Characteristics of Environmental Restoration, Service-learning Projects in Selected California Watersheds, and the Perceived Gains by Participating At-risk High School Students and Their Teachers (Volume I)

Peter Scott Moras
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CHARACTERISTICS OF ENVIRONMENTAL RESTORATION, SERVICE-LEARNING PROJECTS IN SELECTED, CALIFORNIA WATERSHEDS, AND THE PERCEIVED GAINS BY PARTICIPATING AT-RISK, HIGH SCHOOL STUDENTS AND THEIR TEACHERS

VOLUME I

A Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree
Doctor of Education

Peter Scott Moras

School of Organizational Management
Department of Educational Management

September 1999
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST OF FIGURES</td>
<td>viii</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>x</td>
</tr>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>xi</td>
</tr>
<tr>
<td>DEDICATION</td>
<td>xiv</td>
</tr>
<tr>
<td>Chapter</td>
<td></td>
</tr>
<tr>
<td>I. THE STATEMENT OF THE PROBLEM</td>
<td>1</td>
</tr>
<tr>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>Purpose Statement</td>
<td>6</td>
</tr>
<tr>
<td>Research Questions</td>
<td>6</td>
</tr>
<tr>
<td>Significance of the Study</td>
<td>7</td>
</tr>
<tr>
<td>Parameters of the Study</td>
<td>8</td>
</tr>
<tr>
<td>Definitions and Terms</td>
<td>9</td>
</tr>
<tr>
<td>Organization of the Dissertation</td>
<td>12</td>
</tr>
<tr>
<td>II. REVIEW OF THE LITERATURE</td>
<td>14</td>
</tr>
<tr>
<td>Introduction</td>
<td>14</td>
</tr>
<tr>
<td>Adolescent Development: A Period of Transition</td>
<td>14</td>
</tr>
<tr>
<td>Review of Adolescent Development</td>
<td>22</td>
</tr>
<tr>
<td>At-Risk Youth</td>
<td>23</td>
</tr>
<tr>
<td>Educational Change and Reform</td>
<td>30</td>
</tr>
<tr>
<td>Service Learning</td>
<td>36</td>
</tr>
<tr>
<td>School Attendance</td>
<td>52</td>
</tr>
<tr>
<td>Sense of Connectedness to Community</td>
<td>58</td>
</tr>
<tr>
<td>Sense of Social Responsibility</td>
<td>62</td>
</tr>
<tr>
<td>Sense of Efficacy in Problem Solving</td>
<td>76</td>
</tr>
<tr>
<td>Understanding Watershed Stewardship</td>
<td>85</td>
</tr>
<tr>
<td>Section</td>
<td>Page</td>
</tr>
<tr>
<td>---------</td>
<td>------</td>
</tr>
<tr>
<td>Summary</td>
<td>94</td>
</tr>
<tr>
<td>III. METHODOLOGY</td>
<td>97</td>
</tr>
<tr>
<td>Introduction</td>
<td>97</td>
</tr>
<tr>
<td>Research Design</td>
<td>97</td>
</tr>
<tr>
<td>Population and Sample</td>
<td>100</td>
</tr>
<tr>
<td>Instrumentation</td>
<td>107</td>
</tr>
<tr>
<td>Data Collection Procedures</td>
<td>112</td>
</tr>
<tr>
<td>Statistical Analysis of the Data</td>
<td>117</td>
</tr>
<tr>
<td>Limitations of the Study</td>
<td>119</td>
</tr>
<tr>
<td>IV. THE FINDINGS OF THE STUDY</td>
<td>121</td>
</tr>
<tr>
<td>Introduction</td>
<td>121</td>
</tr>
<tr>
<td>Findings of the Study</td>
<td>121</td>
</tr>
<tr>
<td>V. CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS</td>
<td>248</td>
</tr>
<tr>
<td>Introduction</td>
<td>248</td>
</tr>
<tr>
<td>The Purpose of the Study</td>
<td>248</td>
</tr>
<tr>
<td>Conclusions</td>
<td>249</td>
</tr>
<tr>
<td>Recommendations for Further Research</td>
<td>266</td>
</tr>
<tr>
<td>Implications for Action: Personalize Public Schools, Cultivate Teachers, and Support Service-Learning Programs</td>
<td>270</td>
</tr>
<tr>
<td>APPENDICES</td>
<td>277</td>
</tr>
<tr>
<td>A. CHARACTERISTICS OF RISK FACTORS IN CHILD, CAREGIVER, AND FAMILY/ENVIRONMENT</td>
<td>278</td>
</tr>
<tr>
<td>B. COVER LETTER FOR PROGRAM DIRECTORS AND DATA COLLECTION CHECK-OFF LIST</td>
<td>280</td>
</tr>
<tr>
<td>C. PHONE INTERVIEW PROTOCOL FOR PROGRAM DIRECTORS</td>
<td>284</td>
</tr>
<tr>
<td>D. COVER LETTER FOR STUDENTS AND INFORMED CONSENT FORM</td>
<td>289</td>
</tr>
<tr>
<td>E. SURVEYS FOR NVHS, RCS, AND PROJECT HAWK STUDENTS</td>
<td>293</td>
</tr>
</tbody>
</table>
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Developmental Characteristics of Adolescents</td>
<td>15</td>
</tr>
<tr>
<td>2.</td>
<td>Characteristics of Effective Schools and Programs that Meet the Needs of At-Risk Youth</td>
<td>31</td>
</tr>
<tr>
<td>3.</td>
<td>Principles of Good Practice in Combining Service and Learning</td>
<td>45</td>
</tr>
<tr>
<td>4.</td>
<td>Locations of Environmental Restoration Service-Learning Programs for At-Risk High School Youth Included in the Study</td>
<td>101</td>
</tr>
<tr>
<td>5.</td>
<td>Survey Letter-Coding Scheme</td>
<td>108</td>
</tr>
<tr>
<td>6.</td>
<td>Student Reports of the Impacts which Their Program had on Their Motivation to Attend School, by Program</td>
<td>156</td>
</tr>
<tr>
<td>7.</td>
<td>Student Reports of Their Absence from School as a Result of Participation in Their Respective Service-Learning Programs</td>
<td>163</td>
</tr>
<tr>
<td>8.</td>
<td>Student Reports of Degree of Engagement in Their Class Work After Participation in Their Respective Service-Learning Programs</td>
<td>166</td>
</tr>
<tr>
<td>9.</td>
<td>Student Reports of Their Sense of Community Connectedness as a Result of Participation in Their Service-Learning Program, by Program</td>
<td>167</td>
</tr>
<tr>
<td>10.</td>
<td>Student Reports of the Degree to which Their Service Learning Programs Motivated Them to Help Out More in Their Community</td>
<td>174</td>
</tr>
<tr>
<td>11.</td>
<td>Student Reports of the Degree to which Characteristics of Their Program Boosted Their Confidence in Solving Problems</td>
<td>181</td>
</tr>
<tr>
<td>12.</td>
<td>Student Reports of the Degree to which Their Service-Learning Program Helped Them Be a Better Watershed Protector, by Program</td>
<td>190</td>
</tr>
<tr>
<td>13.</td>
<td>Mean Responses of NVHS Students when Asked to what Degree They Perceived Specific Characteristics to be True of Their Program, by Extensiveness of Service-Learning Experience</td>
<td>202</td>
</tr>
<tr>
<td>14.</td>
<td>Mean Responses of RCS Students when Asked to what Degree They Perceived Specific Characteristics to be True of their Program, by Extensiveness of Service-Learning Experience</td>
<td>203</td>
</tr>
</tbody>
</table>
15. Mean Responses of Project HAWK Students when Asked to what Degree They Perceived Specific Characteristics to be True of their Program, by Extensiveness of Service-Learning Experience . 204

16. Correlation of Mean Ratings of Participating Students and Teachers of the Degree to which Specific Program Characteristics Were Perceived to be True of NVHS's Environmental Restoration Service-Learning Program ................................................................. 235

17. Correlation of Mean Ratings of Participating Students and Teachers of the Degree to which Specific Program Characteristics Were Perceived to be True of RCS's Environmental Restoration Service-Learning Program ........................................................................ 239

18. Correlation of Mean Ratings of Participating Students and Teachers of the Degree to which Specific Program Characteristics Were Perceived to be True of Project HAWK's Environmental Restoration Service-Learning Program ........................................... 244
<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Summary Table of Effective Environmental Restoration Service-Learning Programs for At-Risk Alternative High School Students in California</td>
<td>106</td>
</tr>
<tr>
<td>2. Number and Percentage of Student Survey Respondents, by Program, and Across Programs</td>
<td>113</td>
</tr>
<tr>
<td>3. Student Survey Respondents by Grade Level</td>
<td>114</td>
</tr>
<tr>
<td>4. Number and Percentage of Students in Study, by Extensiveness of Service-Learning Experience, and by Gender</td>
<td>114</td>
</tr>
<tr>
<td>5. Number and Percentage of Students Who Participated in Focus Group Interviews, by Program, and Across Programs</td>
<td>116</td>
</tr>
<tr>
<td>6. Common Characteristics of Effective Environmental Restoration Service-Learning Programs for At-Risk Youth</td>
<td>123</td>
</tr>
<tr>
<td>7. Percentage of Students in the Total Study Who Perceived Their Programs to Positively Impact their School Attendance, Sense of Connectedness to Community, Sense of Social Responsibility, Sense of Efficacy in Solving Problems, and Understanding of Watershed Stewardship</td>
<td>199</td>
</tr>
<tr>
<td>8. Program Characteristics which NVHS Students and Teachers Perceived to be Most Helpful in Making Gains</td>
<td>232</td>
</tr>
<tr>
<td>9. Program Characteristics which RCS Students and Teachers Perceived to be Most Helpful in Making Gains</td>
<td>237</td>
</tr>
<tr>
<td>10. Program Characteristics which Project H.A.W.K. Students and Teachers Perceived to be Most Helpful in Making Gains</td>
<td>242</td>
</tr>
</tbody>
</table>
ACKNOWLEDGEMENTS

To my advisor, Dr. Marlin Heckman, and committee members, Dr. Teresa Bader-Hull and Dr. Dwight Giles, for their patience, faith, and ready support. While your encouragement and good-humored help were always tangible when I needed them to be, you were supremely gifted in offering me a kind of no-help helpfulness. You related to me in ways that developed my independence of you and trust in myself. The message became not so much how "you" were going to help me, but how I was going to help myself. In a subtle and profound way, that is the message for at-risk youth and those who work with them.

Thank you to Dr. Roxanne Regules and Dr. Jack Marchi for encouraging me to enroll in the U.L.V. doctoral program, and to the past and current members of the Monterey Cluster for sharing the joys and challenges of learning. You live our motto, "Cooperate to Graduate." To my many U.L.V. cohorts across the state, our shared memories of seminar projects done as a team are a deep source of pride and confidence in my life. For the faculty of U.L.V., especially Dr. Tom Harvey, for designing innovative programs of study that challenged us to make our knowledge, dreams, and beliefs, forces for positive change in our work settings. In particular, kind regards to Dr. Pat Spencer, Dr. Jim Harrison, Dr. Barbara Clark, Dr. Carol Roberts, and Dr. Leo St. John for guiding and administering my educational leadership studies in the Monterey Cluster. A big hug to Dr. Barbara Peterson, my guide and sounding board at dissertation seminar for her sage advice, no-nonsense critiques, command of research, and smiles of understanding that helped place my feet on the path of chapter I and
To my friends at the Return of the Natives Restoration Education Project, Watershed Institute, and Coastal Watershed Council for making dreams come true for large-scale involvement of youth and adults in environmental healing and community-building in Monterey and Santa Cruz Counties. In my mind’s eyes come Jo, Bruce, Sue, Tricia, John, Pete, Ed, Joni, Laura Lee, John Hannum, Lynn Hamilton, Pat McNeil, Donna, Bertie, Penny, Debbie, Deborah, and Danika. You are a source of inspiration, beauty, hope, and ready assistance.

To outside readers, Bruce, Laura Lee, Johnny, Peter, Meighan, Dwight, Brinet, Mary, and Ivy for reading my first two chapters and offering critiques. To Lynn Hamilton, Dr. Bill Nelson, Dr. Lisa Udell, and Angelo Newman for major editorial work. To Dr. Pat Skelton for early advice and perspective. To Rob Shumer for advanced copies of articles and other materials helpful in the design of my study and instrumentation. To Jane Brown for vital assistance in critiquing early drafts of surveys and interview protocols. To Angela Schmiede and Jackie Schmidt-Posner from Stanford for help in understanding focus group research and qualitative data analysis.

To the at-risk children and their families I have dedicated my life to serving, your lives have given mine meaning. Your love and warmth have given me strength. Your laughter and charm have given me hope and cause for joy and wonderment. Your pain and suffering have given my soul depth and feeling. The thought of your potential, should you choose to dream and work to make those dreams come true, gives my soul its wings, my mind its gladness, my heart its peace, my body its desire to create and work the soil.

To Nancy Otter for initiating me into native plants, water quality monitoring, and watershed restoration work.
To my friend and spiritual counselor, Guru Nitya Chaitanya Yati, for seeing my potential to be a teacher when I was just a youth, and helping me into the fields of public education, poetry, psychocology, environmental restoration, and social renewal through application of yogic sciences, faith in God, trust in democracy, and belief in humankind. You have my gratitude and eternal remembrance.

To my father, Henry, for his prayers and well wishes. Thank you in ways that only a son and his father know how to share. You have been a lifelong support and role model to me. To my mother, Barbara Jane, who fed and clothed me during sickness and health, whose love, generosity, kindness, protection, guidance, and discipline are here remembered, though you don't hear my name or recognize my face, ravaged by Alzheimer's to the very brink of existence, may God protect you, keep you at peace, and minimize your pain. To my family and friends beyond count for their support and encouragement.

I want to remember and express appreciation to my computer, an Apple Power Macintosh 6100/AV, for working so hard and being so dependable these last five years. You are a great machine, and so must be the people who made you.

Lastly, thank you to the efficient and friendly staff at the University of La Verne, Wilson Library; University of Santa Cruz, McHenry Library; University of California, Davis, Shields Library; University of California, Berkeley, Doe Library; National Service Learning Clearinghouse, and California State University, Monterey Bay's Service Learning Institute for your help locating, interpreting, copying, and borrowing literature used in the development of this study.

xiii
DEDICATION

This study is dedicated to my daughter Ada, that you inherit a new world.

To the poor people and the people who just think they are poor, but in reality are good and noble beings, may you inherit the earth as was told.

To the broken and distressed, the lost and disturbed, may you see again, may you feel hope again. May you feel whole. May you die having lived a kind and worthwhile life.

To those still behind bars, may you walk free one day soon, to live a more determined, righteous, and happy life. May you find work that you like to do, that is appreciated and compensated for by society. May we work together, citizens of one world, brothers and sisters of one human family.

Lastly, to this sacred earth out of which we have come, by whose kindness our life is maintained, and into which these bodies will rest on their last day; may we see you as you are, an image of our Self, the body of God, the stuff of creation. May we learn to treat you with love and respect, kindness and intelligence, insight and consideration. May it happily be.
CHAPTER I

THE STATEMENT OF THE PROBLEM

Introduction

Everyone can be great, because everyone can serve.

Dr. Martin Luther King, Jr.

The number of at-risk youth in California public high schools has steadily increased over the last forty years, challenging school administrators to find effective educational strategies to help them succeed academically and flourish as contributing members of society. This need for effective educational options is compounded by the demands of modern society (California Department of Education 1995) and a 1 percent annual population growth within the state (California Legislative Analyst's Office 1998).

Students are labeled at risk for various reasons. Students are at risk if they come from large, poor, or broken homes, show a high incidence of school behavior problems, or are involved with the criminal justice system. Additional criteria for identification are poor school attendance, academic achievement significantly below acceptable standards, and a potential for dropping out. The label "at risk" can be a self-fulfilling prophecy. It draws attention to the deficiencies in the person and away from his or her possible capacities,
strengths, and resiliency factors (Vue-Benson and Shumer 1994) which are vital to self-esteem and self-concept.

At-risk students are more prone to elevated rates of self-destructive behavior (Farrington 1987), suicidal tendencies (Hirshfield and Blumenthal 1986), and often live amidst conditions of crime, violence, abuse, and neglect (Garabino 1976). Economic hardship, early pregnancy (Taylor 1987), and substance abuse/drug dealing (Rhodes and Jason 1990) contribute to an at-risk student's decision to drop out of school. The trauma and deprivation of their daily lives can lead individuals to feelings of hopelessness and alienation (Paster 1985). Researchers such as Cowen and Work (1988), and Garmezy and Masten (1986) have found many urban youth, however, who remain prosocial and well-adjusted, despite the stress of living under disadvantaged conditions.

