Phase Two Evaluation of
The Connecting Schools to
People and Place Program
2004-2005

Prepared for
New Hampshire Project Learning Tree &
Woodsville Elementary School

Prepared by:
Andrew Powers and Amy Powers
&
Program Evaluation and Educational Research (PEER) Associates

September 1, 2005
The Connecting Schools to People and Place (CS2P) program is designed as a model school improvement program, based on the environment and focused on sustained and intensive professional development.

--- excerpt from the CS2P Executive Summary

ACKNOWLEDGEMENTS

Thanks to the energetic Woodsville Elementary School teachers, administrators, and PTA members, and New Hampshire Project Learning Tree staff for their thoughtful participation in this evaluation. Special thanks also to Karen Bennett and Nancy Franz of UNH Cooperative Extension and Bo Hoppin of Antioch New England Institute for their guidance and advice on the focus questions for this evaluation, as members of NHPLT’s evaluation team.

Thank you as well to the Place-based Education Evaluation Collaborative (PEEC) for their support of PEER Associates, thus making available their evaluation materials and services.

Many of the photographs in the report were taken by Beth Lesure of New Hampshire Project Learning Tree and Lorie-Ann Noyes of Woodsville Elementary School.
# TABLE OF CONTENTS

EXECUTIVE SUMMARY .................................................................................................................. 5

CONNECTING SCHOOLS TO PEOPLE AND PLACE PROGRAM OVERVIEW ................................................. 5
EVALUATION METHODS .................................................................................................................... 5
FINDINGS AND DISCUSSION ............................................................................................................ 5
  Teacher Outcomes ........................................................................................................................ 6
  Student Outcomes .......................................................................................................................... 7
  Community Outcomes .................................................................................................................... 7
CONCLUSIONS AND RECOMMENDATIONS ..................................................................................... 7

INTRODUCTION ...................................................................................................................................... 9

ABOUT PROJECT LEARNING TREE .................................................................................................. 9
PROGRAM OVERVIEW ........................................................................................................................ 9
  CS2P Program Objectives .................................................................................................................. 9
EXTERNAL EVALUATION TEAM ........................................................................................................ 10
REVIEW OF PLACE-BASED EDUCATION .......................................................................................... 10
  Educational strategies: schools and communities ........................................................................... 12

EVALUATION METHODS .................................................................................................................. 13

EVALUATION QUESTIONS ................................................................................................................ 13
PROCESS AND INSTRUMENTS .......................................................................................................... 14
ANALYSIS OF INTERVIEW DATA AND DOCUMENTS ...................................................................... 14

REVIEW OF PHASE ONE .................................................................................................................. 15

SUMMARY OF PHASE ONE EVALUATION FINDINGS ....................................................................... 15
DISTRIBUTION AND USE OF EVALUATION FINDINGS ...................................................................... 15

PHASE TWO FINDINGS AND DISCUSSION ....................................................................................... 17

TEACHER OUTCOMES: PRACTICE, KNOWLEDGE, AND ATTITUDES .......................................................... 17
  Teachers demonstrate new skills and strategies ............................................................................ 17
  Teachers report diverse opinions on natural science knowledge ...................................................... 30
  Teacher attitudes and values ......................................................................................................... 32
  Linking Teacher Outcomes to CS2P Logic Model ........................................................................... 33

STUDENT OUTCOMES ..................................................................................................................... 35
  Student enthusiasm .......................................................................................................................... 35
  Student stewardship behavior ....................................................................................................... 39

COMMUNITY OUTCOMES .............................................................................................................. 46
  More community members are involved with the school ................................................................. 46
  Community has a greater awareness of the school ......................................................................... 46
  Parents are more involved in the school .......................................................................................... 48

SUSTAINABILITY OF CS2P ............................................................................................................... 50

SPREAD OF CS2P IN THE SCHOOL .................................................................................................. 51

CHALLENGES, NEEDS, AND RECOMMENDATIONS ........................................................................ 53

CONCLUSIONS .................................................................................................................................... 57

LITERATURE CITED ............................................................................................................................. 59

APPENDIX ........................................................................................................................................... 60

APPENDIX A: CS2P LOGIC MODEL ................................................................................................... 61
APPENDIX B: CS2P PHASE 2 EVALUATION OVERVIEW 2004-2005 .................................................. 62
APPENDIX C: INTERVIEW GUIDE ..................................................................................................... 64
APPENDIX D: SURVEY INSTRUMENT ............................................................................................... 66
APPENDIX E: MONTHLY STAFF OBSERVATION RECORD ................................................................... 69
EXECUTIVE SUMMARY

Connecting Schools to People and Place Program Overview

The Connecting Schools to People and Place Program (CS2P) was launched in January 2003 as a pilot project between Woodsville Elementary School (WES) and New Hampshire Project Learning Tree (NHPLT). The program was designed as a model school improvement program, based on the environment and focused on sustained and intensive professional development. The goal of CS2P is to provide today’s youth with the knowledge, skills, and attitudes to become stewards of their local forests and other natural resources.

NHPLT supported WES staff through the following strategies: funding teacher release time and field trips; purchasing natural science supplies; facilitating monthly meetings and summer planning meetings; modeling natural science activities in and out of the classroom; and sharing natural science and curriculum-planning expertise.

Evaluation Methods

The first phase of evaluation, completed in July of 2004, was largely formative, answering questions about program implementation. The evaluation explored the effectiveness of strategies employed by NHPLT staff, including monthly planning meetings, school visits, and acquisition of classroom materials. The evaluation also made preliminary inquiries into teacher practice change. The Phase One report detailed findings about process strengths and challenges, teacher, student, and school-wide outcomes, and offered recommendations for program improvement and future evaluation.

This document reports on the second phase of the evaluation, conducted during fall of 2004 and spring of 2005. This Phase Two evaluation included a continuation of the monthly monitoring and reporting by NHPLT staff, evaluator interviews and observations, and a written survey. This evaluation was primarily summative. It explored program outcomes, including changes to teacher practice, knowledge and values, as well as student and community outcomes.

Findings and Discussion

There is substantial evidence that CS2P impacted the teachers, students, and the community in diverse and positive ways. From the data, a picture emerged of a school with:

- teachers who are deepening their knowledge and skills in place-based education,
- students who are enthusiastic, engaged, and service-oriented, and
- a school with an evolving and improving relationship with the surrounding community.
Teacher Outcomes

One of CS2P’s primary strategies was to help teachers plan and implement natural science based activities throughout the curriculum. The first set of evaluation questions focused on the impacts of CS2P on teachers’ practices, natural science knowledge, and attitudes toward the environment.

Overall, the qualitative and quantitative data demonstrated that teachers made great strides in their development of new skills and strategies for teaching. The evaluation found that WES teachers are:

- Collaborating more, primarily as a result of monthly grade-level meetings, and reaping diverse benefits including:
  - Improved curriculum, and more grade-wide and school-wide activities,
  - Better communication and sharing of ideas and resources,
  - Increased camaraderie amongst teachers and a collaborative school culture, and
  - Networking beyond the school.
- Making greater use of the schoolyard and adjacent natural areas for more dynamic, engaging, and hands-on teaching.
- Using natural science to teach other subjects, particularly reading and writing.
- Increasing their use of PLT curriculum materials.
- Inviting increasing numbers of community members with varied specialties into the school and classrooms.
- Using new supplies to facilitate more frequent and varied natural science teaching.

CS2P supplied both intensive staff and physical resources and a personalized approach to teacher support at WES. The many examples described in the findings demonstrate that this approach was highly effective in preparing teachers with many new skills and strategies to teach locally based natural science on its own and as part of the larger curriculum. There are many promising indications that these changes will be lasting, and that this evolving style of teaching is beginning to establish itself as part of the overall culture of the school.

Findings about changes to teacher knowledge were less conclusive, with teachers reporting substantive learning in surveys, but being less forthcoming about their knowledge during interviews. Some teachers claimed new knowledge in areas such as tree and animal track identification. Others took the opportunity to reflect on gaps in their knowledge or to affirm their intent to rely on local experts. All teachers reported an interest in learning more about natural science.

Preliminary inquiry into teacher attitudes and values about the environment yielded evidence that teachers were developing a broader understanding and greater interest in their local environment, and increasing their participation in resource conservation.
Student Outcomes
As direct beneficiaries of the changes caused by their teachers’ participation in CS2P, the students at WES exhibited many positive responses to the new teaching styles, activities, and content. The evaluation focused on teacher, staff, and parent reported changes to student enthusiasm for natural science and student stewardship behavior. The data illustrated significant changes to student enthusiasm, including:

- Anticipation of and greater engagement during natural science activities,
- Increased personal initiative toward learning natural science, and
- More productive participation in literacy activities when they related to natural science.

In the realm of stewardship behavior, students demonstrated:

- Greater involvement in litter collection in the schoolyard and beyond,
- Enthusiastic participation in and ownership of the recycling project,
- Self-motivated acts of energy conservation, and
- Development of an overall conservation ethic towards natural resources.

Collectively, the data on student enthusiasm and student stewardship behavior show CS2P achieving key program goals and profoundly impacting the students’ experience with natural science.

Community Outcomes
The schoolwide theme at Woodsville for 2004-05 was “caring for our community.” Some of the intended outcomes of CS2P relate to students’ understanding of and participation in the community where they live, as well as community involvement in the school. Evidence suggests an evolving and deepening school/community relationship, including the following:

- More community members involved in the school,
- Greater community awareness of the school,
- Students visiting more places in the community,
- More parent involvement in the school.

Conclusions and Recommendations
Much of the success of the partnership between NHPLT and WES is attributed to the truly collaborative nature of their efforts. Identifying and facilitating the efforts that were most likely to succeed was a key strategy for NHPLT staff. They worked hard to build rapport with the teachers, understand their needs, and meet those needs in supportive ways. Two of the success stories from the partnership—paper recycling and the Helping Tree—were projects that school staff had initiated or intended to initiate prior to CS2P, but that did not come to fruition or attain high levels of success until CS2P. The inputs that NHPLT provided—including grade level planning meetings, materials to help teach, modeling use of teaching resources and local places, and facilitating community connections—served to jump start and provide healthy momentum for changes in teachers, students, and the school culture.
CS2P produced a remarkable and laudable range of successes at many levels. Thoughtful planning, dynamic implementation, and effective use of formative evaluation have helped NHPLT achieve an impressive number of the intended outcomes of the program. The findings of this evaluation suggest that WES will continue to pursue program goals in the years to come and serve as a model for future CS2P schools. The experience of this pilot program provided a strong foundation for replication. With careful selection of future sites, development of strategies to continue to support and motivate the teachers, and detailed documentation of accomplishments thus far, NHPLT should continue to succeed with CS2P.
INTRODUCTION

About Project Learning Tree

Project Learning Tree (PLT) is one of the country’s most well-known environmental education curricula. Established in 1973, PLT delivers a series of activities for students in pre-Kindergarten to grade twelve through a professional development program. At the elementary grade level, PLT offers a guide with 96 hands-on interdisciplinary activities. At the high school level, PLT offers issue-specific modules in the topics of forest issues, forest ecology, municipal solid waste, and environmental and public health risk assessment.

A 1994 evaluation of PLT’s PreK-8 activity guide found that the activities “can be an effective program for increasing environmental knowledge and effecting positive attitudinal growth in students in grades PreK-8, and particularly in grades 2-8. In addition, teachers who have completed at least one PLT teacher workshop, and who implement the new PLT activities as intended, are more likely to observe knowledge gains and attitudinal change in their students. This appears to be particularly true when students are exposed to a series of new PLT activities over a relatively short period of time.” (Marcinkowski and Iozzi, 1994) Formal evaluations of PLT’s secondary modules find similar results.

With an international office in Washington, DC responsible for developing the curriculum materials, each state administers its program independently. PLT was introduced to New Hampshire in 1979, and today New Hampshire Project Learning Tree (NHPLT) operates as a nonprofit organization. In 2001, NHPLT developed the Connecting Schools to People and Place (CS2P) program as a new strategy for meeting the needs of schools and teachers by providing sustained and intensive professional development.

Program Overview

The Connecting Schools to People and Place Program (CS2P) was launched in January 2003 as a pilot project between Woodsville Elementary School (WES) and New Hampshire Project Learning Tree (NHPLT). The program was designed as a model school improvement program, based on the environment and focused on sustained and intensive professional development. NHPLT staff worked intensively with WES teachers for 2 ½ years. Funding for CS2P was provided by the Wellborn Ecology Fund of the Upper Valley Community Foundation, the Dorr Foundation, Chocorua Forest Lands LLC, and local businesses.

CS2P Program Objectives

The goal of the CS2P program is to provide today’s youth with the knowledge, skills, and attitudes to become stewards of their local forests and other natural resources. The program aimed specifically to achieve the following objectives:

- Enhance and ground the teaching of core subjects through use of the PLT curriculum in and outside the classroom.
- Strengthen teacher knowledge and skills to teach science through sustained training and modeling of best practices.
- Increase student academic achievement by involving students in the study of their local environment and community service projects.
• Build stronger connections between a school and the people and places in the community by engaging community members in delivering a high quality curriculum.
• Help students and community members to develop a sense of stewardship for their local forests and other natural resources through an environment-based curriculum and service learning.

The CS2P Logic Model (see Appendix A) provides further description of the program’s short, intermediate, and long-term outcomes. The program logic model served as a guide for the evaluation team and program stakeholders to develop both phases of the evaluation.

