take that long, however.)
5. There is a sample permission slip attached if your school deems it important to receive parental permissions for this kind of program evaluation process.

To read aloud to students:
1. Your participation will help people understand how you feel about your school and community and what kinds of things you are learning.
2. This is not a test. There are no right or wrong answers. You do not need to write your name on the survey.
3. Please circle one number for each question. Notice there are different types of questions. First you are asked to choose among several options, then you are asked to write your ideas in your own words. Later you are asked how strongly you disagree or agree.
4. Please do not leave any answers blank. Choose the answer that best matches how you feel.
5. You will be asked to complete a follow up to this survey at a later date.
6. Your ideas are valuable. Thank you for participating.

If you have any questions, concerns or feedback about this please feel free to call or email SSP’s program evaluator, Amy Powers, at 802-434-4257 A my@peerassociates.net.

Thanks again for taking the time to assist with this research.
1. How to access the most current version of the surveys.
   1. Go to PEEC website http://www.PEECworks.org/
   2. Click on Research/Evaluation Tools
   3. Click on SSP surveys available on-line
   4. Print surveys from the PDF files: please do not alter the surveys in any way. If you have suggestions, let us know.
   5. After May 17 there will also be an on-line option for teachers/staff to fill out the surveys if they prefer that method. (They will not need to print anything or attach anything to email.)

2. Administration of Champlain Educator/Staff surveys
   - **Timing:** I recommend you administer these no later than the week of May 24 (possibly earlier) so that you can do follow up during the school year.
   - **Best option:** administer the survey at a staff meeting so you have a captive audience. Try to also administer it to as many school personnel as possible—administrator, nurse, secretary, etc.
   - **Evaluation Explanation:** It will help if you frame the evaluation to them when distributing this. Why it is important, why they are being asked to do multiple things for multiple years, how SSP is part of PEEC, etc.
   - **Confidential Collection:** Collect them confidentially (i.e. provide an envelope at the meeting that people put the survey into and that you will seal immediately). Have a master list of staff on the outside of the envelope so that people can check off their names as they return surveys. This will allow you to keep track of who you haven't gotten them from. (They are asked to put their names on the last page of the surveys. Assure them that SSP staff will not be looking at the surveys.)
   - **Other option** (less preferable): distribute them in mailboxes and provide individual envelopes for folks to put them into before handing them in. Again, keep track of who has turned them in without looking at the surveys.
   - **Follow-up:** Either way these are distributed, it will also be important to follow up with those from whom you haven't received surveys (whether they were at the meeting and didn’t turn it in or whatever). Here are some dates guidelines (I’m making up staff meeting date):
     - **May 18:** distribute surveys to those at staff meeting and put in boxes of those not present
     - **One week later:** Send around a reminder to everyone who has not returned surveys (including giving them the web link so they can access the survey themselves if preferred)
     - **One week after that:** Distribute another survey with a note asking them to please complete and return the survey. (again, include reference to the web link)
Return Surveys: You can return all surveys to Amy in person or stick them in the mail to:

Michael Duffin
272 Eaton Road
Swanzey, NH 2003446-3614

3. Administration of surveys to Champlain grades 4/5 students:
Please follow the above general framework (confidentiality, timing, etc. with the following modifications

1. Give 4/5 teachers the printed surveys (same website procedure to access it) and a deadline.
2. You may wish to administer them yourselves in the classrooms if the teachers will go for that.
3. Follow up until you have all the sets returned, please!