The study of the variables that distinguish these resilient children from those who are more at risk has been key to understanding what educational conditions and methods are most effective in helping at-risk youth to learn and to achieve (Felner et al., 1985; Lambert 1988; Grossman et al. 1992). Locus of control, family environment, social support, and coping style are known to be some of the variables that play an important role in moderating psychological and social outcomes for children and youth. "These variables represent potential treatment targets for inclusion in intervention programs designed to improve the psychosocial functioning of urban youth" (Weist et al. 1994, 707).

Gottfredson (1986) and Parish and Parish (1989) recommended that
school-based programs decrease the experience of academic failure among students by providing at-risk students with opportunities for successfully demonstrating competency in the school environment. Allowing at-risk students to match their choice of activity with their strengths and interests would increase their chances of having a positive, self-esteem-enhancing experience in the eyes of their peers and teachers. Significant others in the school need to recognize and appreciate their accomplishments. At-risk students need to be given opportunities to develop positive relationships with peers and adults to allow for increased social bonding. This would counter ingrained habits of social isolation and lack of positive peer and adult role models (Parish and Parish 1989).

Findings from Gottfredson's work of 1986 point to the need to develop programs that create a climate of mutual respect and accountability. While at-risk students need to be given flexibility and access to alternative programs and methods, there is a concomitant necessity to maintain consistency, clarity, and fairness with regard to school rule enforcement. Gottfredson concludes by restating the need to build a sense of belonging among teachers, administrators, and students. Cooperative efforts that would increase student and faculty involvement in planning and implementing school change efforts are indicated. It would appear that at-risk students need more buy-in to the system they have been on the verge of rejecting as having no value or relevance to them.

All students learn best if they can participate in active learning opportunities as opposed to passive ones (Kovalik 1987). Hands-on learning
approaches that use a variety of visual, auditory, and kinesthetic experiences are especially meaningful, fun, and appealing to at-risk students. They validate the student's innate learning ability, life experience, and curiosity. Individual and cooperative group learning formats are alternately employed. One such teaching methodology that incorporates a hands-on, experiential approach is service learning.

Service learning is coming into prominence as an effective teaching methodology for K-12 and university students (Stanton, Giles, and Cruz 1999). Service learning can be understood as "programs which combine community service with study of particular subject matter" (Eyler, Giles, and Braxton 1996, 1) where citizenship, academic subjects, skills, and values are taught together. It involves active learning: drawing lessons from the experience of performing service work (California State University, Monterey Bay 1996). This learning approach has special value in that it incorporates many state and federal recommendations aimed at improving education for all students (Shumer 1994). It promotes heightened cooperative, problem-solving skills, and increases the relevance between what a student is learning in the classroom with what is going on in the community (California School Boards Association 1995). Service learning also provides an arena for the development of practical, hands-on skills that students can use in their community and future vocations (California Department of Education 1999). It enhances interpersonal and intergenerational communications, fosters a renewed sense of community, personal
empowerment, and a commitment to making a difference. Nathan and Kielsmeier (1991) emphasize the capacity of service learning to blend classroom work with social action projects in bringing about dramatic improvements in student attitudes, motivation, and achievement.

Service to the environment represents one of the many kinds of service which students may render to their communities as an outgrowth of their academic studies. Within the field of environmental service is a particular focus on environmental restoration, now commonly referred to as watershed restoration. This work involves environmental clean-up, rehabilitation, and monitoring of land and waterways to enhance their capacity to absorb, purify, and release water into underground aquifers and downstream corridors, and development of community-wide commitment to, and participation in, watershed stewardship activities. Environmental restoration service learning has received scant attention by academic researchers.

As each day passes, the urgency becomes greater for individuals and societies to learn and to implement optimal land-use methods and conservation practices which will ensure dependable supplies of clean water for human and nonhuman needs (Associated Press 1998). An opportunity exists for this generation to cooperatively solve the real, interrelated problems of water quantity and quality that threaten California's present and future well-being. Further research is needed to validate the ability of service learning to improve learning for at-risk students via participation in environmental restoration programs.
There is also a need to determine which characteristics of environmental restoration service-learning programs students and teachers feel are most helpful in producing gains.

Purpose Statement

The purpose of this study was to describe the characteristics of environmental restoration service-learning projects in selected California watersheds that produced gains for at-risk high school students who were enrolled in the programs. A second purpose was to describe the characteristics of service-learning programs that at-risk students and their teachers perceived to be most helpful in making gains in school attendance, sense of connectedness to community, sense of social responsibility, sense of personal efficacy in solving problems, and understanding of watershed stewardship, and to determine if a difference existed between those perceptions.

Research Questions

1. What are the common characteristics of effective environmental restoration service-learning programs for at-risk high school youth in selected California watersheds?

2. Which service-learning program characteristics did students report to have an impact on their:
   a) School attendance
   b) Sense of connectedness to their community
c) Sense of social responsibility  
d) Sense of personal efficacy in solving problems  
e) Understanding of watershed stewardship  

3. Which service-learning program characteristics did teachers perceive to have an impact on their students'?
   
a) School attendance  
b) Sense of connectedness to their community  
c) Sense of social responsibility  
d) Sense of personal efficacy in solving problems  
e) Understanding of watershed stewardship  

4. Was there a difference between the program characteristics that students perceived to have an impact on them, and those identified by their teachers?

Significance of the Study

The findings of this research help to validate the ability of service learning to improve learning for at-risk students via participation in environmental restoration programs. A review of the research literature on service learning shows a need for more empirical studies on the effect of specific program characteristics on participants and their match with intended program outcomes. Findings indicate the characteristics of environmental restoration service-learning programs that students and teachers perceive are most helpful in producing gains. This knowledge can help improve service-learning program design and
administration by indicating what program characteristics contribute to the stated outcomes of environmental restoration service-learning projects.

Data from this research may also motivate educational administrators to support reform efforts which empower students and teachers to work together with their communities to study and help solve the pressing social and environmental problems that face them. Increased numbers of caring, responsible youth engaged in society would revitalize democracies, helping to rebuild a strong sense of confidence and hope in the people.

Parameters of the Study

The parameters for this study were as follows:

1. The high school students who participated in this study attended a California public, small necessary high school, continuation high school, or alternative, court community schools for adjudicated youth, and were in the ninth, tenth, eleventh, or twelfth grade.

2. The public, small, necessary high school, continuation high school, and court community schools were located within California watersheds.

3. At-risk students were identified for their potential for dropping out of school by possessing one or more of the following criteria: a high absenteeism, having below-standard academic achievement of at least two grade levels below satisfactory performance, participation in their school's federally-funded, free-lunch program, or having served a sentence in the California juvenile justice system.
Definitions and Terms

For the purpose of this study, the terms were defined as follows:

**At-risk students.** A term to describe students whose school career, vocational career, integrity, and/or well-being is jeopardized by low socioeconomic conditions in the family, involvement with the criminal justice system, potential for dropping out of school, and/or having levels of academic achievement significantly below acceptable standards (two grade levels below satisfactory performance).

**Effective environmental restoration service-learning projects.** Projects which are widely-acclaimed in the field, notable for their ability to offer: integrated learning that enhances the knowledge, value, or skill goals of participants; high service, that meets a real need in the community, is age-appropriate, well-organized, and gets things done; student voice, with students engaged in as many aspects of project planning as possible; reflection, which takes place before, during, and after service activities; and collaboration, where all stakeholders are involved in planning, execution, and evaluation of the program (AmeriCorps Watershed Project 1996).

**Environmental restoration projects.** Carefully-planned and implemented efforts to replant the landscape within a given watershed with plants indigenous to that locale; to recreate beautiful, healthy, biologically-diverse, plant and animal habitats that have been lost or damaged due to development or overuse. Restoration projects are usually undertaken along stream corridors, in parks, on
school campuses, or on private farmland. Participants include teachers, students, researchers, community volunteers, and government officials. Project tasks include: site clean-up and preparation, restoration plan design, ordering or growing a specified number of native plants (grasses, flowers, bushes, and trees) out-planting, laying drip irrigation lines, hand watering, controlled-burning, and weeding as needed. Monitoring of the site by instruments and direct observation is used to determine levels of plant growth, soil enrichment, water quality, and types and numbers of plants and animals living in or visiting the restored area, as part of a longitudinal, scientific study.

**Program characteristics.** Components of the program designed to deliver specific program outputs, i.e., Program characteristic: Inviting diverse racial and cultural groups to participate in a clean-up or planting event . . . Program output: Providing multicultural involvement in science.

**Program outputs.** The actual, measurable benefits, products, or outcomes experienced or accomplished by the participants in the program.

**Sense of connectedness to one's community.** The degree to which a person feels a sense of belonging, affinity for, and meaningful relationship with, the people and place where one lives.

**Sense of personal efficacy in solving problems.** The degree to which an individual feels he or she is effective in identifying, analyzing, and solving problems.
**Sense of social responsibility.** The degree to which an individual feels he or she has to give back to the commons, in return for what one has received from it; the sense of duty one feels to contribute to the material and moral well-being of others based on the need and one's own abilities. Concrete examples include: being informed, voting, paying one's taxes, protesting injustice, corruption, and untruth, advocating for reforms, volunteering one's time and energy in the service of others, as in a church, school, hospital, or community organization, or acting in an environmentally-responsible way.

**Service learning.** A method of teaching where

Students learn and develop through active participation in... thoughtfully organized service experiences that meet actual community needs; that is integrated into the students' academic curriculum, or provides structured time for a student to think, talk, or write about what the student did and saw during the service activity; that provides students with opportunities to use newly acquired skills and knowledge in real-life situations in their own communities; and that enhances what is taught in school by extending student learning beyond the classroom and into the community; and helps to foster the development of a sense of caring for others. (National Community Service Act of 1993; cited in Belbas, Gorak, and Shumer 1993, 1)

**Watershed.** An area of land often thought of as a drainage or catchment, which receives rainfall, runoff, sediment, and dissolved materials which flow downstream, above or below-ground, to receiving waterways or land basins. Watersheds are defined by the ridges of the hills or mountains that divide them (Oregon Sea Grant Program 1995).

**Watershed restoration service learning.** A method where students apply science to the local watershed with active service that meets the needs of the community; is coordinated with elementary or secondary schools, institutions of
higher learning, or community service programs with the community and builds linkages among all stakeholders; fosters community responsibility for a healthy and enduring watershed; is integrated into and enhances the academic curriculum of the students and the educational experience of all community service participants; and provides structured time for students and participants to reflect on the service experience (AmeriCorps Watershed Project 1996).

Watershed stewardship. Mindful caring for the bioregion where one lives, which can include involvement in such activities as: political advocacy for watershed protection and enhancement of stream corridors, wetlands, lakes, ponds, rivers, estuaries, beaches, and bays, community education/organizing, environmental clean-ups, habitat restoration and native plant propagation, flora and fauna counts, soil erosion control efforts, water and air quality monitoring, and photo documentation.

Organization of the Dissertation

Chapter I included an introduction to the problem being studied, a statement of the problem and its purpose, research questions, the significance of the study, and definitions of terms. Chapter II contains a review of the literature on adolescent development, at-risk youth, educational reform, and service learning. This background leads into a discussion of program evaluation and the specific research variables under study: school attendance, sense of connectedness to community, sense of social responsibility, problem-solving ability, and understanding of watershed stewardship. The methodology,
procedures, and limitations are found in chapter III, and chapter IV contains the results of analysis of the data. Chapter V presents the conclusions of the study, implications for future research, and recommendations for action.
CHAPTER II  
REVIEW OF THE LITERATURE

The noblest question in the world is "What good may I do in it?"

Benjamin Franklin

Introduction

The literature on adolescent development, at-risk youth, and educational reform is reviewed. Service-learning research is presented for its potential to drive reform, revitalize learning, and meet the needs of at-risk youth and the communities in which they live. This chapter concludes with program evaluation and the five outcomes investigated in the study: school attendance, sense of connectedness to community, sense of social responsibility, sense of efficacy in problem solving, and understanding of watershed stewardship.

Adolescent Development: A Period of Transition

Adolescence can be summarized as a period of transition from childhood to adulthood (Levine and Havighurst 1989; Keniston 1972; Erickson 1950; Sullivan 1982). The adolescent boy or girl seeks to develop skill, confidence, and self-understanding through a variety of experiences, accomplishments, relationships, and subsequent adjustments. Healthy adolescent development takes place across several, interrelated, developmental domains. This process
requires time and access to meaningful relationships with others in the family, school, and community.

A 1992 Carnegie Corporation report spelled out the characteristics of adolescent development categorized into five areas: cognitive development, social development, physical development, emotional development, and moral development (figure 1).

<table>
<thead>
<tr>
<th>Cognitive Development</th>
<th>Social Development</th>
<th>Physical Development</th>
<th>Emotional Development</th>
<th>Moral Development</th>
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<tr>
<td>Expand knowledge.</td>
<td>Increase communication and negotiation skills.</td>
<td>Begin to mature physically and to understand changes that come with puberty.</td>
<td>Develop a sense of personal identity.</td>
<td>Develop personal values.</td>
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<tr>
<td>Develop critical thinking and reasoning skills.</td>
<td>Increase capacity for meaningful relationships with peers and adults.</td>
<td>Increase movement skills through physical activity.</td>
<td>Develop a sense of personal autonomy and control.</td>
<td>Develop a sense of accountability and responsibility in relation to the larger society.</td>
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<tr>
<td>Experience competence through academic achievement.</td>
<td>Explore adult rights and responsibilities.</td>
<td>Learn to take and manage appropriate physical risks.</td>
<td>Develop coping, decision making, and stress management skills.</td>
<td>Apply values and beliefs in meaningful ways.</td>
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Maslow (1954) and Jourard (1963) also put forward the notion that maturation of the individual is vitally linked to building healthy relationships with others. Adler (1964a) was probably the most renowned social scientist to give attention to describing and explaining the importance of helping in the
development of a wholesome personality. He underscored human communal
nature and peoples' need for others. Adler (1964a) saw our human existence as
dependent on one's "union with the community" (43). For a person to wrestle
with life's problems successfully, social interest in others is required. It is a
necessary component for finding solutions. Adler (1964b) coined a German term
"Gemeinschaftsgefuehl" translated as social interest or social feeling, and
described as "a struggle for a communal form" (275).

Eric Middleton, who studied the "helper principle" in his 1993 dissertation,
"The Psychological and Social Effects of Community Service Tasks on
Adolescents," found other terms for social interest, such as the ability to
cooperate, feeling a sense of belonging, and understanding others. Adler
(1964a, 1964b) believed so strongly in social interest that he believed it
contained the meaning of life. Persons with "an interest in the interest in others"
(Ansbacher and Ansbacher 1964, 140) are evolved human beings. Narayana
Guru, a South Indian social educator, philosopher, and mystic of the last century,
believed that a person's capacity to see one's self in others was directly related
to his or her happiness in life. In verse 22 of One Hundred Verses of Self-
Instruction, he says:

The happiness of another - that is my happiness;
One's own joy is another's joy - this is the guiding principle
that action which is good for one person should bring happiness to
another. (Yati 1982, 45)

On the other hand, a lack of social feeling is used to describe the
development of depression, misery, and general failure in life (Adler 1964a). A
belief that social interest plays a significant role in personality development remains a basic tenet of the behavioral sciences and education. "The socially interested person is depicted as someone who is concerned with the welfare of others, interpersonally well adjusted, and psychologically stable" (Middleton 1993, 7).

Dinkmeyer, Dinkmeyer, and Sperry (1987) provide a link between the thinking of Adler (1964a, 1964b) and what happens in individuals when they help others. This line of thinking might be extended to at-risk students who are alienated from family, school, community, and the natural environment surrounding them. Overcoming their sense of isolation, failure, depression, and disenfranchisement and an attendant lack of responsibility, capacity, and will to change, can lead adolescents to a renewed sense of connectedness, meaning, and place. While the stimulation of social interest is essential in adolescent development, other components of that stage of life need to be considered.