NHPLT staff worked closely with WES staff to provide the appropriate support and resources to achieve the program goals. The following are the kinds of inputs provided by NHPLT:

• Funding teacher release time for grade-level meetings.
• Purchasing natural science supplies.
• Funding field trips.
• Facilitating grade-level meetings and summer planning sessions.
• Modeling natural science activities in the classroom and outdoors.
• Advising and assisting with curriculum planning.
• Building relationships with local resource experts and other community members.

**External Evaluation Team**

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 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 improve the evaluability of programs.

For this report, Amy Powers acted as the Principal Investigator, guiding the evaluation activities and serving as overall editor of the report document. Andrew Powers acted as Research Associate, conducting interviews, developing the survey instrument, and analyzing and reporting on the data. Graduate Research Assistant Linda Lee prepared the interview transcripts.

The following measures were taken to mitigate the potential for researcher bias:

• All interviews were recorded and transcribed fully.
• Interview guides were developed and followed, and generally accepted methods for coding interview data were employed.
• Every effort was made to maintain high standards for methodological rigor.

**Review of Place-based Education**

Project documentation describes CS2P as “place-based education.” In the relevant literature, 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 welcomes student learning to occur in many dimensions. Place-based education roots learning about abstract systems in the concrete experiences of the schoolyard and community. In theory, 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 CS2P logic model.

Existing documentation and evaluation suggests place-based programming is indeed effective (PEEC, 2003). In addition, closely related research has demonstrated that students who are engaged in real-world learning are more likely to succeed than those who learn the same type of material from more abstract text books. Examples of these studies are given below.

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.

Another study demonstrates the broad reaching positive effects of locally based curricula in over 40 schools nationwide. This 1998 study by the State Education and Environment Roundtable demonstrated that when the environment is used as an integrating context (EIC), student achievement and in-school behaviors improve (Lieberman and Hoody, 1998).

Further, many studies of the effectiveness of service-learning have been conducted, in large part 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, 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.

A more detailed literature review of the evolution of place-based education and service-learning prepared by Sharon Plumb in her 2003 Master’s Thesis can be accessed at http://cee.schoolsgogreen.org/PEEC/.
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)

Educational strategies: schools and communities

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 CS2P to find the most appropriate leverage points in a system (or community) to initiate these first steps. Implicit in the NH PLT mission is that educational intervention is an essential way to make change at the community level. Meanwhile, the prevailing environmental education literature advises that a conservation ethic and responsible behavior must begin with early, sustained exposure coupled with action strategies and behavioral practice. (Hungerford and Volk, 1990)

As such, the school system is a natural point of entry for making change in communities. And, given the outpouring of criticism of the effectiveness of the prevailing schooling system in the United States there is a clear call to propose educational strategies that more effectively meet the academic needs of learners. The promise of sustainability education and place-based education is to rise to both of these challenges: enhance community health through increased social participation, and strengthen the school system with more effective academic strategies and community buy-in.

If schools are natural partners for these programs, then teachers are an appropriate beginning audience. In C2SP, school educators serve as the first level of change. It is only from this point that students might be reached. Additional audiences include community members, school administrators, and students. While some place-based education models choose to work primarily with teachers in a professional development setting, other seek to meet their goals via a “whole school” model, working at once with teachers, administrators, students and community members.

The CS2P project contains elements of both a professional development model and a whole school model. With either approach, though, best practice would indicate that for a change in teacher practice or in whole schools to occur, curriculum development needs to be personalized and context-specific. Attention is given to individual teachers, and an emphasis is placed on developing curricula that is not only place-specific but integrates well into existing practice and expectations for district, state and national standards. If teachers or schools are offered teaching strategies that fall outside of broader expectations, they are less likely to be adopted, whereas new curricula and resource offerings that mesh well with existing practice are more likely to be readily adopted.
EVALUATION METHODS

Evaluation of the CS2P program began with the data-collecting efforts of NHPLT staff at the program’s inception at Woodsville Elementary School (WES) in January 2003. From the beginning, NHPLT staff systematically sought to better understand the successes and challenges of their program development and implementation. In the spring of 2004, PEER began to work with NHPLT staff to create an overall evaluation plan and delivered the Phase One report in July 2004.

The first phase of the evaluation was largely formative, answering questions about program implementation. The evaluation explored the effectiveness of strategies employed by NHPLT staff, including monthly planning meetings, school visits, and acquisition of classroom materials. The evaluation also made preliminary inquiries into teacher practice change. The Phase One report detailed findings about process strengths and challenges, teacher, student, and school-wide outcomes, and offered recommendations for program improvement and future evaluation. (The report is available at http://www.peecworks.org/PEEC/PEEC_Research/S0009D307.)

The second phase of the evaluation, conducted during fall of 2004 and spring of 2005, included continued monitoring and monthly reporting by NHPLT staff, evaluator interviews and observations, and a written survey. This evaluation was primarily summative and explored program outcomes.

Evaluation Questions

The evaluation team consulted the goals and expected outcomes outlined in the CS2P logic model (see Appendix A) and met with program stakeholders in order to develop the evaluation questions listed in figure M1. After NHPLT staff reviewed and approved the questions, evaluators designed appropriate research instruments to support those questions. (See Appendix B for Evaluation Overview 2004-2005 and Appendices C and D for Instrument Templates.)

Figure M1. Evaluation Questions for the CS2P Phase Two Evaluation 2004-2005

<table>
<thead>
<tr>
<th>Area of focus</th>
<th>Evaluation Questions</th>
</tr>
</thead>
</table>
| Teachers      | • As a result of involvement with CS2P, in what ways has teacher practice changed?  
• How have teachers’ attitudes and values about natural science changed?  
• How has teachers’ knowledge of natural science changed? |
| Students      | • In what ways has CS2P changed student enthusiasm about natural science? (as reported by teachers and staff)  
• In what ways has CS2P contributed to changes in student stewardship behavior? (as reported by teachers and staff) |
| Community     | • In what ways has CS2P strengthened connections between the school and people and places in the community? |
**Process and Instruments**

The evaluation used multiple methods. Semi-structured interviews were conducted with WES teachers, administrators, and PTA members. A survey was also administered to the teachers, administrators, and support staff. Classroom observations, meetings with NHPLT staff, and analysis of pre-collected data served to triangulate the interview data. Figure M2 summarizes the data collection methods and instruments used in this evaluation:

![Figure M2. Connecting Schools to People and Place Data Sources for Phase Two Evaluation 2004-2005](image)

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Type and Number Administered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviews</td>
<td>12 Teachers&lt;br&gt;1 Principal&lt;br&gt;1 Guidance Counselor&lt;br&gt;2 PTA Members</td>
</tr>
<tr>
<td>Survey</td>
<td>11 Teachers&lt;br&gt;1 Principal&lt;br&gt;1 Guidance Counselor&lt;br&gt;1 “Specials” Teacher (i.e. art, music, physical education)&lt;br&gt;4 Instructional Assistants</td>
</tr>
<tr>
<td>Document Review</td>
<td>Phase One Report and supporting documents&lt;br&gt;10 NHPLT Staff Monthly Observation reports&lt;br&gt;Minutes for grade level monthly meetings&lt;br&gt;WES-CS2P Staff Meeting Notes&lt;br&gt;CS2P Summer 2004 Planning Session Notes&lt;br&gt;NHPLT 2003 Annual Report</td>
</tr>
</tbody>
</table>

**Analysis of Interview Data and Documents**

After fieldwork was complete, pre-collected documents and transcribed interviews were coded to illuminate key emergent issues and answer the evaluation questions (Miles & Huberman, 1994). NVIVO software for qualitative analysis was used to code and sort the data. The most prevalent themes emerging from the data were analyzed and are synthesized in this report.

Specifically, the evaluators used the following protocol for analyzing the data:

1. Wait until the vast majority of data has been collected. Read through all data for the purpose of clarifying the context and getting a holistic impression of the data set.
2. Create an initial list of 5-20 themes that seem to reflect the data.
3. Code all data according to the theme list, while remaining open to the emergence of new themes, sub-themes, and meta-themes. As the remaining data is collected, code it according to the theme list. Look within the data from each theme, sub-theme and meta-theme and recode as necessary to establish clarity and coherence within each level.
4. Generate an outline of the findings and discussions section of the report based upon the final theme list.
5. Write the narrative based on the outline, pulling in data from documents and transcripts as needed. All researchers agree that the final analysis is consistent with their experience.
REVIEW OF PHASE ONE

Summary of Phase One Evaluation Findings

In sharing the findings of Phase One with teachers at their monthly grade level meetings, CS2P staff summarized the following key points:

- Monthly meetings facilitated by NHPLT staff and made possible through funding for release time were welcomed by all teachers, and were the primary component of strong increases to teacher collaboration and resource sharing, and intentional planning among grade level teams.

- As a result of participation in CS2P, every teacher was introducing new natural science based activities and curriculum into their classrooms. Data gathered suggested that teachers were making increased use of the schoolyard and local natural areas, and integrating natural science more thoroughly throughout the curriculum. The teachers were reported to be demonstrating a willingness to adopt and take ownership on new projects. Teachers were also showing increased use and understanding of place-based education terminology and concepts.

- Interviews revealed that despite the challenges presented by the introduction of a new program to a school, the NHPLT staff was highly effective in securing teacher commitment to the initiative. Much credit was given to the flexibility, effectiveness, and rapport-building skills of the NHPLT staff.

- The primary process challenge reported in Phase One pertained to building connections between the school and its surrounding community.

Distribution and Use of Evaluation Findings

Copies of the Phase One report were provided to the principal of WES, NHPLT staff, and members of the NHPLT board of directors. Teachers at WES received copies of the Executive Summary.

The report helped shape key decisions with regard to the second year of program implementation. Among these were decisions to:

- Continue to place a strong emphasis on the monthly meetings,
- Continue to acquire natural science supplies,
- Shift NHPLT staff’s presence from teaching demonstration to co-teaching,
- Enhance efforts to build relationships between classroom teachers and community members, and
- Respect teacher’s individual needs and styles by maintaining flexibility in implementation.
The results of Phase One were discussed during a phone meeting between PEER and NHPLT staff, and at a meeting attended by PEER staff and the CS2P evaluation team. At this latter meeting, a comprehensive assessment was made of the findings of the Phase One report. Participants determined which questions had been sufficiently addressed, which had been somewhat addressed and warranted further investigation, and which had not been addressed.

Through this discussion, the evaluation focus of Phase Two emerged: determining the extent to which teacher practice at WES had changed as a result of CS2P. The three specific dimensions of teacher practice to be investigated were:

- “What” (i.e. natural science knowledge),
- “How” (i.e. teaching methods, including level of interdisciplinary integration), and
- “Why” (i.e. attitudes and values about the environment).

Once teacher practice change was identified as the primary focus of Phase Two, additional evaluation questions were added to guide a preliminary investigation into student and community outcomes.
PHASE TWO FINDINGS AND DISCUSSION

There is substantial evidence that CS2P impacted the teachers, students, and community in diverse and positive ways. The evaluation findings (description of data and evidence) and discussion (analysis and interpretation of the data) are combined to present a comprehensive picture of the findings in an engaging and readable fashion. Quantitative data is included in chart form where it is relevant to the qualitative data. In some cases the charts are referred to in the text, in other cases, they stand alone. Three major sections of findings follow, detailing the major areas of focus in the evaluation:

- Changes to teacher practice, natural science knowledge, and attitudes toward the environment.
- Increases in student enthusiasm for natural science, and development of stewardship behaviors.
- Evolving and deepening relationships between the school and the community.

Teacher Outcomes: Practice, Knowledge, and Attitudes

One set of evaluation questions focused on the impacts of CS2P on teachers’ practices, natural science knowledge, and attitudes toward the environment. One of NHPLT’s primary strategies was to help teachers plan and implement natural science based activities throughout the curriculum. Overall, the qualitative and quantitative data demonstrated that teachers developed diverse skills and strategies to achieve this goal. This is confirmed in survey question 24, which highlights respondents’ learning of place-based practices. Findings about changes to teacher knowledge were less conclusive, with teachers reporting substantive learning in surveys, but being less forthcoming about their knowledge during interviews. Preliminary inquiry into teacher attitudes and values about the environment yielded data primarily related to recycling practices and other indicators of an evolving conservation ethic.

Teachers demonstrate new skills and strategies

“The whole idea is that what we have here is enough for kids this age. We don’t need to teach them about the rainforest, we don’t need to scare them about global warming, we just need to say, ‘what you guys have right here in your backyard, you have a chance to take care of and appreciate.’”

-First grade teacher
Many of CS2P’s strategies are focused on teachers – facilitating meetings, modeling activities, providing resources, and offering teaching support and advice—so it follows that the most significant outcomes would be in the arena of teachers’ interaction with each other, their students, the curriculum, and the community. Ample evidence demonstrated that CS2P has inspired a number of important changes to teacher practice in all of these realms.

The most prominent themes that emerged were:

- Greater teacher collaboration yields numerous benefits,
- Teachers increase use of outdoors and schoolyard for teaching,
- Teachers’ integration of natural science increases,
- Teachers increase use of PLT curriculum,
- More classroom guests participate in the curriculum, and
- New supplies inspire natural science teaching.

**Greater Teacher Collaboration Yields Numerous Benefits**

[The NHPLT staff] has connected us, not just with our curriculum, but with one another.