Teenagers seek to attain status, recognition, and a meaningful place in adult society. "Adolescents are confronted with the basic developmental task of creating the necessary prerequisites for achieving a favorable position within the economic and employment structures" (Hurrelmann and Engel 1992, 121). When adolescents self-select into positive roles, they gain a sense of importance when their contributions and service are appreciated. Enhanced self-esteem and acknowledgement from adults and peer groups eases their transition into the new roles of adulthood. When adolescents fail to achieve success, feelings of
competence, and peer acceptance, they can develop insecurity about their social orientation and self-esteem. It is at this point that adolescents show a tendency to deviate into antisocial behavior as a means to compensate and save face (Hurrelmann and Engel 1992). Glock et al. (1975) and Giordano, Cernkovich, and Pugh (1986) found that experiences of social and material deprivation are an additional source of deviant behavior.

Corey and Corey (1993) addressed the struggle of adolescence to integrate physical and social changes. The stress induced by pressure to make early career choices, compete in the job market or college, become financially independent, or commit themselves to physically and emotionally intimate relationships, can negatively affect teenagers. Peer group pressure is a major force in the life of adolescents, "and it is easy to lose one's self by conforming to the expectations of friends" (Corey and Corey 1993, 166).

Hurrelmann and Engel's 1988 (cited in 1992) study of 1,717 West German adolescents between the ages of twelve and sixteen found evidence that showed a relationship between delinquency and inability to succeed at school, on the one hand, and failure to achieve full recognition of status and prestige in the peer group on the other. Previous studies by Gold and Petronio (1980), Hirschi and Gottfredson (1983), Jessor and Jessor (1977), and Loeber (1982) have shown that difficulty with the changing psychosocial roles in adolescence explain the rapid increase in delinquency prevalent during midadolescence.
Adolescents need to experience successes in tasks (Harter 1978) and to be appreciated for what they do if they are to develop an overall sense of personal worth (Rosenberg 1989). Those adolescents most prone to fail in school, to get into trouble, to be labeled "at risk," tend to lack the very experiences that build the sense of worth they need to foster their positive development and social acceptance (Middleton 1993).

So an adolescent's struggle is a struggle for meaning, for worthiness, for a sense of place in the world. An adolescent's sense of worth is keenly related to his or her sense of identity (Erickson 1950). In their book Becoming a Helper, Corey and Corey agreed with Erickson's assertion that adolescence is a critical time for integrating the various dimensions of one's identity. Strong urges arise in adolescents to break away from "dependent ties that appear to be restricting freedom" (Corey and Corey 1993, 166). There is a natural tendency in adolescents to separate from their family system, at least psychologically, and to develop an identity based on their own experiences. While it is common for adolescents to adopt many of their parents' values, "to genuinely individuate they must choose these values freely as opposed to blindly accepting them" (Corey and Corey 1993, 166).

"Although many adolescents feel frightened and lonely, they often mask their fears with rebellion and cover up their need to be dependent by exaggerating their degree of independence. Much of adolescents' rebellion grows out of the context of wanting to determine the course of their own life"
They are not quite adults and they are no longer children "expected to make something of themselves in a modern industrial society that seems to neither need them nor want them very badly for a few more years" (Middleton 1993, 1).

The lives of most young people in the United States have come to be dominated by the educational system. "This means less time in employment, less time associating with a variety of adults, and more time in what might be called preparing for adult living" (Levine and Havighurst 1989, 180). Coleman (1974) reported this same perception to the country in his federal government "Panel on Youth."

Adolescents have to confront the normal stress inherent in learning positive adult roles and assuming the added responsibility that comes with them, while cooped up for years in schools that give them little opportunity or challenge to do so, outside of participation in sports and clubs. This has substantiated a perception of youth as being a burden, an unproductive, unexperienced sector of society, devoted to leisure or conspicuous idleness. It has bred many of the "up-to-no-good" suspicions and stereotypical, low opinions of them by many working adults, business owners, school administrators, and general citizens. This perception is supported by the findings of Diane Hedin after her 1985 poll of University of Minnesota students on the same subject. Sixty-six percent of the students polled said they believed that adults have a negative view of youths (Hedin 1985). Tough competition for available jobs and a lack of personally-
meaningful, socially-helpful pursuits have left many adolescents feeling frustrated, unmotivated, alienated, and more disposed to mischief (Levine and Havighurst 1989). This vicious cycle serves to perpetuate the negative stereotypes of youth in society as it becomes a self-fulfilling prophecy.

Rapid societal change accelerated by the move into a postindustrial, information age, coupled with the breakdown of the family and tearing of the social fabric have caused researchers to consider whether the values, aspirations and expectations of young people have also changed. Chief among American researchers has been psychologist Daniel Yankelovich (1972), who began surveying youth in 1968. He found that youth tended to fall into one of two groups based on their agreement or disagreement with a number of value statements. The first group he called "practical-minded" and the second group "forerunners." While the "practical-minded" viewed college mainly as a stepping stone to their career and financial security, the "forerunners" acquired a system of beliefs and behavior that attempts to place nature and the natural at the center of existence. Yankelovich identified a third group which he termed "left-outs." He concluded that this third group "must be assisted toward a more individually and socially satisfactory youth if our society is to maintain even a fairly healthy condition" (cited in Levine and Havighurst 1989, 183). Getzels (1978) reviewed Yankelovich's research and his own and concluded that youth values have evolved toward an emphasis on greater personal and social responsibility.
A 1996 Gallup Organization for Independent Sector survey showed this pattern is continuing. U.S. teens are motivated by compassion and idealism, and are giving more of their free time to volunteer causes and at a greater rate than U.S. adults. Of the 1,007 teenagers, twelve to seventeen years of age surveyed, 51 percent reported being asked to volunteer. Ninety-three percent of those asked actually did. The key findings to teen and adult volunteerism were simple—ask them to help. One disturbing trend noted was that certain groups of young people, Blacks in particular, were not asked (to volunteer) at the same rate as they were in previous surveys. Overall, 59 percent of U.S. teens give their time to a variety of causes, compared with only 49 percent of adults. This percentage of teens was about the same as in 1992 when surveyed by the same organization.

Review of Adolescent Development

Many human development theorists and researchers have explained adolescence as an important developmental stage in transition from childhood to adulthood. A wholesome adolescence requires that the individual experience concurrent development from the time of infancy in cognitive, social, physical, emotional, moral, and spiritual domains. If adolescence can be a painful process when the best of family and community conditions are in place, it is considerably more difficult when the individual grows up disadvantaged; where the family and community circumstances are negative, dangerous, unwholesome, lacking, or unsupportive. The individual is at risk of failing to develop a healthy sense of
identity, capacity, and connectedness to community. They need to be treated as people who can help solve problems, rather than as a constant source of problems.

At-Risk Youth

While normal adolescents experience stress, they do not experience major turmoil nor manifest serious symptomatology (Czikszentmihalyi and Larson 1984; Offer, Ostrov, and Howard 1981; Offer 1987). From this perspective, if young people experience significant distress they are indeed in trouble. Their distress can be a predictor of future difficulty (Hamburg and Takanishi 1989). For too many adolescents, the life period they are going through is one of abnormal trouble and tragedy.

Risk Factors

The familiar concept of "at risk" as used with reference to youth has grown out of long-standing research into the prevalent threats to children's well-being (Finley 1994). The 1983, A Nation at Risk report by the National Commission on Excellence in Education helped to bring greater awareness of the needs of at-risk students as it raised public attention to the status of the nation's schools. To understand what is meant by "at risk," the concept of risk factors is identified, along with the related concepts of vulnerability, resilience, and protective factors.

The term "at risk" is borrowed from the fields of medicine and psychopathology and can be used educationally to describe a variety of risk
conditions. A youth can be at risk of failing in school and dropping out, at risk of developing alcohol and drug abuse problems, at risk of breaking the law and getting arrested, at risk of having an unwanted, premarital pregnancy, or at risk of failure in life.

Skelton (1996) defines the "risk" in at-risk youth as "factors which exist in childrens' constitutional make-up, within their families and/or their environments in which they live that are known to contribute to adverse developmental outcomes" (1). Werner (1990) described them as "biological or psychosocial hazards that increase the likelihood of a negative developmental outcome" (97). Parental exposure to drugs or alcohol, or a serious illness as a child are examples of biological hazards. Parental divorce, various forms of child abuse, the witnessing of regular street violence, or living with the death or incarceration of a family member due to gang involvement are examples of psychosocial hazards.

A major 1992 Phi Delta Kappa research effort studied the risk factors in 21,000 students in grades four, seven, and ten in 275 schools in over eighty communities across the nation. Five categories of risk factors emerged from the data: personal pain, academic failure, socioeconomic situations of the family, family instability, and family tragedy. Skelton (1996) reviewed the Phi Delta Kappa study and individual research (Benard 1993; Garmezy 1985; Jens and Gordon 1991; Rutter 1984; and Werner 1989) to produce a comprehensive table of the major risk factors that can put youth at risk. Appendix A presents these
factors in three categories organized by: Child Characteristics, Caregiver Characteristics, and Family/Environment Characteristics. The presence of these risk factors in an individual does not automatically guarantee the development of adverse outcomes, only an increase in the probability of their occurring (Garmezy and Masten 1986).

A common myth is that only children from poor, culturally disadvantaged populations are at risk. Research has shown that the well-off can be at risk too. "Suburban kids are almost as likely as those in violent neighborhoods to report what sociologists call 'parental absence' - the lack of a mother and father who are approachable and attentive, and who set rules and enforce consequences" (Shapiro et al. 1996, 64).

Vulnerability can be defined as an individual's susceptibility to a negative outcome, and is believed to increase as the number of risk factors increases (Werner 1990). A youth who is exposed to a large number of risk factors for a particular negative outcome has a greater probability of succumbing to the negative outcome than a youth who is only exposed to one or a few risk factors (Worrell 1994). Grossman et al. (1992) noted: "The rapid changes of early adolescence and its concomitant stresses, such as the changes in structure from middle school to high school, tend to uncover hidden vulnerabilities" (531).

The label "at risk" is useful for identifying children growing up in poverty or coming from single-parent homes and dysfunctional homes, children who have attendance or behavior/disciplinary problems, and children who are functioning
well below their grade level (Vue-Benson and Shumer 1994). Beyond its use as a descriptive label, the term "at risk" can be self-defeating for the child who accepts it and self-fulfilling for the educator who falls into the trap of lowering expectations for students who have been previously labeled "at risk." The label can negatively condition people to think of such students as being problems to be fixed, or worse, to write them off.

### Shift in Emphasis from Risk Factors to Resiliency of At-Risk Youth

Recent research points to ways that schools and communities can protect children from the threats that are prevalent in their environment, and nurture "resilience" in their personalities (Finley 1994). This represents a shift in thinking. "To think of the appropriate role [for the school] is to think of oneself as a protective figure whose task is to do everything possible to enhance students' competence" (Garmezy 1991, 428). At-risk youth need to learn to deal with external threats and still thrive.

Garmezy (1993), Rutter (1987), and Werner and Smith (1982, 1992) conducted longitudinal studies of infants born into risky circumstances and found that many of them became healthy adults. A combination of circumstance and temperament somehow conspired to help these individuals withstand the strain and threats that life presented to them. The construct of "resiliency" has been developed to describe qualities in children who, even though exposed to life's uncertainties, threats, adversities, and stress, do not succumb to the educational
failure, substance abuse, moral collapse, mental health problems or juvenile delinquency predicted for them (Finley 1994; Linquanti 1994).

**Protective Factors Foster Resiliency**

The presence of protective factors in a child's family, school, and community can alter or reverse predicted negative outcomes. Over time, they can foster the development of resiliency. Benard (1991) identified the following key protective factors found in families, schools and communities:

* a caring and supportive relationship with at least one person;
* consistently clear, high expectations communicated to the child;
* ample opportunities to participate in and contribute meaningfully to one's social environment. (1)

These protective factors can nurture resilient children who show the following characteristics:

* social competence that allows the individual to sustain relationships;
* use of problem-solving skills in daily life; and
* a clear sense of personal autonomy, purpose and future. (1)

Clearly, psychosocial strengths act as protective factors. Other researchers have sought to identify additional psychosocial strengths which can act as protective factors for individuals at risk. Weist et al. (1994) and Spivack and Marcus (1987) found that problem-focused coping strategies protected against behavior problems and declines in self-concept for girls. Nunn and Parish (1992); Luthar (1991); Garmezy (1987); Werner (1989); Nowicki and Strickland (1973); Rotter (1966) and others, have documented the importance of an internal locus of control (autonomy) in achieving academic and extracurricular
goals and moderating the stress of life changes. Nunn and Parish (1992) found that at-risk students' locus of control was more externally oriented, indicating a greater tendency toward believing that behavior had little effect upon outcomes.

Murphy (1987) identified Erickson's sequence of the earlier stages of the life cycle, particularly trust, autonomy, and initiative as "capacities developed during infancy [that] contribute to resiliency" (100). Rutter (1984) identified self-esteem, a sense of efficacy, social problem-solving skills, and security in relationships as important in making youth resilient. Worrell (1994) found anticipation of achievement and perception of school climate (level of connectedness to school) to act as protective factors against dropping out of school in at-risk high school students. Erickson (1959) said that "an increasing sense of identity . . . [involves] 'knowing where one is going,' and an assuredness of anticipated recognition from those who count" (127-128). Worrell's (1994) study concluded that one major difference between resilient and nonresilient youth is "their belief in future success" (96). Worrell suggested that future interventions on behalf of at-risk youth work to instill a sense of hope in them. He cautioned future researchers and program developers not to focus on the exclusive development of self-esteem, especially if it's not founded on increased mastery, skill development, and competence in any one or a number of areas. Bandura (1977), much earlier, found that generic self-esteem programs that have participants sit around and tell each other how good, valuable, and
worthwhile they are offer little increase in self-efficacy unless confirmed by actual performance accomplishments. A sense of competence is acquired through successful interactions with the environment, being able to perform a task that requires some skill, or making something well (Erickson 1959; Worrell 1994). Real self-esteem grows out of genuine competence and a sense of success that is developed over time.

Competence is thought to be an outcome of the healthy resolution of Erickson's fourth stage of life, and is increasingly built upon as a youth matures and develops his or her adult identity and social position. The self-confidence that grows in an adolescent who experiences success and increasing competence in adult roles fuels a self-perpetuating, interrelated pattern of growth (Valliant and Valliant 1981). Confidence can act as a psychosocial lubricant as the adolescent transitions to adulthood, opening doors to greater challenges, and serve to buffer the individual against the natural setbacks, hurts, and uncertainties inherent in the process of growing up.

The current research in the field of at-risk youth and resiliency attempts to identify how different protective factors interact. Specific protective factors are being sought which can be matched up to buffer specific adverse outcomes in specific life contexts, rather than seeking for global protectives (Felner et al., 1985; Lambert 1988; Grossman et al. 1992). The call to arms in the family, school, and community is to work together to "turn the situation around . . . by translating negative risk factors into positive action strategies" (Gibbs and
Bennett 1990, n.p.) which in essence function as protective factors (Skelton 1996).

Waterman (1997); Boyer (1995); Shumer (1994); Shumer et al. (1993); Nunn and Parrish (1992); Benard (1989, 1991, 1993); Glasser (1990); Green (1989), Duckenfield, Hamby, and Smink (1990); Finn (1989); Wehlage et al. (1989), and Calabrese and Shumer (1986) are among the many advocates for making schools communities of support for at-risk youth, and programs designed to serve them, effective in meeting their needs and bringing relevance to their lives. Such schools and programs encourage their membership, commitment, active engagement, and success. Figure 2 lists key recommendations from the literature for making schools and programs effective in meeting the needs of at-risk youth:

**Educational Change and Reform**

This section of the literature explores the topics of educational reform and systemic change to place the current pivotal changes that are transforming public education into context. More integrative views of education are being proposed that integrate hands-on, problem-solving inquiries of real-world situations into the K-12 curricula. Brain-compatible teaching strategies, multiple learning styles, organizational adaptability, community participation, and accountability are key reforms underway in public education. The conclusion raises a question as to whether service learning can play an essential role in linking the various components of educational reform together, helping the nation meet its school
improvement goals, while addressing the urgent needs of at-risk students and their communities.

Create a supportive environment that helps students overcome impediments to membership and engagement, while maintaining high expectations.

Provide diverse, flexible teaching and learning experiences, including work with mentors, tutors/tutees, small, cooperative groups, individualized and technology-aided instruction, and hands-on activities.

Offer a choice in activity selection.

Create opportunities for at-risk youth to have successful experiences, and demonstrate competency before their peers and adults.

Offer encouragement and rewards.

Encourage positive, cooperative, warm relationships with peers and adults.

Develop mutual respect and accountability.

Respect the need for consistency and fairness.

Generate parental assistance and involvement.

Nurture a sense of belongingness to the school environment and community (increased buy-in) through participation in project planning, implementation, and evaluation.

Match student needs and problems and take advantage of student interests and strengths.

Provide carefully monitored experiences which demonstrate the relationship between behaviors and outcomes (both good and bad).

Teachers and staff feel a calling to their work, and accept a proactive moral responsibility to educate at-risk youth.

Elevate the career awareness and level of preparedness in at-risk youth.

Encourage community service experience and the channeling of youths' creativity and energy to address current and future social problems.

Support interdisciplinary arrangements and communication between schools, community organizations, and social service agencies in a "systems approach."

Promote an overall, positive psychological environment based on trust, respect, responsibility, cleanliness, safety, and security.

External funding streams are maintained which allow the programs or schools maximum flexibility in directing the specific uses of educational resources.

Fig. 2. Characteristics of effective schools and programs that meet the needs of at-risk youth. Source: Peck, Law, and Mills (1987); Wehlage et al. (1989); Gottfredson (1986); Benard (1991); Nunn and Parish (1992); Feldman et al. (1983), Rossi and Stringfield (1997).
Perspectives on Educational Reform

Jimmie Lou DeBakey, Public Affairs Liaison for the National Society for Experiential Education, suggests that "educational reform is not a specific destination . . . but a process, a journey, which is constantly evolving and changing to fit particular individual, community, social, and cultural needs as they occur" (DeBakey 1996, 12).

An organization or institution is in decline if it has lost its connection with the people it is set up to serve (Kohlmoos 1995). The most innovative and efficiently organized systems expect, train, and motivate all individuals to "make leader-like decisions with respect to problems in their part of the system" (Gardner 1994, 3). Rather than "smother individual talent and energy under the weight of bureaucratic rigidities," humanistically-redesigned organizations encourage and release it (Gardner 1994, 4). This same strategy is at the core of educational reform. "Educational delivery by its very nature needs to be a dynamic, constantly changing process that reflects and guides societal change" (Kohlmoos 1995, 42). Senge (1990) concurs with Kohlmoos's proposal that schools, like businesses, develop their capacities to be "learning organizations."

What observers of American schools have discovered is a disconnection between home and school, school and society, knowledge and action, individual and community, parent and child, freedom and responsibility. Ernest Boyer (1987), who studied the nation's high schools in 1983, concluded: "The problems of our schools are inextricably tied to the feeling on the part of many of our youth
that they are isolated, unconnected to the larger world outside their classrooms" (7-9).

The educational reform literature speaks to the need for adolescents to have supportive opportunities and relationships with peers and adults where they can develop responsibility, motivation, competence, confidence and a sense of belonging. Reform efforts have been undertaken to provide educational processes that support and challenge all students to succeed, and to become functioning, caring members of adult society by addressing their needs. The nightly news regularly reports the havoc which young individuals wreak on themselves, their families, their friends, and the general public when their needs go unmet, when they are forgotten or shunted or discounted by their families, schools, and society-at-large.

Current educational reformers advocate for a systemic change and an integrated approach to teaching and learning (California Department of Education 1999). Advocates for broad-based, educational reform point to the need for the political, economic, and curricular dimensions of education to come into alignment with its social and psychological dimensions (Keen 1996) and work together. Major scientific, education, research, business, and government organizations and agencies have spoken out for this kind of fundamental redesign of education, particularly in the fields of science, math, and social studies.
In the last decade the California Department of Education has outlined and given details to a comprehensive vision of K-12 school reform by publishing a series of innovative curriculum frameworks. The frameworks were further focused by the school-level task force reports *Ready or Not Here They Come* (child development), *It's Elementary* (elementary grades), *Caught in the Middle* (middle school), and *Second to None* (high school) (cited in California Department of Education 1996b). These are culminating in the Challenge School District Reform Initiative and a *Consolidated State Plan*. The vision represented in these publications challenges educators, policymakers, and community leaders to rethink the traditional goals, structures, and instructional strategies in our schools (Keen 1996; California Department of Education 1996b). A much higher level of self-awareness, social conscience, environmental responsibility, citizenship, commitment to change, and accountability is being demanded to ensure sustainable social and economic progress.

Modern cognitive research has found that all children are capable of sophisticated thought processes from birth. Learning is enhanced when they are given the opportunity to actively incorporate or "construct" what they are learning into their own experiences, concepts, and understanding of how the world works (Elementary Grades Task Force Report 1992). "Brain-based" teaching strategies have been developed that assist children in making the neural connections essential to their later development in life through learning by doing (hands-on
learning) in a safe, friendly environment (The Latest on How the Brain Works 1997).

Brain compatible teachers recommend that instruction be meaningful and relevant to learners with an emphasis on first-hand experiences; that an enriched learning environment be created that stimulates young people to learn rather than forces them to; that students be given time to process and complete what they are learning; be encouraged and allowed to question and probe, and then receive feedback from their peers and teachers; that a choice in activities be offered to them; and above all, that trust be built between teacher and student, and from student to student (The Latest on How the Brain Works 1997).

The California state science, math, and social studies frameworks call for the use of interdisciplinary curriculum and instruction. Team planning within grade levels, across grade levels, and with other schools and community partners is recommended (Anderson 1996). To show mastery and application of learning, the state recommends that students have project/performance-related, class completion activities. Lastly, the frameworks suggest a focus on health, service, and real-life problem solving, building the heart while building the mind, in a sound body/environment.

Jim Kohlmoos, Senior Advisor for the Office of Elementary and Secondary Education, has identified several interconnected themes in today's educational reform movement which suggest a strategic link to the experiential service-learning movement. He sees the basic premise of the reform movement to be
that all students can learn. "Learning is a function of time and effort and not just innate ability. . . . To expect less from some students will only fulfill the prophecy" (Kohlmoos 1995, 43).

When public institutions participate in the dialogue and work necessary to break down the barriers and build bridges between schools and communities, youth and society, needs and opportunities, they get back in touch with the people they were set up to serve. Educational reform then can synchronistically drive more public reform and cause a reinvigoration of democratic citizenship, goodwill, and confidence among people.

To accomplish all of this reform and bring its different essential elements into manifestation in our schools and outreach programs is a challenging, long-term effort. It requires a "dynamic confluence of the community" (Kohlmoos 1995, 43). Ideally, all learners, and, in particular, adolescents, should be able to receive training and life experiences that meet the needs and hopes of the community, while serving their own educational requirements, interests, and aspirations. Doing that is what service learning is all about.

**Service Learning**

What is Service Learning?

The National Service Learning Cooperative (1995) defines service learning as "a teaching/learning method that connects meaningful community service experiences with academic learning, personal growth, and civic responsibility" (1). Service learning may mean involvement in a voter education
drive, a habitat restoration project, water quality monitoring efforts, the construction or rehabilitation of affordable housing, homework tutorials, or a community literacy drive. Volunteering time in a convalescent hospital, organizing and growing organic food in an urban garden project, or helping out in a legal aid office are other examples. As diverse as the needs of the community are, so can be the forms which service can take. Effective service learning involves students in assessing the needs of the community, then forming a thoughtful, personal or group response. Ideally, the nature of the response is developmentally appropriate to the learning needs and abilities of the server (Alliance for Service-Learning in Education Reform 1993).

Service learning addresses the holistic needs of youth, especially those who are at risk, and links their interests to addressing the needs of the community as responsible citizens and active learners. Community service has been seen to be "a powerful tool for youth development" transforming "the young person from a passive recipient to an active provider" (ASLER 1993, 4). "Students want to feel important and that what they are doing is making a difference" (Anderson 1995, 41). By combining community service with formal education, "service becomes a method of learning or service learning" (ASLER 1993, 4).

Service learning places curricular concepts from academic disciplines such as science, social studies, math, and language arts into a real-life context. It facilitates learners in analyzing, in evaluating, and in synthesizing concepts in
their own terms through practical problem solving in response to real community needs. Service learning connects young people to other segments of the community, promoting increased awareness of their environment. Supported by caring teachers and supervisors, students can face challenges and "accumulate experiences that strengthen academic studies" (ASLER 1993, 4). Classroom study is made more relevant and their presence in the world more valued when young people can connect their actions in the world beyond the school campus with their course work and developmental learning needs.

The report, *A Matter of Time: Risk and Opportunity in the Nonschool Hours*, published by the Task Force on Youth Development and Community Programs of the Carnegie Corporation (1992), noted that too many children are raising themselves and each other without the stabilizing input of caring adults. Service learning creates frequent opportunities for youth to be around adults outside the home and the school, thus decreasing the isolation that has existed between youth and social institutions. Service learning involves youth in active individual roles and group projects. The shared purpose and common vision associated with community service projects helps to unify participants and helps generate trust and respect for each other across generations, races, and socioeconomic levels. Bridges are built between the less mature and the more mature. Participation and interaction with positive adults serve as protective factors to youth at risk. With mutual respect between young people and adults,
meaningful dialogue, so often absent in the lives of young people today, can occur (ASLER 1993).

Distinction between Community Service and Service Learning

The terms community service and service learning are often used interchangeably, but they are not synonymous. Community service may provide powerful, motivating experiences for young people, but "community service becomes service learning when there is a deliberate connection made between service and learning opportunities which are then accompanied by conscious and thoughtfully-designed occasions for reflecting on the service experience" (ASLER 1993, 4). Honnet and Poulsen observed that "service, combined with learning, adds value to each and transforms both" (quoted in Giles, Honnet, and Migliore 1991, 7). It can change inert knowledge gained from textbooks to "knowledge and skills that students can use in their communities" (Eyler, Giles, and Braxton 1996, 1). Goodlad (1988) sees service learning to lie at the intersection of theory and practice and self and society. This experiential approach to learning forms the basis for service learning. It is in accordance with the historical tradition of experiential learning theorists from Dewey (1938) who stressed the impact of "direct first-hand learning opportunities," to Piaget (1970), who viewed developmental learning stages occurring as a result of interaction with the environment, down to modern scientists of today who study the way the brain learns (Eyler, Giles, and Braxton 1996).
History of Service Learning


Widespread environmental abuses were also discovered in the 1960s and 1970s and raised public consciousness which spread to form the Environmental Movement. The first Earth Day in 1970 saw successive waves of activism and local, state, and national legislation for better environmental protection, natural resource management, and land use planning practices. The passage of significant civil rights legislation during the same ten-year period can also be credited to dynamic grassroots movements which prompted our executive and legislative branches of government into action (Gardner 1994).

The research of Giles and Eyler (1994) showed that when students are able to address authentic problems in the field and bring critical analysis to bear on them, it encourages them to generate and answer real questions, which is an empowering, self-directing, life-organizing skill. The collective influence of many
individuals thinking in new ways unleashes tremendous energy and force for social change. Thinking on real issues with real consequences helps students to "develop a nuanced understanding of issues in situational context (Giles and Eyler 1994, 1). In essence, they are learning the "learning how to learn" and "judgment in action" skills necessary for survival and effective citizen participation in a democracy but which have been so absent from their formalized, abstract educational experiences (Stanton 1988). They are getting an education of the heart to balance the cultivation of their minds.

Writers like Pablo Freire (1970), Richard L. Morrill (1982), and Henry A. Giroux (1988) have urged for the empowering of the people through the disciplined use of knowledge and language in socially responsive ways. By insisting on the combination of knowing and doing, such efforts promote democratic literacy and a civic education in the truest sense of the term. Students learn to understand and effect change in their own society. Stanton (1987) saw how community service learning, when properly structured, facilitated, related to discipline-based knowledge, and assessed could lead to the development of a student's social responsibility, a critical factor in a functional democracy, while reforming academia.

Reflection as the Link between Thinking and Doing

The reflection component which distinguishes service learning from "helpful" community service can be described as "the process of looking back on
the implications of actions taken—both good and bad—determining what has been gained, lost, or achieved, and connecting these conclusions to future actions and larger societal contexts" (ASLER 1993, 5). The structure of the reflection must be designed to be age-appropriate to the learner, as well as the duration of the service role, type of service, and desired outcomes. Service learning is most effective when it combines community needs and students' interests, and is compatible with their skills and abilities" (ASLER 1993, 5). Constructing service-learning opportunities for youth demands planning time, energy, resources, communication networks, and collaboration with other individuals and agencies in the community. The synergistic energies needed and created to be successful spell the very combination of influences, commitment, involvement, caring and responsive action needed to make educational reform work (Stanton 1987; Wofford 1994, 1997).

Modern Efforts to Create a National Youth Service

Writers in the educational literature such as Fred Newman, Eliot Wigginton, John Goodlad, Ernest Boyer, and Charles Harrison helped to articulate the value of youth service as an educational practice and a stimulus for the development of prosocial attitudes, skills, and knowledge (cited in Landrum 1993). Grassroots efforts by schools and organizations launched nongovernmental national service strategies and model programs. The cumulative effect of these organizing and advocacy efforts created greater public
awareness, understanding, and support for service-learning programs. Their purpose and scope were illustrated with many successful examples. This period also saw growth in program evaluation and assessment which helped to legitimize support for youth service in the skeptical eyes of K-12 and higher education administrators and faculty, government agencies, community groups and funding organizations.

Between 1989 and 1990 President George Bush created the Office of National Service in the White House and the Points of Light Foundation to foster volunteerism. More private help came forward with the W. K. Kellogg and DeWitt Wallace-Reader's Digest Foundations becoming additional major funders in the field. Finally, in 1990, President Bush signed into law the landmark National and Community Service Act. The act provided financial support for community service programs in schools and colleges and supported a full-time AmeriCorps program that students could enter after high school. National youth service was further solidified with President Clinton's enactment of a National Service Trust Fund in 1993 (Landrum 1993, 14). This long-sought and relatively-stable funding of national service-learning efforts was given to achieve four purposes:

1. Improve teaching and learning in primary, middle, and secondary schools.

2. Involve students in activities that promote and demonstrate good citizenship, community service, and personal responsibility.

3. Invigorate education by encouraging and supporting service learning in schools.
4. Mobilize America's youth as partners in an effort to solve the critical problems that face our nation. (Billig and Kraft 1996, 1)

Recently, former General Clayton Powell joined President Bill Clinton and the Points of Light Foundation in hosting "The President's Summit for America's Future" in Philadelphia. Corporate leaders, educational experts, media personalities and thousands of students and citizens of all ages gathered together for four days in April of 1997 to motivate Americans to do more for at-risk youth. A near-term goal was set to reach two million at-risk youth by the year 2000 with five resources essential to productive, meaningful lives. They are:

* Ongoing relationships with caring adults;
* Safe places to learn and grow;
* Healthy starts;
* Access to marketable skills through effective education;
* Opportunities to give back through community service. (President's Summit for America's Future 1997, n.p.)

A report released April 26, 1997 by McKinsey and Company, Inc. (cited in Wofford 1994) gave added credence to the summit's focus on taking care of our nation's youth now, rather than paying for the social costs of our neglect later. The report estimated that the cost to America of treating crime, drug and alcohol abuse, unemployment and high school dropouts is over $600 billion per year. Fifteen to 20 percent of the $600 billion in penalty costs stem directly from the behavior of young people gone astray. The study also provided dramatic evidence that volunteer-based programs are extremely cost effective.
The Characteristics of Effective Service-Learning Programs

The late 1980s saw a heightened interest in defining and articulating principles of good practice for those involved in the growing service-learning field. In 1989, the Johnson Foundation hosted a Wingspread Conference to finalize the writing of those ideas into terms that would be universally understood and widely applied. Figure 3 presents the ten principles in their refined form, which culminated two years of work and the participation of seventy-five national and regional groups.