- Third grade teacher

**Teachers make use of grade level planning meetings**

A major input of CS2P was funding teacher release time for monthly grade-level meetings and facilitating these meetings. The Phase One report found that these meetings provided the foundation for successful implementation of the program. The Phase Two interviews further confirmed that the teachers appreciated the many benefits of such collaboration and were committed to continuing the meetings in coming years. When asked what the most important impact of CS2P had been, all of the teachers interviewed strongly emphasized the value of the grade level meetings.

One result of these meetings was more grade level theme days, in which all of the classes in one grade focused on a particular natural science theme. The students either moved between classrooms for different activities, or gathered all together for a single activity. A kindergarten teacher related how theme days became possible because of grade level planning meetings:

For me it’s been getting together as a group of teachers, having us all meet, and planning our theme days on something specific…Having that time to get together and plan a whole day of
activities around that theme. Then the kindergarteners all do something together as one big group, instead of having them always in their individual classes.

When asked if they had organized natural science theme days prior to CS2P, the teacher replied, “No, because we didn’t have the time to meet.”

A third grade teacher gave another example of the value of this regular collaboration:

…having time for us to meet as a team. To talk about ‘what do you do for this unit?’ and ‘oh I have this, I’ll let you use it,’ that kind of thing, too. Not only getting the supplies but talking about how we’re using those as well as just what we have to start with…There’s just never enough time in a day to talk. It helped, knowing that we had that meeting once a month. I didn’t realize half the stuff these guys had, and we’ve taught together for 18 years.

The teacher later added that even though the third grade teachers had been teaching together for a long time, “Having that time away, we still learned more about each other.”

The value of collaborating in grade level planning teams became so clear to the teachers and administrators at WES that they secured funding from the district to continue the practice once the CS2P funding expired. The value of NHPLT’s contribution in facilitating this was explained by an administrator:

Before we became associated with NHPLT, it was always my intention to increase the amount of professional development for all the teachers in the school, either by adding days during the school year or getting some release time for teachers to do work. I’ve been fairly frustrated with that idea until CS2P and the grant. With the grant we were able to get the funding to pay for substitute teachers, so that we could release our teachers by teams to go and work together with the consultants from NHPLT and develop programs. It’s reached the stage where the school board has approved the same design, using our own local funding for next year, our first year off the CS2P grant. That has been just one of the many kinds of accomplishments that we’ve been able to do through the work of the grant, but also through our efforts to communicate to our community and to our school board, the significance of what we’re doing with the grant.

The grade-level meetings were regularly facilitated by NHPLT staff. However, on one occasion, the staff was unable to attend the meeting and later reported that the teachers had demonstrated that they were “confident and capable of running the meeting without outside facilitation.” The teachers’
success in this suggests that the NHPLT staff were achieving their goal of moving from a leadership role to a supporting role and that the meetings would continue to be valuable and successful without NHPLT assistance.

A lack of time seems to be a universal barrier for teachers when it comes to making changes in the curriculum. Releasing teachers from their classroom obligations to attend grade level meetings was an important strategy for helping them overcome that barrier. Grade level meetings offered WES teachers time to discuss new curriculum ideas and teaching strategies, plan for activities like the theme days, share teaching materials and resources, and connect on a personal level outside the school setting.

Previous and on-going research conducted by PEER substantiates the time challenges faced by teachers and the deterring influence that challenge has on the implementation of new programs and the introduction of new curriculum. Preliminary results from current evaluation projects find that common planning time with grade level facilitation is a highly effective tool for addressing teacher time shortage and appears to be a very strong mechanism for embedding a program into the school culture. Clearly, the NHPLT-WES approach made teacher collaboration time a priority and this effort has been a success.

Emergence of Collaborative Culture

A more coherent school culture appears to have emerged from the regular collaboration in grade levels and the existence of a schoolwide theme. When asked what the most important impact of CS2P had been, a first grade teacher answered: “it brought us together as a staff to have a common goal during the year and helped us with communication and different things that we were working on…[not only] as a grade level, but also as a whole staff.”

This sentiment was echoed by a second grade teacher, who thought that “the whole school has a universal mindset, whereas before it was fragmented.” The change was noticeable at higher administrative levels too. After NHPLT staff presented a status report to the school board, the superintendent remarked, “I’ve never seen the elementary school so unified!”

Research in the field of school culture (Peterson and Deal, 1999) indicates that a strong and coherent school culture will help facilitate many benefits to the school, including:

- Increased school productivity and effectiveness,
- Better communication and problem solving,
- Increased success with efforts to change and improve, and
- Enhanced staff and administration commitment, energy, and motivation. (pp.7-8)
Collaboration Improves Curriculum Development

The comment of one first grade teacher suggests that planned teamwork with other teachers could lead to higher quality curriculum: “Now that I know I’m going to share things [with other teachers], I do them better!”

Another first grade teacher shared these thoughts about how working together improved the quality of her curriculum:

I started teaching first grade the second year CS2P was here. It really helped me with my science development and my science curriculum because I was able to talk to the other first grade teachers at monthly meetings. It really helped me to get started on the right path for teaching natural sciences.

Her comments also suggest that the regular collaboration at grade levels are an important tool to help new teachers gain comfort with the curriculum more quickly and effectively.

Teachers benefit from networking beyond the school

Participation in CS2P enabled WES teachers to associate with teachers from other schools and with other professionals. In May of 2004, four teachers from WES visited Champlain Elementary School, a Burlington, Vermont school involved with the Sustainable Schools Project. The WES teachers made numerous observations and brought back ideas to consider. Later, in 2005, teachers from another elementary school asked to visit Woodsville Elementary School. NHPLT staff noted that the WES teachers were “quite amenable to that idea. They remembered how valuable it was to visit Champlain Elementary and were willing to give another group that experience.”

Two first grade teachers affirmed that they were enjoying more networking opportunities, such as the Wellborn Ecology Fair. After participating in this event, one of the teachers reported that the “chance to mix and mingle with other people that might be doing more than we are,” made her feel like part of a larger network of professionals involved in place-based education. Inspired by her attendance at the fair, she said:

I actually bought a book called the Geography of Childhood. I’m fascinated by the thought of how much everyone needs to have green space outside, and nature to grow, and I just found out about another book that talks about some children not getting that at all from the city.

CS2P offered teachers opportunities to find inspiration networking with others involved in natural science education and prepared them to then offer their experiences to others.

Teachers Increase Use of Outdoors and Schoolyard for Teaching

“This is the biggest year we’ve had as far as all the teachers using what we have out back; getting out into the woods, doing investigations closer to the school, and using our schoolyard as an outdoor classroom.”

-Administrator

All teachers interviewed reported that participation in CS2P has led to much greater use of the schoolyard and natural areas adjacent to the school for teaching natural science, as well as service learning. This finding was supported by responses of agreement to survey question 17, which asked
Survey Question 17. Since my experience with CS2P activities, I would like to take my class outdoors more frequently.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree</th>
<th>Tend to Agree</th>
<th>Tend to Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Respondents</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

if teachers would like to take their classes outdoors more frequently since their experience with CS2P. One respondent did disagree with this statement, but it should be noted that some teachers said they made regular use of the outdoors prior to CS2P, thus they might not have felt they could increase the frequency of that activity.

The ease of being able to simply walk out the classroom door for a lesson has led to many positive outcomes, including more frequent and year-round hands-on natural science learning opportunities, inspiration to improve the schoolyard, and student and teacher attachment to their place.

“We haven’t used our schoolyard like we do now,” reported a second grade teacher. She described how teachers used to think they had to make a field trip to study natural science, with all the inherent logistical and financial difficulties. In contrast, “you can just walk out your back door, go for a short hike, collect pine cones, bring them back and then look at them,” she enthused. When asked what prompted the shift in her perception of the schoolyard’s value, she said “it’s all inspired from CS2P.”

In accordance with using the school’s outdoor environment more, teachers developed more curriculum and activities around schoolyard habitat enhancement, such as planting gardens. A third grade teacher recalled that this sort of curricula was not common at all prior to CS2P.
Many teachers reported on their changing perception and use of the surrounding natural areas as a teaching resource. The following snapshots capture the range of reports on this topic:

A kindergarten teacher related how she “would have never thought to use the trees right here for going out each season and looking at them and doing something about them.” Her students were able to make drawings and observations about the trees as they changed through the year. “We kind of adopt the trees,” she added.

A first grade teacher now ventures further than the schoolyard: “We use what's outside the fence more, just taking our kids out into the woods to see the changes happening.”

A second grade teacher said that through practice and support she has become more confident: “The kids love going out on hikes and getting out into the environment more than we had been doing in the past. And I’m more comfortable with going out into the environment and identifying trees and animal tracks and that sort of thing. I’m not as intimidated as I was before when going out.”

A third grade teacher gained the confidence to integrate the schoolyard on an on-going basis: “We went for a nature walk every single month and we took pictures of the same exact spot each month, made a book of it and it was really neat. Again, it’s not something I would have done by myself, because I wouldn’t know what to say every time I went. But [NHPLT staff] went with us and showed us things.”

“CS2P has enabled us to give them the hands-on experience that children need…instead of just reading it in a book.”

-Kindergarten teacher
Comments such as these helped explain the findings of survey question 1, where a majority of respondents strongly agreed with the statement: “Involvement in CS2P has helped me to see the outdoors as a natural extension of the classroom.”

NHPLT staff reported further evidence that teachers were becoming comfortable using the outdoors. When the kindergarten hosted “Tap a Tree Day” in late March, the woods had become quite muddy by afternoon, “so one teacher suggested we take her students on a tour of the local neighborhood to explore who had maple trees in their yards. The students were quite excited about this walk.” For a teacher to automatically think of exploring nature this way suggests that she was becoming more instinctive about place-based education.

Findings also hint that using the outdoors can be an effective tool for student behavior management. A NHPLT staff member described how teachers asked her to lead some PLT activities and nature walks “to relieve the pressure from testing that morning…The teachers were enthusiastic about using PLT activities as a stress reliever, instead of an unrelated time-filling activity.” A kindergarten teacher was also taking her students on nature walks to burn off extra energy during the day. As NHPLT staff recorded:

“[The teacher] said if she lets them have an extra recess, they take forever to get back on task. If she takes them for a walk, they’ve gotten outside and had exercise and come back in much more ready to get back to work.”

The idea of using nature walks and hands-on natural science activities to help energetic students refocus on their classroom studies merits further investigation.

**Teachers’ Integration of Natural Science Increases**

 Prior to CS2P, we might have had three or four teachers who sort of had a nature focus, but now everyone does. The whole staff is right into it.”

- Administrator

The CS2P logic model hypothesizes that implementing the program will “strengthen teacher knowledge, skills, and strategies to teach all disciplines using the environment.” In this section, this practice will be referred to as curriculum integration. In answer to survey question 23: “Through CS2P, how much have you learned about curriculum integration?” more than half of respondents indicated they had learned “quite a lot”, and the rest indicated “a moderate amount”.

![Survey Question 1. Involvement in CS2P has helped me to see the outdoors as a natural extension of the classroom](chart)
The intention to integrate natural science into literacy was a focus for CS2P from its inception at WES. Ample evidence appeared throughout the data demonstrating that teachers were using natural science to teach other subject matter, especially reading and writing. Teachers at all grade levels cited various examples of how they were achieving this goal. The comments of these second grade teachers typify what was taking place throughout the school:

I know in our team especially we’ve made sure that when we’re doing [natural science] we carry it over to the books that we’re reading. We talk to the librarian, we talk to the art teacher, and say ‘look we’re doing a plant day, we’re looking for any kind of resources, books, video, hands-on, whatever we can tie in,’ and we incorporate it into the lesson.

The books have really enhanced our guided reading program…so we really were able to correlate within the curriculum. It’s not just science during science time, we’re doing science during reading time and everywhere.

A first grade teacher affirmed that her students were “writing more about natural science and observations than they have before” and she found that this writing was very “authentic” for them. She gave the example of writing thank-you letters to naturalists who had visited the classroom. “The kids really see the reasoning behind writing. We also got to know what [the students had] learned, because we asked them to put something that they learned in the letter.” Other teachers also mentioned that having the students write about science had been a useful assessment tool for them as well.

Observations from NHPLT staff further exemplify the teachers’ increasing integration:

I’ve definitely seen changes in how the teachers are approaching science. They are no longer talking about science as a separate topic that they have no time for. Rather, they are discussing science in a bigger context, addressing science content while tying it into the literacy program.

A kindergarten teacher described her experience this way: “As we went along we really learned how to bring more into what we were already doing and to expand on that. That was real positive progress… It has made [my teaching] more interesting and it’s added another dimension to what we were doing.”

This teacher’s comments reveal that real curricular integration was taking place. Teachers moved from feeling that they were teaching “extra” material, to using natural science as a context to teach many subjects in even more interesting and effective ways. This shift offered a clear indication that CS2P was achieving its goals.
Respondents’ agreement with survey question 11: “As a result of involvement with CS2P, I more frequently relate my curriculum to the local environment and community.” suggests that much of the new content was being taught through a local lens, another goal of CS2P.

Other examples of efforts to include natural science across the curriculum include the following:

- This was the third consecutive year that an annual schoolwide dance performance incorporated a natural science theme.
- NHPLT staff noted that a special education teacher took a class in which he was hoping to develop a habitat unit other teachers could use.
- The physical education teacher enrolled in a weeklong residential summer institute cosponsored by NHPLT, “believing it may help him connect gym class to the science curriculum.”
- Even during a grade level meeting that the NHPLT staff member was unable to attend, “the majority of the topics [the teachers] chose to discuss focused on natural science.”

### Survey Question 11

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Tend to Agree</th>
<th>Tend to Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>7</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

### Teachers Increase Use of PLT Curriculum

“[The NHPLT staff member] makes our Project Learning Tree book come alive, because she’ll take an activity and you’ll say, ‘oh yeah, I can do that.’”

-Second grade teacher

Teachers reported they were more likely to use the PLT curriculum guide after having seen activities modeled with students in their classroom or observing them in other classrooms. Teachers reported having been disinclined to take the time to gather materials for and learn how to present an activity when they felt uncertain as to how students would receive the activity.

One second grade teacher was still skeptical of an activity even as NHPLT staff began to model it. “[The NHPLT staff member] did something on our plant day about how things travel. She had this very bizarre, eclectic bit of materials that I’m thinking ‘oh no, I just don’t see this happening.’” To the teacher’s surprise, not only did the students become highly engaged, “coming up with multiple responses”, but she could not resist participating. The teacher concluded, “I would have looked at this activity in the book and said, ‘Yeah, right.’ And not do another one probably, but she did it and proved two-fold that it worked.”
Many comments from teachers such as “there’s nothing like seeing,” and “the demonstration makes it,” indicated that having activities modeled greatly increased the likelihood of teachers repeating them, and becoming more willing to initiate use of other similar curricular materials.

Some teachers needed a push to get into some of the real “hands on” of natural science, as revealed in this third grade teacher’s anecdote:

We did those owl pellets. I would never have done that before. I mean never. I’m not that hands-on with animally gook stuff, but having somebody there supporting you, I’m like ‘okay, I can do that now.’ And now, I can’t wait to get them for next year.

NHPLT staff reported that another of the third grade teachers was so excited about the owl pellets that she brought her class in to observe and later did the activity with them. This occurred as well with the PLT papermaking activity, which one of the second grade teachers learned during summer science camp and shared with her colleagues. According to NHPLT staff observation reports, “this was such a success that the teacher convinced the rest of the second grade teachers to make paper during the school year.”

When asked directly if they thought they would make more use of the PLT curriculum book since involvement with CS2P, a second grade teacher offered this assessment, “[PLT] has been offering workshops for a long time. I think we probably use the book more now, I think they sat more on the library shelves before.” To that same question two kindergarten teachers answered, “Yes. We know what’s in the PLT book now,” and “We’re more aware.”

When asked if there was anything she wished to accomplish with CS2P but had not, a third grade teacher gave this response:

I wish that I’d had [NHPLT staff] come in and model more activities for my different units. ‘This is what I’m doing, can you just do an activity? Pick something and show me how to do it.’ I wish I’d done more of that. And I didn’t. I learn more watching somebody do something than ‘here’s a book, here are all these activities.’ I’d rather have somebody show me how to do it. I work better that way.

The data implies that an on-the-ground, demonstration-based program in a teacher’s own classroom or school, with various examples over time, offers a highly effective way to create teacher buy-in with a particular curriculum guide.
More Classroom Guests Participate in the Curriculum

During its second year at WES, NHPLT staff focused greater effort on establishing connections between the community and the school. One of the primary results of this effort was an increased number of community members visiting the classrooms and contributing to the curriculum. These visitors ranged from Smokey Bear to a local storyteller.

Interviewees described an evolving relationship between teachers and classroom guests. In many cases, NHPLT staff made the initial contact with a community member or provided the names of potential contacts. The data showed that teachers were much more willing to call on local experts once initial contacts had been established.

A first grade teacher explained that she would be more likely to call back classroom guests in future years “because we have those relationships, we’ve made contact. We can call them and say ‘will you come back again?’” She also noted an increased level of comfort contacting potential classroom guests since she felt better equipped to “articulate why we need the person and the impact it has on our curriculum, too.”

Another first grade teacher recounted how she had received a letter in the mail offering a classroom visit from the staff member of a local science museum. “I may not have followed up in the past, but now that we’ve had all these great people coming in and out, it seems like we’ll take advantage of that stuff.” A third grade teacher confirmed this notion by stating simply: “Once we try it and do it, we’re apt to keep doing it.”

PTA members commented that they have definitely noticed a change in the number of guests in the classroom and that the kids have been “extremely excited” and “just euphoric” about such guests as Smokey Bear. An administrator delved deeper into the subject, explaining “teachers have seen the advantages of making connections.” He noted that teachers had been hesitant to call upon outside resources in the past because it took time and energy, but now they really appreciated the “benefit for the kids,” as well as the instructional assistance and knowledge brought in by guests. “We’re beginning to understand that we have resources to use in our community, and NHPLT has really

“I loved having the county forester with us. He added a lot to my experience.”
—Third grade teacher
helped us become more aware of what those resources are,” he concluded. When asked in survey question 29 how much they had learned about using community members to support their lessons, seventy five percent of respondents said “quite a lot”.

When asked by the evaluator if “involvement with CS2P has inspired getting more of these people into the school,” a second grade teacher summed it up this way: “200%. We didn’t have it before, and now we have it. That’s how different it is. And we have it in a great way.”

New Supplies Inspire Natural Science Teaching

Use of natural science related teaching materials emerged as a smaller theme, but remains noteworthy because funding the purchase of these supplies is one of the inputs of the CS2P program. Some teachers simply remarked how the books, microscopes, puzzles, and other hands-on materials had been helpful teaching resources, and others suggested the resources were inspiring more dynamic teaching. Teachers valued that they were able to choose what they needed. When asked what the major impacts of CS2P had been, one third grade teacher commented,

I think one of the most beneficial things [NHPLT has provided] has been the books and the supplies that they have given us to work with. Our school library has expanded a lot, with the books that they’ve been able to buy us. They would give us catalogs and we were able to pick what we wanted to pick. It was the same with the kits that we built; we were allowed to pick what we wanted to do with the money.

Allowing the teachers to choose the books and supplies that they wanted appears to be an effective strategy for preparing them to continue making similar selections later without assistance from NHPLT. A second grade teacher illustrated this point when she reported, “CS2P has influenced what I order. I now get more supplies for my science topics.”

“We had been pretty book oriented and limited in our funding. We would read from the science book and do a worksheet and whatever. We didn’t do much more beyond that, but now we do. It’s always been our desire to have more hands on activities, and now that we’ve been able to have some supplies, we’ve implemented a lot.”

-Third grade teacher

In addition to the benefit of simply having more useful teaching materials available—and not having to “spend so much time as a teacher scrounging for anything extra,” as one third grade teacher said—the most valuable outcome of the new supplies seemed to be a shift to a more dynamic teaching style.
In the classroom, teachers’ many needs compete for funding that is usually limited. Interview data showed that facilitating the acquisition of new natural science teaching resources accomplished many goals for teachers, including:

- Better integration of natural science into literacy,
- Increased teacher preparation and thus greater likelihood to teach hands-on lessons,
- Time saved in lesson planning,
- Greater focus on purchasing other natural science supplies, and
- Teacher enthusiasm about the program.

Other survey data about teaching practices not included graphically in this section revealed the following:

- Teachers felt more confident teaching about the local environment and community since working with NHPLT.
- Teachers were better able to align teaching about natural science with curriculum goals and did so more frequently.
- Teachers felt the curriculum was more coordinated throughout the grade levels.
- Teachers had increased their knowledge of environmental education theories and methods.
- Teachers would like to continue to strengthen their skills at teaching natural science.
- Teachers spend more time teaching natural science since their involvement with CS2P.

CS2P supplied both intensive staff and physical resources and a personalized approach to teacher support at WES. The many examples described in the findings above demonstrate that this approach was highly effective in preparing teachers with many new skills and strategies to teach locally based natural science on its own and as part of the larger curriculum. There are many promising indications that these changes will be lasting, and that this evolving style of teaching is beginning to establish itself as part of the overall culture of the school.

**Teachers report diverse opinions on natural science knowledge**

During interviews, teachers at all grade levels reported with certainty that they had added to their knowledge of natural science and the environment through participation in CS2P. Survey questions 25 and 27 support this finding.
When asked for specifics during the interviews, teachers in two grade level interview groups mentioned improved knowledge of identifying trees and animal tracks, and having a greater general awareness of the local natural environment. Teachers in the other two interview groups declined to identify specific areas of knowledge growth and commented instead on where they felt they had gaps in their content knowledge:

I am aware of what I don’t know that I want to know. I still don’t know trees. I sit outside and hear birds, and I think, what kind of a bird is that? When I’m walking with the kids, there are certain trees I can point out, but the ones I can’t point out are the ones I’m afraid they’re going to ask me!

I think the hard thing is feeling like you have enough knowledge. I don’t feel like I’m a naturalist even though I love nature. I don’t know the different types of trees, well maybe four basic trees, but I don’t feel like I have that complete knowledge. I still think that I would ask people to come in that have more knowledge than I do.

These comments suggest two important ideas. First, teachers are interested in natural science and would like to improve their knowledge. Disagreement with survey question 16: "CS2P has not really helped me to learn more about natural science." supports this finding. NHPLT staff corroborated this, reporting that the teachers have asked for an in-service training next year to learn more natural science content. Also significant is that one teacher would prefer to rely on local experts rather than worry about gaps in her own knowledge.

Although teachers did not explicitly list many specifics that they had learned, it was evident that they had indeed learned many natural science concepts through participation in activities as diverse as owl pellet dissection to papermaking. NHPLT staff sensed that teachers were most likely absorbing new knowledge throughout the process.

The survey questions offer more data than the interviews, with most teachers responding that they learned a moderate amount or quite a lot about the topics listed. A more comprehensive survey
would likely reveal that teachers learned many natural science concepts, even if they did not commit to memory a large portion of the content.

There could be many reasons why teachers’ reports about natural science knowledge were somewhat inconsistent. A few possibilities are:

- Teachers’ responses suggest that they thought the question was aimed specifically at their field-based knowledge.
- Teachers could be more focused on learning concepts than content.
- Teachers could be assessing their own knowledge compared to experts.
- Program emphasis on increasing teacher knowledge was insufficient to create significant change.

The data does not present conclusive results on changes to teacher natural science knowledge, but does suggest that learning clearly took place and that teachers had strategies to fill in gaps where needed.

**Teacher attitudes and values**

Underlying a person’s change in behavior is often a change in his or her beliefs, attitudes, or values. Both survey and interview data supported the premise that WES teachers experienced some changes in their own attitudes and values about natural science and the environment since their participation in CS2P. During interviews, however, teachers were better able—or more willing—to discuss changes to their students’ attitudes and values than their own personal changes. Nonetheless, evidence emerged that teachers were developing a broader understanding and greater interest in their local environment, and like students, were beginning to develop a conservation ethic. It is also important to note that a few of the teachers identified themselves as already having positive attitudes toward the environment prior to involvement with CS2P, and thus felt that it did not precipitate much change in them.

When asked about changes to their personal attitudes and values, almost all interviewees immediately cited recycling as a place in their lives where the most dramatic change in both attitudes and behavior had taken place. All teachers reported enthusiasm for recycling in the classroom, and many said they were bringing in their paper recycling from home.

An administrator thought that working on the recycling instructional units raised the teachers’ awareness. Many teachers’ stories illustrated this point:

---

**Survey Question 18. CS2P has inspired me to feel greater personal responsibility to care for the schoolyard and natural areas that I visit.**

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Tend to Agree</th>
<th>Tend to Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Number of Respondents
A second grade teacher said, “the recycling has made a great difference. I bring things every day, automatically…so it doesn’t pile up. I think that has been huge for me.” She thought that more recycling was needed in the school.

A third grade teacher who said, “I love the recycling, personally,” explained that when helping a friend move she had brought in three carloads of paper. She later asserted that recycling paper “makes you conscious of all the other stuff that gets thrown out.”

A kindergarten teacher explained that some of the teachers were advocating for a change from plastic utensils in the cafeteria to silverware. She felt that since the plastic could not be recycled, it was important to “show the kids that you can reuse silverware and it won’t go in the trash.” While many obstacles to making this change exist, the teacher felt it was important to have made the effort.

A third grade teacher said she was completing the cycle by purchasing recycled content greeting cards and notepaper. A first grade teacher illustrated the connections her students were making as a result of her personal interest in completing the recycling loop. She said:

I went to Staples and bought recycled paper, and I brought it in and showed [my students]. ‘Oh look, this is what your paper might be turning into.’ They were just amazed and all wanted a piece. Before, I wouldn’t have even thought of doing something like that, but seeing that we are recycling right here…. It just opened our eyes more.

In addition to great enthusiasm about recycling, several teachers reported that they might spend more time visiting local natural areas, and one third grade teacher told how CS2P had made her more observant of changes to the place where she lived:

I’m aware in my neighborhood too, and especially the impact of buildings. There’s a lot of building going on in my area. Some of those little wild animals that I’ve enjoyed watching, you see fewer of them now. I’m quite aware of that type of thing.

A final piece of data on teacher attitudes was recorded in survey question 33, which asked respondents about their agreement with the statement: “I am (or plan to become) more actively involved in projects to improve the social and/or environmental quality of our community as a result of participation in CS2P.” Eight respondents indicated, “tend to agree”, three chose “strongly agree”, and two selected “tend to disagree”.

**Linking Teacher Outcomes to CS2P Logic Model**

Participation in CS2P inspired many changes for the teachers at WES. The most substantial changes were to their teaching practices, ranging from small changes like greater use of natural science supplies, to helping shape a more collaborative and productive school culture. Less prominent but still meaningful changes took place in teachers’ knowledge of natural science and teachers’ attitudes and values about the environment.