An effective and sustained program:

1. Engages people in responsible and challenging actions for the common good
2. Provides structured opportunities for people to reflect critically on their service experience
3. Articulates clear service and learning goals for everyone involved
4. Allows for those with needs to define those needs
5. Clarifies the responsibilities of each person and organization involved
6. Matches service providers and service needs through a process that recognizes changing circumstances
7. Expects genuine, active, and sustained organizational commitment
8. Includes training, supervision, monitoring, support, recognition, and evaluation to meet service and learning goals
9. Insures that the time commitment for service and learning is flexible, appropriate, and in the best interest of all involved
10. Is committed to program participation by and with diverse populations

Fig. 3. Principles of good practice in combining service and learning. Source: Kendall and Associates (1990, xxi).
Kinds of Service-Learning Programs

Newmann (1975), Newmann and Rutter (1983, 1986), Conrad and Hedin (1987, 1989, 1991), Lorenz (1990), Shumer et al. (1993), Furco (1994), Eyler, Giles and Braxton (1997), and others, have investigated and described the various forms which service learning can take. Service-learning programs can be viewed on a continuum from low curriculum infusion to high curriculum infusion. Service-learning programs with the least infusion into the curriculum appear as a community service class or community projects. Schools where service is a school-wide theme, used as an instructional method in core curriculum, or infused completely throughout the institution and its learning process constitute respectively greater degrees of embeddedness in the curriculum.

Much has been written about the theoretical benefits of service-learning programs. However, there are few formal evaluations to verify the benefits of these programs and anchor them in a knowledge base (Giles, Honnet, and Migliore 1991). One of the difficulties in service-learning research is the multiplicity that exists in the activities and settings that may comprise the service, each of which may have its own plausible effect. For example, the "service" can be tutoring an elementary reading student, removing nonnative plants from a city park's habitat restoration area, delivering food to shut-ins, conducting oral history research of migrant farm workers, or organizing a badly-needed, after school sports and field trip program for at-risk youth. One program may sponsor and
coordinate several kinds of service activities depending on the interests of the volunteers and perceived needs in the community. Programs also vary in their emphasis of certain program characteristics (independent variable) over others. This diversity of activity and emphasis contributes to the complexity of any service-learning research.

Newmann and Rutter (1983) illustrated the difficult, but not impossible, job of identifying the dependent variables to study. They suggested nine possible benefits that could accrue to a person from one act of direct civic involvement, not to mention the benefit that involvement could have on one's political efficacy, civic participation later in life, recall of factual data, or sense of self-esteem (Conrad and Hedin 1991).

There are additional constraints to research into service-learning outcomes. Students are rarely, if ever, randomly assigned to participation in service-learning activities. They engage in them by choice. Also, control or comparison groups are not readily available. A further constraint is the small number of standardized instruments that exist by which to measure program effects (Giles, Honnet, and Migliore 1991). The short duration and limited intensity of many service programs have made it difficult to conduct longitudinal studies of participants' attitudes, behaviors, and perceptions, especially those related to social responsibility, sense of efficacy, and commitment to civic participation. "Social responsibility is ultimately measured over a lifetime," and most researchers have to be content to "use short-term, proximate predictors of
long-term behavior” (Giles and Eyler 1994, 330). Much of the work in service learning has taken place in the last five to ten years, which does not allow time for adequate evaluation. "Since service learning programs quite often do not produce a tangible outcome, evaluating the success of a particular program can be difficult" (Murdock and Eakins 1996, 8). A comprehensive listing of the beneficial outcomes most often cited for students, schools, and communities can be found in Conrad and Hedin's (1989) publication, *High School Community Service: A Review of Research and Programs*.

General Research Findings on the Benefits of Participation in Service Learning

Quantitative and qualitative studies of youth have shown that K-12 service-learning programs can enhance their personal, moral, intellectual, and social development, as well as open their eyes to career opportunities (California Department of Education 1999; Brill 1994). Newmann and Rutter (1983) found that service-learning programs can be powerful in raising self-esteem and improving self-knowledge in students when they are allowed to design their own service, work independently, and supervise their peers' service projects. Other service programs engage students in discussions of social, political, and moral issues, which can profoundly affect the students' own attitudes, beliefs, and values. These programs encourage students to develop moral judgments and moral certitude to discern right from wrong, good from bad (Furco 1994).
A number of quantitative studies have shown that attitudes towards self and others are more favorable among students who engaged in service. Sprinthall (1974) found that high school students who served as peer counselors as part of a psychology course moved from being wary and self-protective to being more trusting and open. Studies by Urie (1971), University of Pittsburgh (1975), Beister, Kershner, and Blair (1978), and Williams (1991) all found positive effects on self-concept and social competence among students who participated in field education service programs. Usher’s work with students engaged in field course work found similar effects. Usher (1977) concluded that students engaged in experientially grounded courses tend to be more outgoing, uninhibited, impulsive, and sociable. Likewise, Luchs (1980) found that high school students involved in community service had higher self-esteem, a greater sense of efficacy, and gained more positive attitudes towards others than nonparticipating comparison students.

While outside the target population of this study, 1,500 college students at twenty colleges and universities across the nation were surveyed in the spring of 1995 by the Comparing Models of Service Learning Project (Eyler, Giles, and Braxton 1996). Findings from this study show patterns and directionality which can be reasonably assumed to apply to younger, high school students. Eyler, Giles, and Schmiede (1996) were interested in researching the impact of service learning on students’ citizenship values, skills, attitudes, and understanding. Participation in service learning had a significant impact on increases in many
outcomes over the course of a semester. Positive interaction with faculty outside the service-related experiences contributed independently to growth on most outcomes measures. Previous experience often made a difference on outcomes. "It would appear that the effects of service are cumulative; students who have participated continue to gain from that experience" (Eyler, Giles, and Schmiede 1996, 4). Service and closeness to faculty were significant predictors of growth on citizenship confidence values, i.e., belief that they can be personally effective in their community, that they are connected to it, that the community can be effective in solving its own problems, belief that service should be a school requirement, and that citizens should volunteer to serve.

Research in the field of service learning is still young, and there is a continuing need to study impacts of participation on students, schools, and communities. Researchers have given priority to the study of the impacts of service on students, mainly out of necessity to see whether the service-learning methodologies being pioneered merited continued attention and funding. As a result, fewer studies have been done on the impact of service learning on the recipients of service in schools and communities, with two exceptions, assessments of tutoring and peer helping.

Barriers and Disagreement with Service-Learning Programs

Barriers to effective service-learning programs exist in both practical and perceptual forms: practical in that appropriate resources may be unavailable to
support them, and perceptual in that some people doubt the worth of such programs (Murdock and Eakins 1996; Westheimer and Kahne 1994). The barriers to effective service-learning programs may be daunting, but not insurmountable. Fertman et al. (1994) noted that while support for service learning is evolving and often slow going, the enthusiasm of students and teachers and their advocacy for service learning is infectious. Programs flourish when participants and staff are enthusiastic about what they are doing. They also state that such factors as advisory boards, trained service-learning coordinators, effective communication between programs, and even good publicity, all help overcome barriers.

To overcome barriers to effective service-learning programs, all parties involved in their successful implementation (teachers, students, administrators, and coordinators) are urged to look into those program characteristics that have contributed to existing, effective programs. Multidimensional programs need to be looked into that support students in a variety of service settings (Orr 1987).

Based on the literature and discussions with practitioners and researchers, the researcher selected five variables for study: school attendance, sense of connectedness to community, sense of social responsibility, sense of efficacy in problem solving, and understanding of watershed stewardship. The empirical studies and theoretical claims presented for each variable give additional focus to the study.
School Attendance

Poor school attendance and a potential for dropping out are among the identified characteristics of students at-risk. A related risk factor that contributes to poor attendance and a propensity to dropping out of school is academic achievement significantly below acceptable standards, usually defined as two grade levels below satisfactory performance (Vue-Benson and Shumer 1994). Truancy is the first sign of trouble, a signal from young people that they need help if they are to go forward, not backward in life. It is a signal which parents, school officials, and the community at large need to heed (United States Department of Education 1996).

The dropout prevention literature focuses on the conditions and causative factors of at-risk youth, implications of the problem of at-risk youth for the U.S. labor force, key vocational and nonvocational strategies for resolving problems of at-risk youth, exemplary vocational and nonvocational programs for serving at-risk youth, and the role of career and vocational educators in meeting the needs of at-risk youth. Effective teachers and administrators make personal connections with students and make school interesting, relevant, and worth attending. Effective schools are those that can provide all students, especially those at risk, with a community of support that encourages school membership and educational engagement (Wehlage et al. 1989). Effective programs provide students at risk of school failure with "a meaningful and motivating context for learning" and active learning strategies (Adenika-Morrow 1995, 35).
Demographic data show that students who become truant and eventually drop out of school set themselves up for a lifetime of struggle and economic hardship. This impacts the economy and social fabric of our country. Twenty percent of adults over the age of twenty-five in the United States have not completed high school (Bureau of the Census 1994). In 1993 alone, 3.4 million persons between the ages of sixteen and twenty-four dropped out of school before earning a high school diploma. In 1995, high school dropouts were almost twice as likely to be unemployed as high school graduates (United States Department of Education 1996). Those dropouts that do become employed earn on the average $6,415 per year less than high school graduates (Bureau of the Census 1994). A pattern of future lost productivity begins in an individual's youth.

"Truancy is a gateway to crime. High rates of truancy are linked to high daytime burglary rates and high vandalism" (U.S. Department of Education 1996, 1). Eighty-two percent of America's prisoners are high school dropouts (Demographics of School Reform: A Look at the Children 1990). The Los Angeles County Office of Education contends that truancy is the most powerful predictor of juvenile delinquent behavior. California District Attorney, Kim Menninger, says "I've never seen a gang member who wasn't a truant first." In San Diego, 44 percent of violent juvenile crime occurs between 8:30 A.M. and 1:30 P.M. Experience shows it takes parents, school officials, law enforcement agencies, juvenile and family court judges, and representatives from social
service, community, and religious organizations working together to combat truancy (cited in U.S. Department of Education 1996).

While school attendance is a traditional measure of student success and an indicator of continued persistence in education, there are few service-learning research studies that have included school attendance as a dependent variable. Partly, the reason for this is the relative youth of the service-learning research field. The holding power of schools and programs has certainly been in the minds of school administrators, teachers, program coordinators, dropout prevention specialists, and counselors. Program directors and administrators have informally assessed their efforts to capture and retain the interest and participation of at-risk students through the process of formative and summative evaluations.

A consortium of school districts in Kern County, California, found that outreach to youth with a history of truancy through parent contact, peer tutoring, and mentoring services is effective in reducing truancy (United States Department of Education 1996). An innovative "Community Service Early Intervention Program" in Marion, Ohio, focuses on potential truants during their freshman year. Students referred to the program are required to attend tutoring sessions, give their time to community service projects, and participate in a counseling program. They are also required to give back to the intervention initiative by sharing what they have learned with new students in the program and recommending others who might benefit. Parental participation is crucial
throughout their six-week program. Twenty out of the twenty-eight students who took part in the program had improved attendance records and passed the freshman year. "This program is a combination of early intervention and early personal attention. As long as the child knows that someone is watching out for them and taking an interest in them, they will not be truant. The attention factor is very important" (U.S. Department of Education 1996, 11). In both examples, clear incentives and sanctions played a part in the success of the programs, with tutoring, mentoring, and counseling services as key components.

Luchs' 1980 study included school attendance as one of her dependent variables as an indicator of attitudes toward more responsible community and school citizenship. Data analysis and conclusions supported her research hypothesis that students who were more involved in experiential programs demonstrated positive and significant gains in school attendance and in acceptable school behaviors.

Shumer (1994) studied the program characteristics of an alternative, Community-Based Learning (CBL) Program for grades 9-12 in a magnet K-12 school. The CBL program was a dropout prevention effort focused on youth service, career exploration, civic education, and academic development. The target population had extremely low grades with histories of poor attendance in public schools. Shumer's team interviewed and surveyed students and teachers to find out what characteristics of the program contributed to their gains. Where students identified field experiences and tutors as important elements in the
educational system, there was improved attendance and improved grades. High school students testified to the value of a human connection to their college tutors, adult support staff, and people with whom they worked in the community.

Quantitative data revealed that the CBL program had a significant effect on grades and attendance. Both qualitative and quantitative data showed that certain program components were considered important to retention and learning in school. Case studies and surveys supported the students' ranking of the field experiences and the college tutors as the most important components of the program. The students' reasons included: personal attention, personal choice of activities, development of personal relationships, exposure to adult environments and adult responsibility, and the creation of a program that "didn't seem like school." The field experiences were viewed as motivational. Students had a chance to connect their future goals with their current studies in high school. Survey data indicated students valued the small size of the program and low student-adult ratio, not as an impetus to stay in school but because it helped them learn. "Size was equated with learning: the more opportunity for adult-student interaction, the greater the chance for learning to occur" (Shumer 1994, 366).

Recently Joe Follman, director of Florida's Learn and Serve program, reported findings from a two-year study of 50,000 students. He found that Florida students who participated in service learning improved their attendance,
grades, and conduct (Gardner 1997, 17). Students characterized as at risk made greater gains than non-at-risk students.

Wehlage et al. (1989) studied effective dropout prevention programs, developed a generalizable, theoretical framework for understanding the relationship between at-risk students and their schools, and suggested local and state policy changes to improve schools. Dropout prevention specialists such as Duckenfield and Swanson (1992) are seeing service learning as an approach that fits closely with the findings of Wehlage et al. (1989). They point to the ability of service-learning programs to provide opportunities for the development of a supportive environment, fostering membership and commitment, while engaging students in tangible learning activities. Peck, Law, and Mills (1987) note the ability of service learning to incorporate course work with real-world problem solving, experiential learning, and experiences with responsible, mature adults.

More studies need to be done to prove that service learning can consistently contribute to improved school attendance and school retention in a variety of settings. The limitations of Shumer's (1994) study of community-based learning with students at only one school revealed a need to examine CBL-type programs in several different environments to spotlight exactly what program elements contribute to success in those environments.
Sense of Connectedness to Community

Traditional high schools have been stereotyped as cold, impersonal, boring, adolescent ghettos cut off from normal life outside their high and sometimes barb-wired perimeter fences. They have been characterized as dehumanizing and lacking in opportunities for student participation (Maeroff 1996). Life in poor, inner-city high schools can be threatening at best, and downright dangerous and deadly at worst. When the school's social life reinforces subcultures of exclusivity and alienation, rather than a community of inclusion and connection, it is little wonder that students check out mentally, then physically.

The literature repeatedly cites the need for strategies to build a sense of belonging in at-risk students (Shumer 1994; Duckenfield and Swanson 1992; Wehlage et al. 1989) and address feelings of alienation, isolation, fragmentation, isolation, powerlessness, normlessness, and meaninglessness (Seeman 1959; Dean 1961; Newmann 1981; Calabrese and Schumer 1986; Rossi and Stringfield 1997). Alienation has been a key research variable of social scientists. It has been difficult to measure because of the highly individualized nature of a person's response to society, hence the multiplicity of terms used to define it (Calabrese and Schumer 1986). This thrust is reinforced by findings obtained from the early research of Coleman in the 1970s. His study showed that students value school primarily for its social life and secondarily for its academic opportunities (Coleman 1974).
Students drop out of school or have poor attendance for many reasons—a main one being they feel they don't belong. If students are valued as individuals, they can more easily discover and bring forth their unique gifts to the world, and in doing so, find their place in it. Schools that themselves function as trusting, respectful communities and utilize active, experience-based learning strategies foster participation. Participation fosters a sense of belonging, connection, and sense of responsibility. In the words of Robert Finch, "True belonging is born of relationships not only to one another but to a place of shared responsibilities and benefits. We love not so much what we have acquired as what we have made and whom we have made it with" (quoted in Shaffer and Anundsen 1993, 95).

Structured and purposeful involvement in a variety of required and self-selected, contextualized activities and projects can generate success experiences in at-risk students and be an important source of new and welcome feelings of self-esteem and competence. As in any organization, successful participation breeds a sense of satisfaction in people and induces greater levels of energy. Effective school programs for at-risk youth help them to achieve educational success and to associate good feelings with learning and school, a place where they want to belong.

At-risk students have a need for positive relationships with peers and adults to increase social bonding and counter isolation. Regular feedback from adults can help them develop vital self-discipline, goal-setting, and life
management skills. They can also learn how to derive learning from their own experiences and mine the wealth of their own insights which can be plowed back into the community as ideas, energy, enthusiasm, discontent, constructive criticism, imagination, hopes, and dreams. The more at-risk youth feel that they can contribute and make a difference in their communities, the deeper will be their sense of connectedness with those communities. Kretzmann and McKnight (1993) say that "a true community is only able to grow and strengthen itself by including all of its members and finding room for them to develop their capacities within its own pattern of growth" (69).