NHPLT has achieved several short term (by the end of year 3) teacher outcomes listed in the CS2P logic model:
- Teachers better understand how environment-based education supports curriculum goals.
- Teachers are better able to align PLT and other materials with school curriculum goals.
- The faculty works more collaboratively and there is grade level cohesiveness.
- Teachers view the outdoors as a natural extension of the classroom and students spend more time outside for academic study.

CS2P’s success is further confirmed by the achievement of two intermediate (by the end of year 5) teacher outcomes:

- Teachers use their grades’ adopted special places regularly and visit other nearby public and private lands for academic study.
- There is a greater sense of school cohesiveness for curriculum instruction.
**Student Outcomes**

The evaluation focused on teacher, staff, and parent reported changes to student enthusiasm for natural science and student stewardship behavior. As direct beneficiaries of the changes influenced by their teachers’ participation in CS2P, the students at WES exhibited many positive responses to the new teaching styles, activities, and content. The data illustrated significant changes to student enthusiasm, including greater engagement in learning and increased personal initiative toward learning. In the realm of stewardship behavior, students demonstrated greater incidence of recycling, litter collection, and energy conservation, and displayed development of an overall conservation ethic towards natural resources.

**Student enthusiasm**

“The link between student motivation and academic 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*

Student enthusiasm for and engagement in learning would seem to inherently be regarded as a positive thing. Further, it has been shown to be a predictor of student academic success. Thus, it was encouraging to note that teachers, administrators, and parents agreed emphatically that the students at WES were much more enthusiastic about natural science since participation in CS2P.

Student enthusiasm for and increase in enthusiasm in such terms as “a 100% increase,” “a tremendous increase,” and “a definite increase.” Responses to survey question 34 reflect strong agreement with the statement that “Our students are more enthusiastic about learning about natural science as a result of CS2P.”

Examples of increased enthusiasm for natural science were abundant throughout the data. Many interviewees were themselves most animated when describing the excitement of the students. Some of the most significant themes that emerged were:

- Anticipation of and engagement during natural science lessons and activities.
- Increased personal initiative towards natural science.
- More productive participation in literacy activities when they related to natural science.

---

1 For the purpose of this report, student enthusiasm will be defined as students’ level of interest in the material, motivation to learn, and amount of personal initiative put into the learning process in and out of the classroom.
The second grade teacher team offered numerous accounts of how focused and enthusiastic students were during different CS2P-inspired natural science activities. In some cases, the teachers seemed somewhat surprised by how energized the students were. The following is an excerpt from the teachers’ conversation about student enthusiasm for science:

“They’re so excited by planting a tree. I don’t know if I would have been that excited at their age. When we plant trees, or do anything with gardening, they are just thrilled by it.”

“After all the things we did in that afternoon [during science camp], they just didn’t even want to go home.”

“All you’re doing is putting bulbs in the ground and covering them with dirt. You know, there’s not a whole lot of excitement that’s happening directly with bulb planting. They were thrilled, absolutely thrilled.”

“My kids are coming back from these two rooms, (doing plant activities) and I’m just like ‘whoa!’, because they’re just attacking me with what they’ve done for projects, and so excited, ‘we did this’ and ‘we did that.’”

“And when you celebrate a dumpster…”
“That was unbelievable!”
“The kids did banners and posters on recycling, and the kindergarten all had recycling patches on their faces. I mean the kids were all excited to go out and see the dumpster, and I’m thinking, ‘Wow!’”
Anticipation of and engagement during natural science lessons and activities

Teachers and parents reported that once students had a number of positive experiences enjoying natural science, they began to eagerly look forward to future activities. Students’ reported preference for CS2P-related activities is shown in survey question 37: “Students prefer CS2P-related activities as a way of learning natural science.” All respondents reported that they either “strongly agree” or “tend to agree.” When walking through the school, a NHPLT staff member reported that students would frequently ask “When are we going to do that fun activity again?” or “When are you going to take us back into the woods?” A teacher confirmed this anticipation; after CS2P activities, her students also “want to know if we’re going to do the lesson again, and when.”

A parent corroborated this when telling about the students’ enthusiasm for a visit from ocean naturalists. She said, “They knew when [the visitors] were coming and they were very excited. ‘What am I going to see?’ ‘What do I get to touch?’ they asked.” She added, “I don’t think anybody faked being sick that day…. They know about that day, they’re not going to miss out on that day.”

Increased personal initiative towards learning natural science

While the reports of student enthusiasm in the classroom are encouraging, it is also important that some of the excitement moved beyond teacher-guided instructional time, with the students initiating natural science study and inquiry on their own.

Microscopes acquired through CS2P funding inspired many students to take a closer look at nature. First and third grade teachers reported that their students were frequently going out unprompted to find natural objects to examine with the microscopes.

“There’s more of the outside inside,” noted a first grade teacher, explaining how her students brought in more insects to study, including water beetles and ants. Less animate objects also captured her students’ attention: “Rocks. I’m getting lots of rocks.” NHPLT staff noted that a few students reportedly searched for spiders and insects at home.
One parent said that her son learned about loons during a science lesson. After writing a paper about loons in class, he went on to attain a Boy Scout merit badge based on further independent study of loons. That same boy also brought his snapping turtle reading home and read it to his younger siblings.

Another parent talked about her son, who had a lifelong dinosaur obsession. “He’s known as the resident paleontologist here,” she explained. With exposure to new and interesting natural science lessons, he has “blossomed out into other areas” and become more highly engaged in his local place. The parent was delighted to see his expanded interest and credited it “directly to CS2P because he has been able to experience these things through them.”

“A first grade teacher told how some of her students had changed in their attitudes toward wild animal scat:

In the beginning they’re all like ‘eww, eww what’s that?’ Now they’ll tell me ‘I know there was a bear at my house because I saw the scat.’ They don’t call it the bear poop anymore, they’re actually using the right term. They could tell what it was eating and they’re going on and on about it.

NHPLT staff also noted that a few students did natural science projects at home and brought them into class, and others pleaded with their parents for trips to return to science museums, the ocean, and other favorite natural science field trip destinations.

A final indication of student initiative was suggested by a PTA member. The PTA gives out mini grants to the classrooms, and when the students were asked what sort of new supplies they would like, they requested more materials related to things they had learned through CS2P.

**More productive participation in literacy activities**

Student enthusiasm for natural science also manifested itself in literacy activities. Teachers remarked that when their students were highly engaged in science subject matter, they were equally excited to read and write about it. A second grade teacher reported that “they see it in books and they just come to life.” She said her students “all want to write about themselves and their own experiences,” and when they have been inspired by a natural science activity, “they really want to write about it.” The teacher described how even the students who are not enthusiastic writers were willing to do so,
because then they could have a chance to later talk about what they had written. To that, another second grade teacher added, “their illustrations, their pictures, everything has more meaning to it.”

A first grade teacher reported that for some of her less writing-oriented students, “because they’re writing about the science topics, they are more eager to write than they would be if they were writing about something else.” She described how these students would write for longer than usual, listing everything they knew about a certain subject.

Two teachers recounted occasions when students were more concerned about spelling when it came to science-related words. A first grade teacher said:

I noticed today how a boy who spelled a whole bunch of high frequency words wrong would come to me and ask me the science words. He didn’t want to get ‘anemone’ wrong. He could spell ‘when’ without the ‘h’ but he was going to have ‘anemone’ right. It was important to him.

Teachers also indicated that students are showing increased interest in reading about natural science. One first grade teacher reported, “I have about 30 ocean books right now, on my shelves, in the science center, in the browsing center, and all over my desk. Still, I had a kid come up to me today and ask ‘Do you have any more ocean books?’” Another teacher noted that given free choice, students were choosing natural science books during library time.

One final idea that emerged from the interviews was that student enthusiasm builds from year to year. This was CS2P’s third year at WES, and most of the students had been exposed to the program in previous years. One teacher reported that because her students had enjoyed many activities in the previous grade, she believed that they were already more predisposed towards natural science upon entering her class.

The data suggests that students are enthusiastic about natural science and the energy carries over into literacy activities. It also appears that some students who had not typically been as inclined towards reading and writing performed better and more enthusiastically when the topic was natural science.

Student stewardship behavior

Interviewees were asked to comment on their observations of student stewardship behavior. For the discussion of student stewardship behavior, a simple definition will be used: taking personal responsibility to protect and maintain natural and community resources. The most coherent body of

“The students] like nonfiction. They’re learning to make inferences and transfer information from one book to the next.”
–Third grade teacher

“I had lots of spider squashers at the beginning of the year, and on Tuesday there was a spider crawling down the wall and they were all lined up, and as they went around the corner, each person said, ‘Be careful! Don’t squish the spider! Oh, be careful, he’s right there!’ And they all watched and made this wide berth around it to get in safely.”
–First grade teacher
examples of student stewardship came from the Helping Tree project, developed by WES staff with assistance from NHPLT. To participate, students take some helpful action, whether it be at home, at school, or in the community. An adult fills out a sheet describing the action and the student gets a leaf on the Helping Tree painted on the wall in the school gym. The students also receive recognition for their contributions at a monthly awards ceremony. The Helping Tree not only provides incentive for students to participate in helpful actions, it serves as a highly visible and dynamic record of that participation. An administrator described the activity:

Slowly that tree has filled up with leaves. People in the neighborhood notice kids out there, cleaning up their community and they are rather impressed with the fact that the kids care about it. The kids care enough that they have created a real interest in recycling, so the staff here has to think about what we can do to help nurture that concern the kids have.

While The Helping Tree was not an idea introduced by CS2P, many interviewees described ways in which NHPLT’s involvement at the school was critical to the level of success that it attained. NHPLT brought inspiration, facilitated connections, created opportunities for participation, and tied it back to the curriculum. An administrator described how “we’re all part of that influence to do [community service], but without NHPLT being there as the source, I don’t think anything else would have happened to this degree.”

The record book for the Helping Tree provides countless examples of student stewardship, which were corroborated by other evaluation data. Interviewees cited many occasions on which students took action to protect and conserve their environment. Of these many examples, the primary themes that emerged were:

- Litter collection,
- Recycling,
- Energy conservation, and
- Development of a conservation ethic.
Litter collection

Picking up litter is perhaps one of the most widely practiced and universally accepted acts of environmental conservation, and students at WES participated eagerly. Teachers, parents, and administrators all remarked on how the students liked to pick up litter around the schoolyard, to the point where it was a regular recess activity. Without prompting the students would get gloves and bags from the school janitor and proceed to clean up the schoolyard. “They really are sensitive to keeping our area clean,” commented one administrator. Agreement with survey question 38: “At home or outside the school, students take action to protect and improve the environment more frequently since CS2P.” supports the interview findings.

“I don’t think [litter] bothered them as much before. Now it does, because it’s their playground and they take ownership in it.” This comment from a first grade teacher suggests that as a result of spending more time learning in the schoolyard and doing projects to improve it, students were feeling personal responsibility towards it. A NHPLT staff member also “noticed that, as time has gone by, students have gradually started picking up more trash and staying on the trail more in the Aldrich Woods, presumably because they have begun thinking of it as an extension of their playground.”

The staff member’s observation also implies an expansion of the area that the students feel personal responsibility towards. It could be possible that as the students grow and spend more time in an expanding geographic area, their sense of stewardship expands as well.

Supporting that idea, a parent said that her son picks up litter along the road where they live “not because he has to, but because he wants to.” Two teachers also mentioned that some of their students had taken part in Green Up day in Vermont, a statewide litter collection effort. A parent also mentioned Green Up day and told how one student “was excited about cleaning up the environment where his cousin lived,” and “of course he’s saying we should have that in New Hampshire, too.”

While a behavior like litter collection can readily be adopted, understanding and internalizing the reasons for it is a more profound lesson. One teacher observed that trash pickup was becoming a less frequent activity because there was an ever decreasing amount of litter on the school grounds. Students, she believes, were transitioning from learning to pick up trash to not dropping it on the ground in the first place.
The fact that students at WES are feeling some personal responsibility for keeping not only their immediate space but the larger environment clean is an indication that they have begun to develop a deeper understanding than doing it “because they should.” A parent thought one of the reasons students had changed their littering habits was because they had learned how garbage could harm animals. “I think they’ve learned why they don’t do things,” she concluded.

**Recycling**

The paper recycling program that developed at WES during the CS2P program succeeded tremendously and provided an excellent vehicle for achievement of program goals. Recycling offered a positive stewardship action that students could perform day after day, on their own initiative, at any grade level. It also transferred easily to students’ home lives. Response to survey question 41 indicated almost unanimous agreement that resource conservation in the school had increased because of participation in CS2P.

In addition to being able to practice conservation behaviors, instructional resources put together with NHPLT’s assistance helped students to understand the reasons for recycling and how the whole cycle works. The students’ zeal for recycling was evident throughout the data and all interviewees remarked on it. Various examples were cited of students educating their families about recycling, as well as reminding their teachers and peers. A first grade teacher reported that her students “had gone home to their families and pushed them to recycle.” A second grade teacher explained how she knew her students were getting the message when parents were telling her, “My children are after me to recycle!”

Teachers also referred to examples of students holding them accountable for recycling. A third grade teacher described her experience this way:

> By mistake, I went to throw away a piece of paper in the garbage, and they said, ‘You can’t put that in there, it’s got to go in the recycling bin’, and I said, ‘Oh, no! How dare I forget!’ It was when we first got the bin so I wasn’t used to it. They decided it should be closer to my desk so maybe I would use it…and it worked!
The most significant recycling took place in one of the Kindergarten classrooms. The teacher was collecting plastic containers and recycling them in her hometown where that was possible. Since students had many daily interactions with beverage containers, they had new opportunities to learn about what types of plastic were recyclable, and even how to make consumer choices based on recyclability of the packaging.