Students need to develop mutual respect and accountability to help them become healthy, contributing members of their community. Amitai Etzioni makes this point in his writings about character development in his book, *The Spirit of Community: The Reinvention of American Society*. It is "acquiring the capacity to control one's impulses and to mobilize oneself for acts other than the satisfaction of biological needs and immediate desires" (Etzioni 1993, 91). Workers need this self-control if they are to do quality, dependable work. Citizens need self-control. They have to learn that they can expect help from their community and government in times of need, but that it requires a reciprocal giving back to the community and their support of the government. Service and volunteer work is desirable in that it brings people together from different backgrounds. It enables and encourages them "to work together, build community, and foster mutual respect and tolerance" (Etzioni 1993, 261).
The fields of medicine, psychiatry, counseling, and conscious healing offer an interesting correlation to education theories with abundant evidence of the self-destructive force of alienation and intolerance (Moyers 1993; Weil 1997). Many cancers, heart conditions, ulcers, depressions, and aggravated psychosomatic conditions can be traced to the condition of one's mind, heart, and soul. Ornstein and Sobel (1987) state that the occurrence of disease is higher in those with weakened social connectedness. The personal and social crimes of substance abuse, addiction, and sexual exploitation can also be traced in part to one's feeling of connectedness or alienation as engendered from the earliest years of human development, and the pain and hopelessness it engenders.

Gore (1992) devoted a whole chapter to the dysfunctional nature of modern culture in his book, *Earth in the Balance: Ecology and the Human Spirit*. A key concept in his discussion is that human beings act out their pain and estrangement from life in their attitudes and abusive, overconsumptive use of the earth's natural resources. He theorizes that just as the false assumption that we are not connected to the earth has led to the environmental crisis, so has the equally false assumption that we are not connected to each other led to our social crisis. Lilly Collett believes that the "national epidemic of drug use and alcoholism is the product . . . of a culture that offers so few sustainable, non-drug opportunities for interconnection, self-expression, and spiritual meaning" (quoted in Shaffer and Anundsen 1993, 25). Juxtaposed with the emptiness and
suffering which comes from isolation are the claims of Allan Luks: "The most profound feelings come from being connected to another human being. People who are involved with others live longer" (quoted in Shaffer and Anundsen 1993, 25).

**Sense of Social Responsibility**

Most civilizations die from within, and are conquered less often by traitors within the gate than traitors within the heart—loss of belief, corruption, loss of a sense of control, and disintegration of shared purposes. (Gardner 1994, 5)

Social responsibility is a civil commitment a person has by virtue of one's membership in the community. It means being answerable and accountable for one's actions in society. A person's sense of social responsibility is also the degree to which an individual feels he or she has to give back to the commons in return for what he or she has received from it. It is the sense of duty one feels to contribute to the material and moral well-being of others based on the need and one's own abilities. It is to think of the good of the whole into which one's private good and personal interests are to be incorporated, balanced, and ensured.

There is a historical basis for social responsibility in the vision of American's Founding Fathers and Mothers. The framers of the Constitution saw that an informed, active citizenry was the essential element in continuing the American Revolution. What was implied in their vision was that the "Revolution" not be viewed as a limited social transformation, but continue through time as a social life that continuously turns around the core principles of freedom, democracy, and self-determination. To be vital and effective, each generation
has to renew its connection, understanding, and commitment to those principles through education and an intelligent, compassionate engagement in social and political life.

America's public school system has generally failed to be an effective communicator of a tradition of active citizenship and social responsibility, because of the primarily passive ways in which those values have been taught. The lack of emboldening role models for youth to imitate or gain inspiration from and the presence of degenerating, contradictory messages from popular culture are two additional factors that inhibit young people from expressing and developing themselves through natural selfless action and community service. Citizenship cannot be taught by passive means, but by active means where the learning is in the doing, guided by models and instructed by direct experience (Newmann 1975; Sullivan 1982; Cirone 1987; Stanton 1988; Boyte 1991).

Social responsibility rests not just with discourse on civil and political issues, but public acts and work for the good of the community. The scale and widespread nature of the social problems that need to be confronted and creatively solved demand that a broad, grassroots effort of concerned citizens come forth. Boyte wants to bring back an "understanding of citizenship as effective, skilled, public-spirited work in solving our common problems." (Boyte 1995, 1). Gardner (1994) describes a healthy community as "an arena in which we learn responsibility to and for others. It is a network of trust and social support and nurtures a sense of the common good" (2).
One's sense of identity with life determines the degree to which one feels responsible for creating improved conditions in the world. Having a greater, more inclusive identity with life can be viewed as a natural act of self-preservation, as well as the creative evolution of human ability to envision diversity arising out of wholeness. "Mastering this act within our own boundaries would go a long way to helping the world master it. If we regain confidence that we can master our own problems, our effectiveness on the world scene will be substantially enhanced" (Gardner 1994, 5).

A New Civic Spirit and Renewal of Democratic Living

Writers like John Gardner, Jane Mansbridge, Shelley Berman, Richard Kraft, Fred Newmann, Dan Conrad, the late Diane Hedin, Harry Boyte, William Cirone, and Karen Pittman speak to the renewal of civic spirit, moral vision, shared purpose, and community-mindedness happening in America today (Jones, Maloy, and Steen 1996). They outline the steps needed to rebuild a civic literacy in schools and communities that combine knowledge, discourse, judgment, and citizen action. They envision a holistic development of individuals taking place, in part through their understanding, involvement, and reflection on the direct work and service experiences they give to their schools and communities.

Positive, collaborative planning and implementation efforts are underway in many American cities and counties, and are cropping up in cyberspace.
These small and large-scale democratic community-building and problem-solving efforts bring together people from diverse backgrounds, ages, interests, and expertise. They build on the strengths of the participants and involve the community in assessing its own problems and determining its own solutions. Governmental agencies, funding sources, organizational guidance, and leadership training are coordinated to blend stakeholders, key players, and decision-makers together in strategic planning around critical issues and engage in related and spirited advocacy, education, reform, and revitalization efforts. Americans, especially the young, are learning that "to act positively and to trust others makes life much easier in postmodern society than a cynical, self-protective attitude" (Jones, Maloy, and Steen 1996, 45).

Karen J. Pittman described the spirit of this civic renewal process in her book, *New Designs for Youth Development*. She emphasizes the term "community youth development" in that it reflects the critical need to continue "working in partnership with young people to strengthen or regain their ties to community--whether it be family, neighborhood, school or friends—and working with communities to value and support youth." Bringing this vision about "requires shifts in practices and priorities, as the goal becomes less about delivering services and more about offering supports and creating opportunities" (Pittman 1996, 1). Community collaboration is key to youth development. Most problems of the city and at-risk youth are interrelated, so those who work on them have to work together (Gardner 1994).
Community development and youth development are inextricably related. Both are dependent upon economic opportunities and "hinge on the basic health of the functions of the family and citizenship." Pittman sees tying the two goals together as the only long-term strategies for reducing youth and community problems (Pittman 1996, 1).

Proceedings of a 1996 Wingspread Conference, "Emerging Best Practices: Weaving the Work of Youth and Civic Development" in Racine, Wisconsin, underscored the need for youth to develop civic literacy skills in addition to academic and vocational competence, if they are going to succeed and if communities are going to transform with them, rebuilding the nation and world (Boyte and Massengale 1996).

Developing and Measuring Social Responsibility

The writers of the new California History-Social Sciences Curricula concur with Morrill (1982) when they say that students need to be helped to develop their personal potential and social potential. The curricula stresses the use of active, experiential learning approaches to achieve these ends. They cite the natural ability of hands-on, real-world learning experiences to motivate students more than passive, listening-based learning modalities. They also give recommendations for students and teachers to not shy away from controversial issues. They reiterate the purpose of democratic life and the end of democratic education to be engagement in thoughtful dialogue on issues of the greatest
social relevance, and participation in focused action to address the most pressing social needs—the understanding, celebration, and protection of life itself. The new California social studies curricula reflect a shift of focus from enlightened self-interests to action in the common good (California Department of Education 1997).

Newmann (1987) suggests greater attention be given to help citizens deal with the issues of pluralism, distributive justice, individual interests and collective responsibility, and meaningful participation. Newmann attests to the value of direct experience to motivate students and maximize retention and transfer. He also values participation as a valuable source of citizenship knowledge.

Conrad and Hedin (1981) developed an "Experiential Education Questionnaire" as part of their work with the Center for Youth Development and Research at the University of Minnesota. The project was undertaken to assess the impact of experience-based programs on student participants in secondary schools. Conrad and Hedin validated their Experiential Education Questionnaire by using over 4,000 students who participated in over thirty different types of community experiential programs throughout the country. One section of their instrument measured student attitudes toward being socially and personally responsible. It was called the Social and Personal Responsibility Scale (SPRS).

The three dimensions of attitudes, competence, and efficacy are included in the SPRS. Conrad and Hedin believed that they form a concept of total
responsibility when taken together. In explaining the assumptions built into the SPRS, they maintained that:

A person will act in a responsible manner when the following conditions are present. First, one must feel a sense of responsibility or have a responsible attitude toward others in the society. Second, one must have competence to act upon this feeling of concern for others. Finally, one must have a sense of efficacy, which allows one to believe that taking action and feeling concern can make a difference. (Conrad and Hedin 1981, 2)

The SPRS contains five subscale variables. They are social welfare, duty, competence, efficacy, and perceived responsibility. They measure the extent to which the students have responsible attitudes, feel competent to act responsibly, feel a sense of efficacy to take responsibility, and perceive their ability to perform responsible acts.

The major problem in measuring responsibility is the tendency of respondents to give a socially desirable response. Individuals tend to present themselves in a positive light, giving their idealized sense of responsibility rather than their actual level (Conrad and Hedin 1981). Berkowitz (1965) noticed this same tendency when he created his own scale, the Social Responsibility Scale (SRS). The SRS assesses a readiness to do what is socially desirable, including the giving of socially desirable responses to opinion statements (Williams 1993). One way to reduce the susceptibility of the problem is through question format. Harter (1978) came up with a "structured alternative format" in which the subject is presented with a unique type of question.

Crossman's 1989 dissertation focused on the effects of required community service on the development of self-esteem, personal responsibility,
and social responsibility in high school students in a Christian-based Friends school. While her research findings have limitations on their transferability, the trends she discovered are worth noting. Required community service did have a positive impact on the development of social responsibility on both males and females.

Understanding the Development of Moral and Environmental Values in Youth

Moral psychologists take the perspective that morality is three dimensional, consisting of moral thoughts (cognition), feelings (emotion), and behaviors (Beringer 1990). They form the core of a sense of social responsibility. Psychologists who work on understanding moral experience have formulated theories to describe how individuals come to understand concepts of justice (Levine and Havighurst 1989), care (Gilligan 1982), and responsibility toward other people (Haan, Smith, and Block 1968). Unfortunately, these concepts have been applied to the context of human relationships alone. They have overlooked the notion that morality and ethics extend to the natural environment which can be labeled "environmental morality." Passmore (1974) thinks that this disregard may be partly due to the fact that in traditional Western culture ethical considerations have not included the environment, and partly because the natural environment has been taken for granted until its value was recognized in the face of ecological crises.
With the exception of Lozzi (1989), very little empirical research has been done in environmental moral development. Lozzi demonstrated through his research that people who are more knowledgeable about environmental issues reason at higher levels on moral issues dealing with the environment than people who are not so knowledgeable. His research also showed that most of society functions at the lower egocentric stages, and few people reach the highest stage of moral development. Beringer (1990) considered the implications of these data. He suggested that it may be important to teach natural science concepts and information from the fields of biology, ecology, and geography, in addition to dealing with the sociocultural, economic, and ethical questions involved in environmental issues. It might be possible then to challenge students to think about environmental matters from a moral-ethical perspective, because they are more informed.

Research by Mergendoller (1989) has shown that people’s moral actions are not based on philosophical analysis but upon human response to a situation. Moral action is rooted in a sense of self rather than in knowledge of rights and rules (Beringer 1990). "Balanced, whole people should be the outcome of education. Wholeness requires the integration of the personhood of the student: the analytic mind with feelings, the intellect with manual competence" (Orr 1992, 101).

Most moral psychologists would agree that moral development is relationship oriented and that movement through the moral development stages
is facilitated by engagement with and connection to others. Service-learning advocates are mindful of this developmental phenomenon when they plan programs for youth. "Service programs compel students to form connections and relationships to individuals and communities. They require students to be autonomous, to articulate the balance between rights and responsibilities, to be inclusive yet to recognize when a limitation of action is appropriate" (Heffernan, 1996, 15).

Participation in service-learning programs allows students a chance to broaden their perspective through exposure to a variety of experiences and roles with genuine societal problems. Enhanced perspective-taking, according to Kohlberg (cited in Hartwick 1995), is required for advancement in one's moral reasoning. Students struggle with problems of their own choosing, and learn to act in accordance with what is reasonable. While commonly accepted community values may be focused upon, no particular belief system or political ideology, either liberal or conservative, is espoused or forced on them to adopt. Social engagement is a common sense way for youth to develop more mature, inclusive perspectives and grow from the experience of acting on one's convictions. In short, they can grow morally (Hartwick 1995).

The ways in which these positive relationships are initiated and nurtured are important to the ultimate success of the service program and to supporting youth "to act on behalf of a community's best interest" (Heffernan 1996, 17). Service learning and youth development researchers are keen to know more
about these factors that appear essential to both meeting the needs of at-risk youth and their communities and ensuring program success.

Delve, Mintz, and Stewart (1990) came up with a service-learning model to describe the development of college students' social responsibility via volunteer experiences. They drew on the intellectual and moral development theories of Perry, Kohlberg, and Gilligan in their conceptualization of five phases of social responsibility development. The first initial phase is termed exploration, where students are eager to help or get involved in public service activities, but have no focused commitment to a campus group or community agency. The second phase, clarification, also is characterized by exploratory behavior but the students begin to clarify their values regarding service work. The realization phase is indicated when the service-learning students discover something important about themselves and become personally committed to a particular population or issue. As they connect their service work with their own life their sense of excitement and commitment increases. The fourth stage of activation is indicated when students start to get the big picture and show development of a more contextualized, complex understanding of social issues. Observation of social injustices and environmental damage are often prime motivators to young people. Their attitudes and behavior show they have come to identify with the population, watershed, or biosphere they serve and have become advocates for its protection, advancement, or well-being. In the last phase of internalization, students have integrated the ethic of service so much into their lives that their
lives are changed to the point of realigning personal and career goals. Their commitment to their new values is demonstrated clearly in their lifestyle and communication, setting up a lifetime of commitment to counter social and environmental injustice (Olney and Grande 1995).

Olney and Grande (1995) validated the service-learning model by Delve, Mintz, and Stewart (1990) with a modified version of their five-phase scale termed The Scale of Service-Learning Involvement. The Scale of Service-Learning Involvement was also developed to assess service-learning student outcomes. It collapsed the five phases into three: exploration, realization, and internalization. These have proved easier for respondents to distinguish between, and so measure. Olney and Grande recommend the need to test the model with minority groups and to further validate and explore the Delve, Mintz, and Stewart (1990) model.

Eyler et al.'s (1997) national study, mentioned earlier, is shedding light on the development of students' citizenship values, skills, attitudes, and understanding. Students completed surveys at the beginning and end of their service-learning experience and program descriptions were completed by program directors or faculty (Eyler et al. 1997). There were 1,136 pre- and postsurveys gathered from students who engaged in service, and 408 from their classmates who opted not to enroll in service learning. Additionally, sixty-five students from six colleges were intensively interviewed during the spring of 1996 at the beginning and end of the semester.
A factor analysis of student responses to descriptive statements about their service brought up five powerful determinants of a successful learning and service experience. They include: placement quality, application, discussion, writing, and community voice and diversity. Placement quality refers to having a variety of things to do, responsibility for important work, challenging and interesting activity, and feeling appreciated by those the student works with. Application is a close connection between service work and what was being studied. Discussion includes the frequency and depth of discussion about the service, i.e. analysis rather than simple description or sharing of feeling. Writing includes keeping journals and doing writing assignments. Community voice and diversity indicated the richness of the experience, the opportunity to work directly with people in the community, the involvement of community partners in determining the nature of the service project, and opportunities to work with people from different ethnic or cultural backgrounds (Eyler et al. 1997).