The teacher explained that her students began learning by watching her and other teachers recycling plastic bottles at their classroom bin, and soon they wanted to be able to do that too. She stated that,

I have students now bringing water bottles instead of juice because they can see they can put their water bottle in our recycling...so it’s almost like you’re changing what they’re going to eat and drink now because of the packaging...I’ve noticed a lot with their snacks that they say ‘this can go in recycling in that paper bin because it’s that cereal board.’

It is impressive that at the youngest grade level, the students took the biggest steps forward in terms of understanding how their personal consumer choices affected the environment. It is a strong indicator of the accessibility of recycling as a way to develop stewardship behaviors. Students were also very enthusiastic to learn about the complete cycle of where paper comes from and where it goes after the recycling bin. This was especially highlighted through a PLT papermaking activity.

One last testament to the students’ passion for recycling was observed during the evaluator’s interviews with teachers. The principal announced on the public address system that the last dumpster of recycling that was collected weighed a full ton more than the anticipated capacity. At that moment, cheering could be heard ringing out spontaneously through the hallways.

**Energy conservation**

Another stewardship behavior that students can readily participate in and understand the reasons for is energy conservation. Interviewees mentioned it, but did not talk as extensively about it as they did litter collection and recycling. Energy saving behavior did, however, show up numerous times in the logbook for The Helping Tree. Parents detailed case after case where children turned off unused lights, televisions, and radios, and performed other small acts of conservation such as turning off the faucet while brushing teeth.
Development of a conservation ethic

Although development of a conservation ethic and increased awareness of the environment is not a stewardship behavior per se, many believe that these characteristics lead to behavior changes. Thus it is worth noting that data collected suggests that students are changing their attitudes about stewardship.

A kindergarten teacher reported that, “more so than other years,” her class was

…going out almost every day just around the neighborhood, and they were very excited to see the buds coming out and having them change over time. We talk about not picking things, and we just leave them there to look at. They are really learning a respect for things.

She said that when her students bring in insects to examine under the microscope, “they know they have to bring them back to the environment where they came from.”

Evidence of the students developing a broader understanding was corroborated by a second grade teacher who thought that her students were “realizing the importance of the whole cycle of the environment, keeping a balance, and keeping things healthy.”

Other teachers cited examples of their students being more aware of and “indignant about” pollution issues. During an activity about oil spills, a first grade teacher said her students “were really making unbelievably good connections…one student said that if oil spilled here, that eventually it might get to the ocean by going into streams.” She considered it advanced for a first grader to learn about a remote event such as an Alaskan oil spill and make a connection to how that might relate to their home place. Another of her students made a more personal connection when he expressed that he needed to talk to his uncle, who was dumping motor oil when he changed it from the car.

One parent told a particularly illustrative story about her son’s evolving conservation ethic:

He has a favorite tree at home that he went to go climb last night, but he fell off a little bit and cracked the branch. He was in tears, because he thought he had killed the tree. So he’s very concerned about that and now he said, ‘Mommy, I fell off a part of my tree and I’m not going to do it again, and I’m going to be very careful with it because I know it houses animals. So we need to make sure it’s safe.’ It was heartbreaking, but at the same he’s getting it. There’s that light bulb, and it’s on.
Survey data not represented graphically in the student outcomes section showed respondents felt that:

- Students had gained a better understanding of how their actions affected the environment.
- Students had improved the schoolyard through CS2P projects.
- Students were gaining a sense of responsibility for improving the local community and environment through CS2P-related schoolwork.
- Students had enjoyed participation in CS2P.

The program logic model contains the following student outcomes that are being realized at WES:

- Students take action to improve the schoolyard and their special places.
- The schoolyard is enhanced by student projects
- Students possess a stronger sense of respect and responsibility for the school and adopted special places.
- Students demonstrate an understanding of how one’s actions affect the environment.

Collectively, the data on student enthusiasm and student stewardship behavior show CS2P achieving key program goals and profoundly impacting the students’ experience with natural science.
Community Outcomes

The schoolwide theme at Woodsville for 2004-05 was “Caring for Our Community.” The discussion above reflects some of the diverse ways in which students were caring for the natural environment where they live. Some of the other intended outcomes of CS2P relate to students’ understanding of and participation in the community where they live, as well as community involvement in the school. Evidence of the evolving and deepening school/community relationship included:

- More community members are involved with the school,
- Community has a greater awareness of the school, and
- Parents are more involved in the school.

More community members are involved with the school

As described in greater detail in the teacher practice section, WES has seen a significant increase in community members visiting the school. A sampling of recent visitors includes:

- University of NH Seagrant Docents
- Local Master Gardeners
- US Fish and Wildlife Service Conte Refuge Staff
- UNH Cooperative Extension Grafton County Forester
- Local Storyteller
- Montshire Museum Staff
- NH Fish and Game Department staff and docents

By making initial contacts and creating human resource lists for teachers to use, NHPLT staff provided the foundation for on-going and expanded involvement by the community in the school. A second grade teacher reported that community involvement “increased so much more than it ever was before because now we have a resource list.”

Certain schoolwide events like the Fall Field Day were designed specifically with the intention of involving as many community members as possible. At a CS2P summer planning meeting, a list of possible guests was brainstormed and strategies were developed for tying them into the school theme.

Community has a greater awareness of the school

The paper recycling program offers the best example of the school addressing an important need in the community. For years, town residents interested in recycling have been required to drive to a neighboring town in Vermont to use their transfer station, which is open only limited hours. No
local recycling opportunities existed. Based on connections made by the NHPLT staff, the school determined that it could provide an opportunity for both the school and public to recycle its paper and earn money for the school to implement its “Caring for Our Community” theme.

Just as the teachers and students have embraced the recycling program, the community at large has responded eagerly. The paper recycling dumpster is readily accessed at the back of the school. A parent-volunteer constructed a set of steps next to it to make it easy to use for all. The local newspaper printed articles about the recycling program including one covering the celebration inaugurating the dumpster. A third grade teacher said that the recycling program has “been one of the best things that’s come out of CS2P” and has generated “positive publicity” for the school.

*Figure F2. Letter from community member to school.*

“To the children, staff, and administration of Woodsville Elementary School:
Thank you all for taking action on recycling, by installing a dumpster for our paper recycling needs. Your thoughtfulness on making this a cleaner world to live in, and by preserving our forests through the saving of our paper products, is to be applauded by me. I commend you all, and thank you for setting an example for all to follow. I’m an advocate of recycling, and am glad to know that we can leave our children, and your future children, something behind in this world besides a gold watch. God bless you all!”

The principal of WES has been very active in pursuing sources and support for the recycling effort. He has motivated many local institutions and businesses to recycle their paper at the school and secured assistance from local volunteers to monitor the dumpster over the summer and on weekends.

*Survey Question 32. CS2P gets people (young and old) more involved in solving real life problems in our community.*

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Tend to Agree</th>
<th>Tend to Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>12</td>
<td>10</td>
<td>2</td>
</tr>
</tbody>
</table>

Number of Respondents

Teachers offered various examples of community use and appreciation of the recycling facility. A first grade teacher said,

“There have been several days where I’m leaving after school and some parent is pulling up in a pick-up truck, and saying ‘thank you for having this!’ I think there’s been this need and we finally addressed it.

Recycling has probably been most visible and far reaching in terms of generating community connections to the school. In addition to that, other student efforts also attracted attention. As mentioned earlier in this report, an administrator reported that community members were impressed by students doing service activities like picking up trash in neighborhoods and raking peoples’ lawns. A parent said her son earns Helping Tree leaves by volunteering at the senior center and that:
He would go there and empty their trash and water their plants, and whatever they needed, he did. They were able to say ‘oh he’s from Woodsville Elementary School, and he’s coming here because of CS2P.’

In addition to the newspaper articles about the school, WES also got a visit from a local radio station that profiled them as “The Cool School.” The school was nominated for this mention by the family of a first grader who had recently moved from Connecticut. They had “just been incredibly impressed with our building,” according to a teacher.

Teacher responses to survey question 30 further support the qualitative data that WES was making a positive impression on the community. It appears that--because of community, student, teacher, and parent motivation--recycling and community service are programs that are likely to expand, even after NHPLT is not as actively involved. The success of these programs and the praise they have earned may inspire WES students and faculty to engage the community in other positive and productive ways.

**Parents are more involved in the school**

Interviews with two PTA members offered insight into ways that CS2P was creating increased parental involvement with the school and also suggested ways that parents and siblings were being exposed to CS2P through WES students.

One PTA member explained that garnering parental involvement was always a challenge, but “whenever we’ve had CS2P events, parents come with their kids, which is a tremendous feat in itself because everyone’s busy, but they take that time out of their schedule to see what their children are learning.” She thought that this increased parental interest was “absolutely” connected to the enthusiasm of the students.

The parent also thought that teachers had become more receptive to her participation and that of other parents in the classroom. “I think it’s also helped the teachers to welcome new ideas from parents to come into the classroom,” she said. She recounted a number of occasions on which she or other parents had brought different activities for the students to do and how they tried to keep it related to natural science:

We’re always in the classroom, we’re always doing things with the kids, and I think the teachers look forward to that too. And we always try to make sure it is in direct association with CS2P.
Another theme that was evident in the interviews with the parents was that interest in natural science was spreading to the parents, siblings, and sometimes other peers of the students. A parent related how her son was... bringing everything home and teaching the girls. They talked about littering and that sort of stuff and now they say 'oh my goodness someone littered! That’s not okay!' I’ve also learned a lot from him which he’s directly gotten from CS2P.

“You’d be surprised,” related another parent, how much some fathers on a field trip were “getting into” learning about insects. She also described how they were taking some CS2P-inspired activities and replicating them with the Boy Scouts.

These anecdotes point to a potentially promising trend, namely that the enthusiasm of students for natural science leads to not only greater parent participation in the classroom, but also a spreading of interest in natural science to the families and peers of the students. Further, the students’ enthusiasm for learning in general seems to promote an increase in parents’ enthusiasm for participating more in the learning process.

The enhanced community standing of WES is a testament to the success of NHPLT’s involvement with the school. Judging by the broad community participation in and gratitude for the recycling program, CS2P is already achieving one of its long term goals, that the community values the school’s role in contributing to community quality.

CS2P is clearly achieving the following short term community outcomes:

- Community members are more involved in programs and activities at the school.
- The community is more aware of what is taking place in school.
Sustainability of CS2P

Although not a specific focus of the evaluation, data emerged from the interviews regarding the extent to which changes that took place during the CS2P program will be sustained. Comments from teachers, staff, administrators and parents were generally optimistic that CS2P’s objectives would continue to be pursued in years to come. Highlights of these comments include:

They have been very careful to leave documents behind that are templates for carrying the work forward. Everybody here is more likely to keep going with this because we now have the directions for how to do it next time. [First grade teacher]

There’s a larger confidence factor in the staff in all this material and working with it… it’s in the fabric of this school. And it’s not going to be one of those things that die. [WES staff]

I definitely think it’s going to keep going because we have parents that have been so involved this year. I think with the parents, there’s definitely a will to have it continue, and you know, where there’s a will, there’s a way. [PTA member]

We had one candidate who knew all about PLT. And again, that’s nice to hear…there’s a lot that we look for in any particular candidate that comes aboard, but PLT, and natural science certainly is one of those important ones. [WES administrator on new teacher hiring process]

Survey question 14 illustrates an important shift in thinking that will be critical to the continued focus on natural science. If teachers and administrators truly believe that natural science is as important as traditional core subject matter, they will be more likely to continue taking action to insure that it plays a prominent role in the curriculum.
Spread of CS2P in the school

In addition to surveys administered to WES faculty and staff, four classroom paraprofessionals and a “specials” teacher were surveyed. Since they were not direct recipients of NHPLT’s inputs, the intention of this data collection was to make a very preliminary investigation into their views on the impacts of CS2P.

This data set showed similar favorable response patterns to the rest of the surveys (reported above, throughout the document) in the following areas:

- Seeing the outdoors as an extension of the classroom (question 1)
- Greater curricular coordination exists in the school (question 6)
- Greater collaboration (question 8)
- Increased student enthusiasm (question 34)
- Enhanced student sense of responsibility (question 35)
- Students and teachers improved the schoolyard (questions 42, 43)

The five additional surveys had less favorable responses than the rest of the surveys—indicating that CS2P had impacted the respondents less—in the following areas:

- Confidence in teaching outside (question 4)
- More time teaching outside (question 9)
- Curricular integration (question 11)
- Incorporation of community service (questions 20, 23)
- Knowledge of community experts (question 29)

The comparative data sets suggest that the survey respondents who were not the target audience of CS2P were indeed aware of many of the impacts of the program on the students and teachers, but did not have similar changes to their own teaching practices or skills. Perhaps most notable in this comparison is that all respondents reported they were collaborating more, again suggesting the emergence of a schoolwide culture of collaboration.
Based on the evaluation findings, several challenges and needs were identified. Each challenge or need is reported below alongside its corresponding recommendation. These recommendations are offered for reflection and program refinement prior to implementation at another site.