The researchers were most intent on focusing on changes that occurred over the semester on students' assessments of their citizenship skills, their confidence that they can and should make a difference in their communities, their community-related values, and their perceptions of social problems and social justice. This focus on the effects of service learning and service-learning program characteristics sought to isolate out the intervening influences of such factors as: gender, race, parents' income, age, the student's own previous college volunteer experience, as well as the effect of the pretest measure. It
turned out that most background characteristics did not significantly relate to increases on outcomes, with the exception of previous service. Even over the short period of one semester, participation in service learning had a significant impact on increases in many outcome measures. Positive faculty interaction outside of the service-related experiences contributed independently to growth on many measures and served as predictors of change, a fact already well-supported in the literature (Pascarella and Terenzini 1991).

"One way in which service-learning may impact students is that it creates an environment where students work closely with faculty and other students and build the kinds of strong relationships that have a positive impact on their lives. Program characteristics associated with building these relationships would thus be important in designing effective programs" (Eyler et al. 1997, 6).

Service learning was a predictor of growth in valuing a career helping people, volunteering time to the community, and influencing the political system. Lastly, service experience tied to a college course of study helped students expand their conceptions of social justice. They were more able to place themselves in the shoes of others and to remain open to new opinions and information. "Those who participated in the service experiences were more likely to show an increase in their tendency to see problems as systemic, to think that changing policy was a better approach than targeting individuals, to believe that improving social justice should be a priority for society, and to be able to see
things from the perspective of others, and to be open to new ideas" (Eyler et al. 1997, 5).

Melchior (1997) recently completed a study of high-quality Learn and Serve America programs in nine states, including California. Positive results in most indicators were reported. Students showed more engagement in school, greater personal and social responsibility, more acceptance of cultural diversity, and were more likely to volunteer in the community as the result of service learning. The California Department of Education (1997), RPP International, and the Search Institute are noting similar impacts as they complete a three-year study on students, teachers, schools, and communities in twelve of the thirty-six CalServe-funded, school-community partnerships. Teachers see improved student knowledge of the community and its issues, increased student sense of responsibility to the school, and improved self-esteem and self-confidence.

The degree to which people can challenge youth to speak up and share the work of rebuilding their communities, to help them find and articulate their own voice and merge it at times in a chorus of many, to defend and attain the common good, is the next topic for discussion: youth problem solving.

Sense of Efficacy in Problem Solving

The context of this was an African-American neighborhood's effort to involve its youth in an urban garden project called "Strong Roots" in the Berkeley-Oakland area. "At our end-of-the-summer party, the seniors (senior citizens) said they had loved being with the young people. 'Watching them, I thought that what a person really wants in life is to find a thing that needs doing, and do it well.'"

Melody Ermachild Chaves, "Strong Roots."
A sense of personal efficacy in problem solving refers to the degree to which an individual feels he or she is effective in identifying, analyzing, and solving problems. Efficacy is a function of learning. It increases as one's competence and confidence increases. Growth in problem-solving ability is related to having opportunities to build skills doing work of vital public importance and doing things that matter to the person. It hinges on providing environments where individuals are given the freedom to choose, to risk, and to make mistakes, and to learn from those experiences (Parnell 1997).

This research variable is key to unfolding the potential locked up in our youth, especially those at risk, by affirming them to be valued and contributing members of the community. This revaluation of our youth and their capacity for intelligent and caring engagement in their families, schools, neighborhoods, and local institutions can spark a renewal of our nation and world. This process happens in the context of reciprocal relationships and is time and energy consuming. It is a renewal of each individual, one at a time, not doing for another what they can do for themselves, but helping them to discover, imagine, and manifest their capacity, their talents, their interests, their competence (Cortes 1993). The effort directed towards developing students' problem-solving ability is also at the heart of educational reform, particularly in the areas of science, social studies, and math.

Human beings are problem-solving creatures by nature. Humans are born with brains designed to process large amounts of information and hunt for
patterns and meaning. From learning to walk and talk to distinguishing between pain and pleasure, or deciding whether to fight or flee, learning is nonstop problem solving. Even when asleep, human's unconscious mind (the part of our mind or collective consciousness we're not aware of, but which is extremely aware of us) is busy searching for solutions to problems or dilemmas facing them, which are partially revealed to people in dreams.

A person's confidence and sense of well-being is intimately tied up with one's perceived problem-solving ability. It is also tied up with one's connectedness and sense of responsibility to one's community. It is what one has to offer, what one feels one can give. One's sense of personal value and of being valued by others is related to who he or she is and what he or she can do. Individuals value the place they are in to the degree that they are appreciated there and given promptings to contribute their talents. The place can be one's family, neighborhood, school, workplace, community, nation, or world.

People have applied their intelligence throughout history to survive and to extend the understanding of their bodies, their mind, their emotions, their machines, and the world in which they live. Scientific theories have been advanced and challenged successively. Each new theory, each new machine, each new technological tool, embodies what has been learned prior through application to real or experimental conditions. What holds true in practice gets fed back into theory, and so in a spiral-like fashion humankind's understanding progresses. Educational reformers bear in mind the lifelong nature of learning,
the amazing dynamics of the human brain, and the untapped potential within people when they plan school improvement efforts.

Enhanced Problem-Solving Ability
Linked to Educational Reform

The new California State curriculum frameworks in science, math, and social studies assume that improved problem-solving ability can only come from a change in how formal learning is viewed. Students are to shift from playing passive roles to being active participants in constructing their own learning. Each curriculum framework spells out the kinds of educational environments, teaching techniques, and learning outcomes which will best support powerful learning experiences. Powerful learning experiences demand and result in improved individual and group problem-solving ability. Students are viewed as workers and teachers as guides. Learners need to be related to in ways that help them take on greater responsibility for determining both the subjects of study and the manner in which they are learned.

The frameworks place a special emphasis on learning and research in a real-world-based context, beyond the walls of the classroom and library. Teachers are being trained to utilize different modalities in their teaching. Students are being given greater freedom to learn and demonstrate mastery via visual, auditory, kinesthetic, or tactile modes that are comfortable to them. Evaluation of science, math, and social studies learning is moving towards performance and demonstration. Eisner suggested eight evaluation tasks that
are consistent with experiential education programs and the learning envisioned by California's curriculum frameworks. One of these was that evaluation tasks should "reveal how students solve problems, not just the final answer, since reasoning determines students' ability to transfer learning" (Eisner 1993, 1).

Students need to be taught how to evaluate their own learning as well as the thinking of others. The most successful learners, be they readers, scientists, inventors, industrialists, crafts persons, musicians, artists, poets, or athletes, are effective problem solvers. They have this learning-how-to-learn, metacognitive ability which they apply to whatever they are doing to improve their understanding and performance. The world and careers of the twenty-first century demand that graduates address and solve an increasing range and complexity of problems, so the stress on problem-solving ability is rightly placed by educational advocates, members of the business world, and elected officials (United States Department of Education 1996, 6).

Interaction with the community, as espoused by educational reformers and service-learning advocates, cultivates communication, cooperative learning, and problem-solving skills (Keith 1997). It promotes maturity, leadership, and higher-level thinking skills. The positive contributions of youth get to be recognized and valued, for they are given greater opportunities and freedom to express themselves and relate to issues that matter to them. School becomes more meaningful because students are shown how to think practically, derive
knowledge from their own experience, and be valued members of their own community. They can learn the citizenship skills of responding to the needs of the society they are placed in, and satisfying their own need to be part of the solution, rather than part of the problem (Schine 1990; Pereira 1990; Rutter and Newmann 1989). More interaction and collaborative problem solving creates a greater sense of community and deepens one's sense of social responsibility in a cyclic feedback loop.

True success in problem solving builds self-esteem, self-confidence, and sense of capacity (Bandura 1977). Problem-solving ability in daily life has been cited earlier as a protective factor for at-risk youth (Benard 1991). Activities that serve to enhance their problem-solving ability and help bring their locus of control for changing circumstances in their life or world within their reach build their resilience to negative factors (Rutter 1984). Almost all students report that service experience strengthens their self-confidence and their self-esteem (Boss 1994, Crossman 1989). Many ethicists believe that proper self-respect, what Kant terms the "principle of self-love" (Kant 1956, 20) to be our primary moral duty, for without self-respect we cannot respect others and think of their well-being (Boss 1995). The literature on social responsibility puts particular attention on moving at-risk youth and their communities from feeling helpless, to feeling able, and then to helping others.
The Task of Adolescence is to Discover One's Gifts

Adolescence is a time to find out what it is one is especially gifted for and enjoys doing, then finding a way to cultivate and share that. The service-learning approach to education encourages students to find a problem that is important to them that they are interested in solving, learn more about it, then take some action, reflect on what or was not accomplished, and integrate those learnings into new, more refined action. Kolb (1995) described this cyclic process of learning as the creation of knowledge through the transformation of experience.

At-risk students who participate in service-learning programs are called on to find their strengths and use them. They are confronted with the challenges and dilemmas of everyday life and interaction with people that prompt them to use their moral reasoning (Gardner 1991), leadership, decision-making, and communication skills.

Eyler et al. (1997) have continued in their efforts to provide empirical evidence about the effects of service-learning programs on cognitive outcomes. Most of the prior research in the field has focused on the effects of service learning on attitudes and values and there is less evidence of intellectual impact (Eyler et al. 1997). Only a modest correlation has been found so far to show that service can increase factual knowledge in conventional classrooms (Markus, Howard, and King 1993). Eyler and Giles (1997) see "growing evidence that the unique contribution of service is more likely to involve improvements in problem solving or more complex understanding of social issues" (1).
The basis for the Eyler, Giles, and Braxton study (1997) was the theoretical framework of cognitive scientists concerned with how "experts" and "novices" deal with ill-structured problems. The study used interview and survey data from their national comparative study (1995-1997) to:

1. Compare problem-solving strategies of students with extensive service experience and less extensive experience,

2. Identify changes in students' problem solving over the course of a semester in which they participated in a class with a community service component,

3. Compare changes in problem solving over the course of a semester between students who had intensive service-learning classes with well-developed integration of service and subject matter with students who experienced their service learning as an add-on option to the class, or who did not participate in a service option. (n. p.)

Interview protocols were analyzed using important variables from the expert/novice literature and an earlier pilot study. These included: problem finding, problem locus, casual complexity, solution complexity, community solution strategy, and personal strategies for community action. In brief, "expert" problem solvers tend to approach the social problems related to their service in a more complex and thorough way than "novices" with limited experience. Experts also are more likely to have well-developed strategies and rationales for citizenship action which show they consider the context of a problem in a more detailed and sophisticated way. Their counterparts are more likely to jump to quick solutions and tend to form simplistic analyses and plans of action. Experts tend to explore an unstructured problem and related information to obtain multiple perspectives, alternative interpretations, and to reduce the effects of any
bias. This groundwork helps them "frame" or articulate the problem and suggest possible defendable solutions.

The tests controlled for the intervening variables of age, gender, previous community service, and previous participation in service-learning classes. Nearly all results were significant at .01 or more. Preliminary results of the study showed that participation in a highly integrated and reflective service-learning course was a strong predictor in all six variables. "They were significantly more likely to demonstrate growth than those in moderate or low intensity service-learning experiences" (Eyler, Giles, and Braxton 1997, 1-3). Their findings show that service-learning experiences contribute to improvement in personal efficacy in problem solving. Further study of high school populations is in order.

Educational reformers and service-learning advocates stress the need to ground or relate classes and concepts to real-world settings where students can exercise their knowledge, judgment, and compassion. Youth, viewed as students and as citizens in a democratic society, need to be invited and encouraged to take up the challenge of understanding and addressing problems that are relevant to them. Their interest, energy, enthusiasm, and commitment are crucial to solving the interlinked social and environmental problems that face this and future generations.
Understanding Watershed Stewardship

We can find happiness in protecting the world around us not only because we cherish it for its awesome beauty, power and mystery, but because we cherish our fellow humans, those who live today and those who will live tomorrow.

Jacques-Yves Cousteau

This quote by the late pioneer of global ocean and land conservation sums up the context and rationale for addressing the problem of watershed stewardship. This particular problem was chosen because of its interest to the researcher. It has also captured the attention, imagination, and commitment of a growing number of communities and service-learning groups across the country and world.

Water problems are central to California's present and future economic, social, and spiritual well-being. Problems of water supply and water quality need to be addressed and solved by this generation of citizens. They are urgent and vitally interrelated to the behavior of human beings as they interact within their respective watersheds in the state. Solving the social problems around California's use of its water will guarantee its future; failing to do so will guarantee its end.

Why Protect Watersheds?
A Conceptual Framework

A watershed encompasses the forests, uplands, agricultural lands, streams, roads and other areas delivering water into a drainage, and their biotic communities. A healthy watershed:
- provides habitat for natural communities
- filters toxic pollutants originating from cities and farms
- recharges aquifers
- prevents soil erosion
- reduces salt water intrusion into aquifers
- controls flooding
- supports sustainable agriculture
- creates "greenbelts" in residential areas. (Watershed Institute 1996, display board)

History of Watershed Problems in California

Watersheds in California and around the nation have been severely degraded by freshwater diversion, filling of wetlands, pollution, and development (Watershed Institute 1996). The quality and quantity of surface and subsurface water is one of the most important environmental criteria used in gauging the quality of life from a public health perspective, and the prospects for future economic well in a given region. "Quality and quantity are interdependent, and the lack of one affects the other" (Greenberg 1993, 108). Despite recognition of the critical values provided by healthy watersheds, every year more wet areas are damaged than restored. Many local, state, and federal watershed plans have been produced recommending water conservation and wetland protection with little on-the-ground improvement.

Watershed stewards seek to work with partners in government, education, science, and nonprofit organizations to implement recommendations at the ground level to convert their region from a microcosm of watershed problems to a model for positive action (Watershed Institute 1996). Empowering individuals and communities to accept responsibility for environmental problems in their watershed and to commit to their resolution through multiagency, community-
wide, collaborative efforts is now the preferred approach to watershed planning and resource management by government agencies. The 1972 Federal Water Pollution Control Act and its revisions as the Clean Water Act and enactment of National Pollutant Discharge Elimination System standards have provided overarching federal legislation for the states to make all waters swimmable, fishable, and boatable (Greenberg 1993).

In recent years, citizens have continued to refine the practices of participatory democracy and collaborative problem solving. Planning and restoration efforts for entire watersheds covering tens or hundreds of square miles have been organized. Grassroots conservation organizations and government resource management agencies have shared leadership in sponsoring and coordinating these endeavors. Their basic aims have been to educate the public and stakeholders, to advocate for watershed enhancement and protection, and to participate in habitat restoration and monitoring projects.

Watershed-scale resource management approaches are successful because they build on reciprocal, interdependent relationships. Agency officials and personnel can offer sponsorship and technical expertise while citizen groups, schools, and nongovernmental organizations can provide person-power, enthusiasm, commitment, monitoring data, and a personal connection to their own watersheds. These efforts rekindle faith and hope in participatory democracy by providing opportunities for individuals and groups to communicate with each other and build their confidence in solving problems (MacGregor...
Watershed-scale resource management approaches are also providing practical examples of organizations that mimic the same dynamics and vibrancy found in nature which they are striving to represent. They are flexible, integrated, affirming, and self-renewing. Their strength is found in their diverse assemblage of individuals and viewpoints coming together in dialogue and common purpose. The sense of unity they generate comes from their systems approach to watershed/bioregional management. Vying, disparate interests, as between loggers and fishermen, farmers and urban dwellers, can be brought together. A common interest can be found in promoting a healthy watershed which serves the interests and well-being of every creature that lives in it. This higher level of concern is taken "not as individuals or as species, or even as organic beings, but as a community that includes the physical as well as the organic components of the region" (Berry 1990, 166).

Environmental stewardship can be thought of as an act of social responsibility, for when people act as trustees of water they are guaranteeing and protecting life itself. As history has taught those who have ears to hear, mismanagement of water supply and the watersheds that generate them has been the undoing of great civilizations in the past.

Water resource protection agencies have found that the single most important action they can take to create stewardship is to establish a volunteer-based, scientifically-based program which is fundamentally connected to decision making (MacGregor 1996). MacGregor believes that "successful monitoring
leads to stewardship; successful stewardship requires monitoring" (88).

Stewardship is viewed as problem solving. Monitoring is a way to stay on top of the problem of water quality and habitat integrity.