**Challenge/Need:** Teachers were motivated by having NHPLT staff present at meetings.

**Recommendation:** Develop tools for WES staff self-monitoring.

“It’s easy to say, ‘oh I have this great idea’ and then throw it out, but when somebody emails and says, ‘Don’t forget you said you would’, then you have to follow through on it. Well, the challenge next year, is how do we keep that accountability in there.”

-Second grade teacher

With the end of NHPLT’s intensive involvement, continuing the work of place-based education falls to the teachers. The monthly grade level meetings will provide the forum for teachers to work together. It would be beneficial to provide the teachers with reporting forms to individually record progress, obstacles, needs, to-dos, and other ideas that they would then share at the grade level meetings. Alternatively, teachers could collectively fill out the forms at their meetings for use as a guide until the next meeting. If the teachers are encouraged to use reflective practices, it may help motivate them in the absence of NHPLT staff.

**Challenge/Need:** Teachers want follow up with NHPLT staff.

**Recommendation:** Establish strategies and tools for continued communication with teachers.

Teachers and administrators clearly anticipated staying in touch with NHPLT staff for on-going consultation. The more structured this on-going relationship is, the more likely that teachers will feel they are still part of an on-going program.

Possibilities include:

- Teachers periodically send self-monitoring forms to NHPLT
- Teachers send grade level meeting minutes to NHPLT
- NHPLT staff make regular check in phone calls or emails
- NHPLT staff make regular but less frequent site visits
- NHPLT staff send out a regular bulletin/newsletter with ideas, resources, anecdotes
- NHPLT staff provide an annual inservice day “refresher” on CS2P concepts and strategies

**Challenge/Need:** Teachers are more likely to try new activities after seeing them modeled.

**Recommendation:** Return to school periodically and/or develop video documentation.

As detailed in the findings, teachers received substantial value from seeing activities modeled. Periodic demonstration days in the school would likely lead to greater on-going use of the PLT.
curriculum. To encourage further exploration of the curriculum guide, it is suggested that teachers come to consensus on which activities they would most like to have demonstrated.

To create additional lasting value from these demonstration days, the activities could be video recorded. WES teachers would then have a visual record to refer to and NHPLT would have something to offer other interested teachers as well. A broader possibility is to consider training teacher leaders within CS2P schools who would model activities for their peers on an on-going basis.

**Challenge/Need:** Teachers lack confidence in their knowledge of natural science.

**Recommendation:** Provide training in use of field guides and keys as teaching tools.

Some teachers seemed to lack confidence in teaching their students outdoors without assistance because their field knowledge was not sufficient. A simple and valuable lesson to provide early on would be the use of field guides and keys as teaching tools. Teachers would not have to feel put on the spot and any mystery tree, bird, or flower would present a learning opportunity for the students and teachers alike. NHPLT staff noted that training in this area was indeed offered about a year before CS2P was introduced, but only a handful of the teachers participated. Implementing such training during the program start-up phase might help teachers to feel more confident teaching outdoors despite limited field knowledge.

**Challenge/Need:** Teachers want new supplies to teach new material.

**Recommendation:** Continue availability of grant and/or provide grant-writing skills.

Teachers were unanimous in their enthusiasm for new supplies purchased with grant money, especially books. Continued funding for purchases would be highly motivating for the teachers and could easily be tied in with the earlier recommendation about accountability. For longer-term sustainability, it would be useful to provide teachers with the skills, tools, and resources to write their own grant proposals requesting supplies. This recommendation applies to field trip funding as well. Another option is to work with teachers, administrators, and/or the PTA to explore possibilities for including such funding in the school budget or other funding source. Ideally, the school district could fund grant-writing training for teachers, and then provide them time and resources to use their new skills.

**Challenge/Need:** Teachers benefit from documentation of activities.

**Recommendation:** Continue systematic documentation of CS2P activities.

As a first grade teacher was quoted above: “Everybody here is more likely to keep going with this because we now have the directions for how to do it next time....We feel like ‘Okay, we can go ahead and organize the fall festival next year because you showed us how and you left us written directions.’” Teachers and school staff would be greatly assisted by an easily referenced manual on how to implement the day to day activities of CS2P, such as fall field days, theme days, and grade-level work.

On a larger scale, systematic documentation with a focus on replication of the successful elements of CS2P would grow into a highly useful resource for future implementation at other sites. In essence, such a manual would capture the experience of and lessons learned by program staff and participating teachers. Comments from both program staff and teachers suggested that there was some confusion and a great deal of shared learning at the outset of the program. Documenting the process could increase the likelihood that future staff members and participating schools might benefit from this learning.
Challenge/Need: **Program logic should be consistent with program evolution and evaluation findings.**

**Recommendation:** *Refine program logic in session with key stakeholders.*

The Phase One report recommended various refinements to the program logic, which were largely implemented. The findings of this report offer further possibilities to refine the logic model so that it will continue to be a useful tool for program implementation and on-going evaluation. Specific areas for refinement include:

- Student enthusiasm outcomes
- Teacher knowledge outcomes
- School culture outcomes

Key program stakeholders should work to update and refine the logic model based on evaluation data and NHPLT staff experience.

Challenge/Need: **Future sites will be more likely to succeed if NHPLT continues its careful selection process.**

**Recommendation:** *Continue to refine site selection criteria.*

A reasonable part of the success of CS2P at WES must be attributed to predisposition of the faculty, administration, and staff towards school change. NHPLT made an excellent choice in WES for piloting CS2P. NHPLT staff should work to refine the site selection criteria based on lessons learned from the experience at WES.
CONCLUSIONS

“I’m in my fortieth year of being an administrator in public schools…. Every school that I’ve been in, I’ve really tried to establish some strong natural science programs in the nearby woods, in the nearby fields and so forth. I have to say that after forty years, I finally found a place where it took. It really took. It’s whole, it’s in the fabric of the school now. I think it would take a lot of outside influences to really make that disappear. But it’s here because we found the right people at the right time with the right resources and with a staff that had that ingenuity, creativity, and willingness to try it.”

-Administrator

Spiritual teacher and writer Ram Dass said: “In a garden we do not grow flowers, we create the conditions in which flowers can grow.” This bit of wisdom draws a parallel to NHPLT’s involvement with WES during the past three years. WES proved to be fertile ground for the growth of new ideas, new practices, and new connections. NHPLT, through its careful assistance, helped create the conditions for the teachers and students to blossom.

Much of the success of the partnership between NHPLT and WES can be attributed to the truly collaborative nature of their efforts. Identifying and facilitating the efforts that were most likely to success was a key strategy for CS2P. NHPLT staff worked hard to build rapport with the teachers, understand their needs, and meet those needs in supportive ways. Two of the success stories from the partnership—recycling and the Helping Tree—were projects that school staff were already initiating or wanting to initiate, but that did not come to fruition nor attain high levels of success until NHPLT’s participation. The inputs that CS2P provided—grade level planning meetings, materials to help teach, modeling use of teaching resources and local places, and facilitating community connections—served to jump start and provide healthy momentum for changes to teachers, students, and the school culture.

Throughout the process, teachers were enthusiastic and appreciative. Providing them with release time for grade-level meetings was a critical feature of the program. Helping teachers overcome time challenges opened the field for curriculum development, theme day planning, sharing of ideas and physical resources, cultivating community contacts, planning outdoor activities, and other essential components of the overall shift toward place-based education. The teachers demonstrated a remarkable array of changes to their teaching practice. That they had not already demonstrated changes of a similar scale to their environmental attitudes and values should not be construed as a shortcoming of the program, as these are long term outcomes, intended to appear once teachers have been practicing place-based education for five to ten years.

Student outcomes, as reported by teachers and parents, also pointed to a successful effort by NHPLT. Students showed substantially increased enthusiasm for natural science, which spread into all the other subjects taught with that as the integrating context. Their excitement and motivation, in turn, provided inspiration for their teachers and parents. Projects to improve their schoolyard and more time spent in natural areas adjacent to their school helped them to connect to their place and
to feel a sense of responsibility for it. The teachers and administrators encouraged and allowed the students to take ownership of the flourishing recycling program, giving them a sense of accomplishment in a real world natural resource conservation project. All of these factors worked together to bring significant benefits to the students of WES.

The community also reaped the benefits of the thriving partnership between WES and NHPLT. Local resource experts and others had the opportunity to share their knowledge with receptive and appreciative student audiences. Under the auspices of the Helping Tree, students performed countless tasks of service to their families, neighbors, and schoolmates. They also helped to create the only paper recycling facility in the town of Woodsville, which in the first few months of its inception, was immediately popular with town residents.

CS2P produced a remarkable and laudable range of successes at many levels. Careful planning and effective use of formative evaluation have helped NHPLT achieve an impressive number of the program’s intended outcomes. The findings of this evaluation suggest that WES will continue to pursue program goals in the years to come and serve as a model for future CS2P schools. With careful selection of future sites, development of strategies to continue to support and motivate the teachers, and detailed documentation of accomplishments thus far, NHPLT should continue to succeed with CS2P.
LITERATURE CITED


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

APPENDIX

APPENDIX A: CS2P LOGIC MODEL ................................................................. 61

APPENDIX B: CS2P PHASE 2 EVALUATION OVERVIEW 2004-2005 ............... 62

APPENDIX C: INTERVIEW GUIDE ................................................................. 64

APPENDIX D: SURVEY INSTRUMENT ............................................................ 66

APPENDIX E: MONTHLY STAFF OBSERVATION RECORD ......................... 69
## Appendix A: CS2P Logic Model

### New Hampshire Project Learning Tree
**Connecting Schools to People and Place**

**Logic Model**

**Hypothesis:** If we implement place-based education with a focus on curriculum integration and professional development, we will:
- Strengthen teacher knowledge, skills, and strategies to teach all disciplines using the environment.
- Increase student academic achievement and enthusiasm for learning.
- Build stronger connections between a school and people and places in a community.
- Improve student and community stewardship for forests and other natural resources.

<table>
<thead>
<tr>
<th>Resources/Inputs</th>
<th>Activities and Strategies</th>
<th>Short Term Outcomes (By the end of year 3)</th>
<th>Intermediate Outcomes (By the end of year 5)</th>
<th>Long Term Outcomes (By the end of year 10)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Environment-based Curricula</strong></td>
<td>Implement program to meet needs of school and teachers. Be flexible. Establish support by being present and build trust by keeping promises. Train faculty in Projects Learning Tree, WET and WILD and make other curriculum materials available. Inventory existing school resources and identify highest priority needs for new materials. Document current classroom practices. Model use of environment-based curricula in the classroom and outdoors. Train faculty in ecological concepts related to grade level curriculum topics, with a focus on the local environment. Assist faculty with curriculum integration and facilitate development of thematic units. Facilitate and support faculty collaboration through grade-level planning meetings and school wide initiatives. Organize and facilitate summer planning time. Model effective curriculum planning strategies, including Understanding by Design and curriculum mapping. Share information to nurture common knowledge among staff through meeting notes and in-school conversations. Identify special natural places for each grade level to study. Build sustained relationships between faculty and local landowners and resource professionals. <em>Model and facilitate use of local expertise.</em> <em>Build relationships with community volunteers in ways to support school.</em> Train and support faculty in enriching curriculum through community-based projects. Facilitate and support involvement of steering committee.</td>
<td>Teachers and students better understand how the natural systems around the school and in the community operate.</td>
<td>Teachers better understand how environment-based education supports curriculum goals. Teachers are better able to align PLT and other materials with school curriculum goals. The scope and sequence reflects a progression in student skills and knowledge regarding natural science. The faculty works more collaboratively and there is grade-level coherence. Teachers view the outdoors as a natural extension of the classroom and students spend more time outside for academic study. Students take action to improve their schoolyard and special places. Community members are more involved in programs and activities at the school. The community is more aware of what is taking place in school.</td>
<td>Teachers have an environment-based approach to teaching and use it when designing new units. Students are motivated to improve their local community and initiate independent projects. The community values the school’s role in contributing to community quality. The boundary between school and community is seamless. The number and type of community members who work collaboratively with school staff is high. Teachers, students, parents, and community members possess the knowledge, commitment, and skills to be caring stewards of our forests and other natural resources.</td>
</tr>
<tr>
<td><strong>Professional Development</strong></td>
<td><strong>PLT Staff as In-school Consultant</strong></td>
<td><strong>Pass-through Funding to School</strong></td>
<td><strong>Fundraising Consultation</strong></td>
<td><strong>Community Expertise</strong></td>
</tr>
<tr>
<td><strong>Curriculum Planning</strong></td>
<td><strong>Facilitation of School Wide Collaboration</strong></td>
<td>Fund field trips. Fund substitute teachers during planning and professional development time. Acquire classroom materials to support environment-based study. Provide stipends to teachers for summer planning and professional development activities.</td>
<td>Train and advise interested staff in grant writing and fundraising.</td>
<td>Support school initiatives by leading classroom lessons, leading field trips, advising community-based projects, and more.</td>
</tr>
</tbody>
</table>
Appendix B: CS2P Phase 2 Evaluation Overview 2004-2005

Program evaluation will:

- Evaluate effectiveness of the CS2P model in terms of process and outcomes
- Provide useful information for program coordinators & funders to assist with program development, justification & refinement

Evaluators’ Philosophy

- 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 & to help them to improve their programs based on evidence of program functioning & outcomes. We also intend to help organizations build their own capacity to reflect on & internally evaluate programs & to help to improve the evaluable of programs.

Evaluators’ Roles

- Meet with project staff to develop evaluation plan, & make modifications as needed
- Data collection including site visits to schools, interviews, photo documentation
- Data analysis
- Report writing
- Evaluation Contact person: Andrew
- Est. # of days to complete CS2P Phase 2 evaluation products: 25

CS2P Staff Roles in Evaluation Process

- Develop evaluation plan with evaluators
- Provide input throughout the year via meetings, phone and/or email on evaluation direction, appropriateness of instruments, & format of final report
- Liaison between evaluators & school (e.g. setting up interview schedule)
- Collect & share observation notes, project documentation, photos with evaluators as designated
- Assist in administration of surveys
- Provide access to data such as test scores as designated
- Provide incentives for participant participation in evaluation process

Deliverable Products

- Written report on Phase 2 findings due July 15th 2005.

Delivery of Evaluation Data

- Since much evaluation work depends heavily on the active and timely participation of program staff, PEER will not be responsible for reporting on data that has not been delivered within a pre-determined time period. This also applies to site visit planning that does not happen in a timely fashion or events that evaluators might benefit from attending but of which PEER is not notified. To avoid this loss of data, PEER will provide program staff with a rough timeline in advance of data collection deadlines (or in the case of events, clarify the type of events necessary for observation), then provide a reminder of the deadline at least two weeks prior to the deadline. Finally, if data or notification has not been provided, PEER will notify program staff that data will not be included in the analysis or report because of delays, lack of provision, or lack of notification.
### CS2P Phase 2 Evaluation Overview, 2004-2005

<table>
<thead>
<tr>
<th>Category</th>
<th>Evaluation Strategy/Activity</th>
<th>Personnel Accountable</th>
<th>When</th>
<th>Evaluation Questions and/or Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Surveys</strong></td>
<td>a) Develop Teacher Survey (note: Survey will allow triangulation with interview and other data, will not be sufficient for detailed statistical analysis due to small sample size, lack of pre/post or dosage measurements.)</td>
<td>AAP, MD</td>
<td>Fall 04</td>
<td>As a result of involvement with CS2P, in what ways has teacher practice changed?</td>
</tr>
<tr>
<td></td>
<td>b) Administer Teacher Survey</td>
<td>CS2P staff</td>
<td>Spr 05</td>
<td>How have teachers' attitudes and values about natural science changed?</td>
</tr>
<tr>
<td></td>
<td>Re-administer CBAM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>c) Enter and Process Data</td>
<td>AAP, GT</td>
<td>Spr 05</td>
<td>How has teachers' knowledge of natural science changed?</td>
</tr>
<tr>
<td></td>
<td>d) Analyze and Report</td>
<td>AAP, ALP, MD</td>
<td>Sum 05</td>
<td>In what ways is CS2P strengthening connections between the school and people and places in the community?</td>
</tr>
<tr>
<td><strong>2. Interviews</strong></td>
<td>e) Conduct interviews with teachers, school staff, PLT staff, parents, and community members</td>
<td>AAP</td>
<td>Spr 05</td>
<td>In what ways has CS2P changed student enthusiasm about natural science? <em>(As reported by teachers and staff)</em></td>
</tr>
<tr>
<td></td>
<td>f) Plan, travel, transcribe, analyze, and report on WES interviews and site visits</td>
<td>AAP, ALP, MD</td>
<td>Spr 05</td>
<td>In what ways has CS2P contributed to changes in student stewardship behavior? <em>(As reported by teachers and staff)</em></td>
</tr>
<tr>
<td><strong>3. Other</strong></td>
<td>g) Revise &quot;WES Visit&quot; Sheet to facilitate collection of data relevant to Phase 2 questions</td>
<td>AAP, ALP</td>
<td>Win 04</td>
<td></td>
</tr>
<tr>
<td></td>
<td>h) Complete WES Visit observation sheets and provide to evaluators.</td>
<td>CS2P staff</td>
<td>on-going</td>
<td></td>
</tr>
<tr>
<td></td>
<td>i) Review forms, monitor process, analyze, report</td>
<td>AAP</td>
<td>Win 04 Spr 05</td>
<td></td>
</tr>
<tr>
<td></td>
<td>j) Use CBAM and other pre-existing data to establish baseline data as relevant to Phase II questions</td>
<td>AAP, GT</td>
<td>Spr 05</td>
<td></td>
</tr>
<tr>
<td></td>
<td>k) Meetings, Communication, Administration</td>
<td>AAP, MD</td>
<td>Win 04 Spr 05</td>
<td></td>
</tr>
</tbody>
</table>
Appendix C: Interview Guide

CS2P Phase II Interview Guide
Woodsville Elementary School, May 26 & 27 2005
Interviewer: Andrew Powers, PEER Associates

1. How would you describe your experience with the PLT/WES partnership (or program)?

2. As a result of your involvement in the PLT/WES program, has your teaching style or teaching practice changed? If so, in what ways?
   (prompts…)
   a. collaboration with other teachers
   b. greater use of outdoors for teaching
   c. more inclusion of natural science
   d. alignment of PLT materials with curriculum goals
   e. more use of classroom guests
   f. more use of schoolyard

3. One of the objectives of the PLT program is to strengthen teachers’ skills for teaching natural science.
   a. Do you think that participation in PLT has provided you with new **skills and tools** for teaching natural science?
   b. Has it changed the way you **teach** science?

4. Have you learned new things about natural science from participating in PLT related activities? (prompt: for example, local trees and wildlife, schoolyard environment, energy systems, etc…)
   a. Can you offer any specific examples of new knowledge that you have acquired?
   b. What was most significant in helping you to learn new things (prompts: collaboration with teachers, involvement of resource people, work with PLT staff)

5. Another objective of the PLT program is to deepen teachers’ personal connection with the environment and natural sciences.
   a. Have your personal attitudes and values about natural science changed? If so, in what ways?
   b. Are you more interested in your local environment? If so, what aspects of it?
c. Do you think about or act differently in relation to your local environment since your involvement in PLT? Can you give examples?

6. PLT intends to strengthen connections between the school and people and places in the community. Do you think that is happening? Can you give me examples?
   a. (prompts…)
   b. More field trips to local areas
   c. More parents in the classroom
   d. More community members in the school
   e. Community more aware of school happenings

7. Has PLT had an effect on your students’ enthusiasm for studying natural science topics? If so, in what ways does that show up? (prompt: for example, do they cheer—or groan—when science time is announced, do they tell their parents about science lessons, students doing science activities in own time or at home…)

8. Another objective of PLT is to have students develop a sense of stewardship for local forests and natural resources through involvement in community service and natural science curriculum. Do you think this is happening? If so, can you give examples of ways in which students are taking an active role in caring for their local community and environment?

9. Do you have any expectations that were not met during the project?

10. Do you have any other thoughts to share about the impacts of PLT, or advice for the program staff?

   Thank you for your time and input!
Appendix D: Survey Instrument

PLT/WES School Partnership
Teacher/Staff Survey

We recognize that you have many demands on your time and appreciate your completing this survey. Your thoughtful input helps us to improve our partnerships with individual schools. Your responses will be seen only by the evaluation team, and your name will NOT be used in any report, publication or discussion without your prior permission. THANK YOU!

While we tend to refer to this project as the PLT/WES partnership, its formal name is Connecting Schools to People and Places (or CS2P). To keep the questions concise, the project will be referred to as CS2P throughout the survey.

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

<table>
<thead>
<tr>
<th>Item</th>
<th>Strongly Disagree</th>
<th>Tend to Disagree</th>
<th>Tend to Agree</th>
<th>Strongly Agree</th>
<th>Not Sure or N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Involvement in CS2P has helped me see the outdoors as a natural extension of the classroom.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>2. Since CS2P began, I am better able to align teaching about natural science with school curriculum goals.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>3. CS2P has had little impact on how frequently I align teaching about natural science with school curriculum goals.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>4. I feel more confident while teaching about the local environment since working with CS2P.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>5. I feel more confident while teaching about the local community since working with CS2P.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>6. Schoolwide participation in CS2P has helped coordinate the curriculum throughout the grade levels.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>7. CS2P has not really helped me to teach traditional subjects using natural science.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>8. I collaborate for curriculum planning with other teachers more as a result of involvement with CS2P.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>9. Because of CS2P, I spend more time teaching outside of the classroom.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>10. I spend more time teaching natural science since being involved with CS2P.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>11. As a result of involvement in CS2P, I more frequently relate my curriculum to the local environment and community.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>12. My enjoyment of teaching natural science topics has not really changed since involvement with CS2P.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>13. Because of my experience with CS2P, I have become more interested in the natural environment where I live.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>
### How much do you disagree or agree?

For each question, please circle only one number that best matches your opinion. Please do not leave any blanks.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Tend to Disagree</th>
<th>Tend to Agree</th>
<th>Strongly Agree</th>
<th>Not sure or N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>14. Since my involvement with CS2P, I have come to believe that natural science is just as important in a child's education as math, spelling, reading, writing, etc.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>15. CS2P has helped me to make more of my natural science lessons &quot;hands on&quot;.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>16. CS2P has not really inspired me to learn more about natural science.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>17. Since my experience with CS2P activities, I would like to take my class outdoors more frequently.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>18. CS2P has inspired me to feel greater personal responsibility to care for the schoolyard and natural areas that I visit.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>19. Since being involved with CS2P, I would like to continue to strengthen my skills at teaching natural science.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>20. I would like to incorporate more community service activities into my curriculum because of my experience with CS2P.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>

### What have you learned about through CS2P?

Please rate how much CS2P added to your knowledge about the following topics, items 21-29:

<table>
<thead>
<tr>
<th></th>
<th>Nothing</th>
<th>Very Little</th>
<th>A moderate amount</th>
<th>Quite a lot</th>
<th>Not sure or N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>21. Local natural systems and processes as they relate to the curriculum topics</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>22. Environmental education theories and methods</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>23. Curriculum integration</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>24. Place based practices (i.e. strategies for teaching outdoors, involvement of community members, etc.)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>25. Local animal life cycles and behavior</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>26. Local energy sources</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>27. Identification of local trees and plants</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>28. Community resources that support curriculum</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>29. Community experts that support curriculum</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Question</td>
<td>Strongly Disagree</td>
<td>Tend to Disagree</td>
<td>Tend to Agree</td>
<td>Strongly Agree</td>
<td>Not sure or N/A</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>------------------</td>
<td>------------------</td>
<td>---------------</td>
<td>----------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>30. The community is more aware of what takes place at the school as a result of CS2P.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>31. Community members are any more involved in programs at the school than before CS2P.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>32. CS2P gets people (young and old) more involved in solving real life problems in our community.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>33. I am (or plan to become) more actively involved in projects to improve the social and/or environmental quality of our community as a result of participation in CS2P.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>34. Our students are more enthusiastic about learning natural science as a result of CS2P.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>35. Through their CS2P-related schoolwork, students gain a sense of responsibility for improving the local community and environment.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>36. Through their CS2P-related schoolwork, students more frequently take action to protect and improve the environment.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>37. Students prefer CS2P-related activities as a way of learning natural science.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>38. At home or outside of school, students take action to protect and improve the environment more frequently since CS2P.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>39. Since involvement with CS2P, students have a stronger connection to the community where our school is located.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>40. My students have not really gained a better understanding of how their actions affect the environment.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>41. Our school is more active in natural resource conservation (water, energy, soil, air, solid waste) because of participation in CS2P.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>42. My students have improved the schoolyard through CS2P projects.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>43. Teachers and staff have improved the schoolyard through CS2P projects.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>44. My students have enjoyed participation in CS2P.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>45. I have enjoyed participation in CS2P.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>

Your Name __________________________ Your grade level or position __________________________ Today's Date ________

Only the evaluation team will see your individual responses.
Please return this survey in the envelope provided to:
Beth Lesure, NHPLT, 54 Portsmouth St, Concord, NH 03301.

The End. Thank you again for taking the time to fill out this survey!

(Please complete all three pages of this survey.)
Appendix E: Monthly Staff Observation Record

Goals

• To encourage reflective practice on the part of those involved with CS2P.
• To utilize CS2P staff’s insider’s view to keep an on-going record of CS2P’s impacts.
• To build up a pattern of information that we can use to improve the implementation and outcomes of CS2P.

Considerations

• This form intends to capture PLT staff’s observations and reflections during grade level meetings, classroom visits, and schoolwide functions, as well as changes in the school building, personal reflections on what has been observed, etc.
• The questions are meant as prompts. If there is nothing observed in any particular category, it is fine to leave that blank.
• Please provide context for your observations, such as who said something and what they were doing at the time.
• It is important to note when you observe either a distinct change or a distinct lack of change.
• Please return this form to PEER Associates by the 5th of the month following the month of record. Return by email is preferred.

1. Please provide examples or evidence of changes to teacher practice that you have observed and would attribute to the teacher’s involvement with CS2P. (e.g. collaboration, use of PLT resources, curricular changes, integration of natural science and literacy, extension of classroom beyond school walls, teachers following PLT staff’s modeling, etc.)

2. Describe any changes you have seen in teachers’ attitudes, values, or knowledge of natural science. (positive or negative)

3. Describe any ways in which you see CS2P strengthening connections between the school and people and places in the community. (e.g. greater involvement of community members in the school, more community awareness of school happenings, more classes going out into the community as part of their school day, etc.)

4. Have you observed or heard of changes in student enthusiasm about natural science? If so, provide examples.

5. Have you noticed or heard about any ways in which CS2P has contributed to changes in students’ stewardship behavior? If so, provide examples.

6. Do you have any direct quotes from teachers, students, staff, parents, or community members to support the above observations?

7. Do you have any other observations or comments?