The Fifth Annual Volunteer Monitoring Conference: Promoting Watershed Stewardship held at the University of Wisconsin, August 3-7, 1996 conducted discussions of stewardship. The key elements of these various discussions were responsibility, action, and the future. "The critical elements of volunteer monitoring identified by the speakers were participation, credibility, communication, and action" (MacGregor 1996, 88). Citizen monitoring created local ownership of a water resource and gave them the tools to participate in decision making about water resources. Volunteer monitoring efforts are not just about celebrating a river or stream, or "understanding complex ecological connections." It provides people "with a unique means to govern their precious resources" (88). For a society at risk of being able to assure adequate water quantity and water quality, or fearful that the problem is out of its hands or too large to handle, gaining a means to make an individual difference to achieve those ends would be empowering. For an at-risk high school student with a low locus of control, learning attitudes and actions that he or she can take to identify and remedy problems in their watershed would tend to increase their locus of control and confidence. The solution is within their grasp. As volunteers, at-risk students are helped to make a connection between their beliefs and their actions
as individuals and citizens of the watershed they live in. They learn to form and live a conservation ethic (MacGregor 1996, 89).

The concept of the classroom has changed to include one's neighborhood and one's world. A new understanding has arisen that what is "at issue are the assumptions and values underlying our science, technology, economy, politics, and education" and that education holds the key to transforming the others" (Orr 1989, 50). This realization has helped to raise awareness of environmental problems which have implications for how people live or should live, and how schools and institutions, with their buildings and grounds, are designed to function.

The Adopt-a-Watershed program developed out of Hayfork, California, represents a good example of the new, interdisciplinary, action-based, research studies that involve all ages of students in real-life problem solving in streams, rivers, wetlands, estuaries, and bays close to their school. The watershed is the educational focal point for a minds-on, hands-on curriculum that celebrates the history, integrity, and potential of any given place. Teacher-training, program management, and age-appropriate lessons are provided to participating schools. Kindergarten students to high school seniors engage in a series of integrated field studies, habitat restoration, and monitoring efforts in cooperation with local land owners, ranchers, citizen groups, service organizations, resource management agencies, and scientists. The student-citizen empowerment and community organizing links that result from these kinds of interdisciplinary
environmental restoration initiatives like the Adopt-a-Watershed program are aligned with the goals of educational reform and service learning. Their constituent elements seem to meet the needs of at-risk youth for structure, purpose, meaningful roles, relevant content, and rigorous academic instruction. As a program, Adopt-a-Watershed attempts to embody the understanding that the concepts that underlie natural communities are the same that underlie human communities and human systems. Issues of sustainability and ecoliteracy as advocated by The President's Council on Sustainable Development (1996) and the California Guide to Environmental Literacy: A Systems Perspective (California Department of Education 1996a) are incorporated into the implementation of the Adopt-a-Watershed program.

Research on Environmental Restoration Service Learning

Two noteworthy authors in the academic literature that give background to ecologically-sustainable education and culture in which environmental restoration service activity is rooted are Bowers (1995) and Van Matre (1990). Dodge (1990), in his article "Life Work: Some reasons Why Environmental Restoration May be the Art Form of the Twenty-First Century," sees restoration as an art form of the future, "a new genre of the healing arts" (3). Jordan (1990) speaks to the ability of restoration to reshape the land of the injuries we've mindlessly inflicted on her and transform the human spirit in the process. The first systematic attempt at ecological restoration occurred in 1934. Native ecological communities were
I restored on three hundred or so acres of disturbed land at the University of Wisconsin at Madison with the help of Civilian Conservation Corps workers, and later, faculty and students.

Reforestation and soil rehabilitation efforts during the Great Depression and the Dust Bowl Days in the dry South can also be counted as significant early beginnings of restoration. More recently, contract tree-planters and worker-owned reforestation cooperatives fanned out from single-species recultivation practices that created unhealthy monocultural conditions into mixed plantings of native trees and grasses that historically grew together in forests to be rehabilitated. Trail repair crews in national parks and forests have helped to develop grassland, forest, and creek stabilization and restoration techniques. Recent large-scale restoration efforts in the U.S. occurred in Everglades National Park in Florida and Redwood National Park in Northern California. A three-year planning process has begun with an aim to produce an ecosystem restoration program for the San Francisco Bay and Delta that would be the country's biggest.

There have been two phases to the development of ecological restoration. The first phase emphasized the product of the restored community as an object in the landscape, the fact that a natural area was conserved. The second phase began in the 1970s and emphasized the value of ecological restoration to the restorationists as a process, a way of learning about the system being restored, and finally, a way of establishing an intimate mutually-beneficial relationship with it (Jordan 1990).
At least half the emphasis now on environmental restoration is on the effects to the person doing the restoring. It follows that a brief look is needed into what needs to be restored in the person of the at-risk high school student. Earlier generations of children spent more time outdoors during their formative years playing, wandering around, and exploring. Succeeding generations of children have spent more time indoors. Their contact with nature has been more vicarious, mainly known through television documentaries and videos. As a consequence, their sense of attachment to nature, knowledge about it, and respect for it has shrunk. Getting out in nature, getting one's hands dirty or wet, helps to reground youth who may be out of touch with organic life and its fundamental rhythms and stabilizing forces.

The literature review reveals little research on the benefits to participants of environmental restoration service learning. One notable set of findings was reported by Joe Follman, director of Learn and Serve, K-12 for Florida. He sees Learn and Serve students and AmeriCorps workers who participate in environmental service-learning programs gain knowledge about environmental issues through working on them. Florida students who participate in such projects get better grades, come to school more, and get into trouble less than they did before taking part. They also develop a greater sense of caring for others as a result of their participation (Follman 1996).

More recently, Lieberman and Hoody (1998) studied forty schools in thirteen states that utilized the environment as an integrating context for learning.
While not explicitly service-learning programs, these schools involved K-12 students in problem-solving and project-based activities in their community and natural surroundings. Archival data, interviews, surveys, and field observations from the study schools indicate that "students find learning more personally meaningful" and "learn to read, write, and do math more effectively within an environment-based context than within a traditional educational framework" (Lieberman and Hoody 1998, 22). The learning effects for students in schools that have this contextualizing, real-world focus are similar to Follman's (1996) and include:

* better performance on standardized measures of academic achievement in reading, writing, math, science, and social studies;
* reduced discipline and classroom management problems;
* increased engagement and enthusiasm for learning; and,

**Summary**

Human development theorists and researchers have explained adolescence as an important developmental stage in transition from childhood to adulthood. A wholesome adolescence requires that the individual experience concurrent development in cognitive, social, physical, emotional, moral, and spiritual domains. At-risk youth have the same developmental needs and potential as non-at-risk youth. Advocates for at-risk youth seek to develop their resiliency to the negative risk factors that may be prevalent in their lives. The characteristics of effective programs for at-risk youth are well known and well
documented. The characteristics listed in figure 2 serve as protective factors for at-risk youth and help them to help themselves. The best programs meet needs, bring relevance to lives, and embody the recommendations of the educational reform literature.

Service learning is a teaching methodology that recognizes the holistic needs of youth to be active learners and responsible citizens, linking their interests and commitment to addressing real community needs. Students can face challenges, build skills, and develop a sense of confidence and capacity in themselves. The involvement of youth in age-appropriate, well-supervised, service work with meaningful reflection activities can foster greater maturity, social awareness, problem-solving ability, and communication skills. It can earn them academic credit. There is a continuing need to study impacts of participation on students, schools, and communities. In particular, there is a need to better understand the effect which various program characteristics may have on participants.

Community development and youth development can occur hand-in-hand when schools form partnerships to further their service-learning goals. Economic revitalization, vocational preparedness, and ownership of the interrelated social and environmental problems in one's community are common outcomes of the civic renewal process engendered by service learning. School environments and programs that meet the needs of at-risk youth provide them with opportunities for success, inclusion, boundaries, accountability, acknowledgement, positive
relationships, meaning, and renewed hope. These are the main variables that appear to influence improvement in school attendance, sense of connectedness to community, sense of social responsibility, and sense of efficacy in problem solving.

Watershed stewardship is being actively promoted by environmental educators, community volunteers, natural resource managers, and government agencies as a way to demonstrate active citizenship and real-world problem solving.
CHAPTER III
METHODOLOGY

Introduction

The purpose of this study was to describe the characteristics of effective environmental restoration service-learning projects in selected California watersheds that produced gains for at-risk high school students who were enrolled in the programs. A second purpose was to describe the characteristics of service-learning programs that at-risk students and their teachers perceived to be most helpful in making gains in school attendance, sense of connectedness to community, sense of social responsibility, sense of personal efficacy in solving problems, and understanding of watershed stewardship, and to determine if a difference existed between those perceptions.

Research Design

This study was designed as both descriptive and ex post facto research. A descriptive, nonexperimental design was employed to gather information on the programs and their impact on participants. Descriptive research seeks to "describe systematically the facts and characteristics of a given population or area of interest, factually and accurately" (Isaac and Michael 1990, 50). Through a review and content analysis of archival data that described the three environmental restoration service-learning projects chosen for the study, their
key characteristics were identified and described. Telephone interviews, e-mail, and in-person interviews with the program directors were used to obtain additional information not available in program documentation. Preliminary archival research and telephone interviews with the directors allowed the researcher to learn the characteristics of each program and customize the written surveys for each program with that information. These key characteristics were placed into the rating/ranking portions of the survey so that respondents could assess the presence and helpfulness of the actual characteristics of their particular program, along with some universal characteristics of effective programs that had been embedded in the survey. Site visits and observations gave the researcher a first-hand feel for each program and its watershed restoration work.

An ex post facto criterion group research design was used because two groups, students and teachers, were compared across five variables or qualities, after the fact. This study identified similarities and differences between their perceptions of the program characteristics they thought to be present and most helpful. Prior year and program year school attendance records were reviewed to substantiate self-reports of participating students.

This study asked project participants (students and their teachers) to rate the degree to which elements of their service-learning programs were present in their experience of the program. They were also asked if they perceived them to be helpful in making gains in school attendance, sense of connectedness to
community, sense of social responsibility, sense of personal efficacy in solving problems, and understanding of watershed stewardship. Focus group questions probed sample groups of participating students to indicate why particular elements were or were not helpful. A focus group interview also probed the entire population of teachers to find why they thought particular elements were or were not helpful to students.

The independent variables in this study were specific program characteristics that were common or unique to the three programs. The dependent variables in this study were the gains made by students.

The decision to use both qualitative and quantitative data-gathering techniques in this research design was made for several reasons. Quantitative rating/ranking of the most beneficial program elements lent itself to a simple paper and pencil survey. The focus group interview, a qualitative method, was best suited to find out why the participants thought particular program characteristics were most beneficial to them (Eyler, Giles, and Schmiede 1996). "Telling one's own story" is an especially effective qualitative method to help youth open up to, and discuss, the underlying and interlinked issues of moral judgment and stewardship (Tappan and Brown 1989, 190). It was also a natural way for them to share their perceived growth in sense of belongingness (school attendance), connectedness, responsibility, and efficacy in problem solving. Naturalistic, qualitative methods of inquiry were more apt to find out what participants saw as significant in their experiences (Hendricks 1994), whereas a
quantitative method was appropriate for analysis of their ratings and rankings, and to facilitate comparison between students and teachers.

Cost and time were factors in the decision to use telephone interviews with the service-learning program directors because they were geographically very distant from the researcher. According to Frankfort-Nachmias and Nachmias (1996), the telephone interview is now generally accepted as a legitimate method of data collection. Its validity is comparable to that obtained through mail surveys and personal interviews. This claim is backed up in studies done by Klecka and Tuchfarber (1978), and Sudman and Bradburn (1982), which show that telephone interviews can provide higher response rates, relatively accurate data, and higher quality data.

Population and Sample

The population for this study was sixty-seven at-risk high school students and seven teachers who participated in three effective environmental restoration service-learning programs at public, alternative high schools in northern and central California. The three programs studied were Project H.A.W.K. at Cache Creek Continuation High School in Yolo and Woodland Mid-Town Court Community School; Nueva Vista High School in Concord, a small, necessary high school, an outreach partner of the Lindsay Wildlife Museum in Walnut Creek; and River School, a court-community school in Ukiah operated by the Mendocino County Office of Education. Figure 4 shows the locations of these study sites in northern and central California.
Fig. 4. Locations of environmental restoration service-learning programs for at-risk high school youth included in the study.
A purposive, nonprobability sampling method was used to select these three alternative high school environmental restoration service-learning programs for the study. Purposive sampling is a procedure that can be used when the subjects for research need to be chosen for specific reasons. After consultation with an expert panel, the researcher decided to make the sample representative of the most effective environmental restoration service-learning programs run by, or for, continuation high schools, small necessary high schools, or court community schools.

Continuation high schools are specially designed alternative programs for high school students who have failed or have disqualified themselves from participating in their normal high school. California has over five hundred continuation high schools which serve approximately 115,000 students year-round (California Department of Education 1995). Small necessary high schools are like continuation high schools but usually don't have their own campus. They are commonly found sharing space on an existing traditional high school campus, either in classrooms or portables. A court community school is for young people who are no longer eligible to attend any form of comprehensive education in their district, because they have been expelled, have great needs, or are on probation.
Use of Expert Panel to Nominate Programs

An expert panel was consulted to help nominate a group of programs for possible consideration, then to concur on the final selections. This panel included: the director of the California Department of Education's Environmental Education Division, the chief service-learning consultant to the CAL SERVE program at the California Department of Education, an advisor to the Alameda County Service Learning Partnership with the Alameda County Office of Education, the Co-Director of the AmeriCorps Watershed Project with oversight for operations in eleven California counties, a Richmond High School teacher/program developer with the Friends of the Estuary/San Francisco Estuary Project, and the Water Resources Education Coordinator, Non-point Source Section, Division of Water Quality, with the California Water Resources Control Board.

Effective programs were operationalized to mean those programs that were widely acclaimed by experts for their ability to consistently implement the five elements of high-quality service learning: integrated learning, high service, student voice, reflection, and collaboration. Inquiries by the researcher generated twenty-five programs for initial consideration. They were environmental restoration programs that had a service component and served at-risk high school students, in whole or part. The outstanding programs were identified from among the twenty-five, if their names were nominated by the experts on two or more occasions, independent of consultation with each other.
Ultimately, two programs, Nueva Vista High School and Project H.A.W.K., were selected and picked from the top five, after achieving concurrence from the expert team, after determining that it was logistically feasible to study the programs, and after reaching individual agreements of participation with their program directors. The third program, River School, a court community school, was found by the researcher, and already known to be exemplary by one of the expert panel members. It had been a pioneer in developing environmental restoration service-learning programs for adjudicated youth, possessed a strong track record, and was well-respected in the communities it served. The remaining panel members cleared it for inclusion in the study.

While the study was benefited by the inclusion of River School, it also suffered in several ways. First, the researcher was aware that the school had shifted its emphasis from environmental restoration service learning to more direct service to the social and educational needs of the its local community, Ukiah, prior to advocating for its inclusion in the study in the fall of 1997. Its director had assured him that some of the students who had participated in its earlier pioneering, environmental restoration projects were still at the school, though many had graduated. Since this study was ex post facto in nature, this researcher was satisfied that a statistically significant number of participants in this study sample from that site would have had those experiences to draw on when he surveyed and interviewed them in December of 1997. As it turned out, delays in approval of the researcher's methodology and fierce, "El Nino," winter
storm conditions caused a delay in data collection. The researcher wasn't able to access the program until January of 1998. By that time, several of the students whom he had hoped to have participate in his study had either graduated or moved out of the program. As a result, fewer students in the study sample had environmental restoration service-learning experiences that had influenced them. The remaining students had no direct, environmental restoration experience, save for some activities done in their community garden or while engaged in neighborhood clean-ups. While these at-risk students benefited from these experiences, the lack of relevant environmental restoration service-learning experience weakened the findings obtained from River School.

Secondly, the researcher was expecting to survey twenty-to-thirty students from River School, based on information from the director. Only eleven students out of a larger school population had expressed interest and turned in their informed consent forms signed by their parents by the day of data collection. Difficulties in getting parental consent forms back contributed in part to the low Ns encountered when this program was studied. The study lost some of its statistical significance, and therefore, its generalizability, because of its small, overall numbers.

The researcher wasn't pleased with these unexpected conditions at River School: few students with environmental service-learning experience and a low, turnout (N=11). He figured these difficulties came with the territory of wanting to study the severely at-risk. Also, there was no other alternative, public high
school program known to exist in California to take its place that met the
study's selection criteria. Table 1 lists the three programs included in the study,
showing program type, location, and sample size.

Table 1. Summary Table of Effective Environmental Restoration Service-Learning Programs for
At-Risk Alternative High School Students in California

<table>
<thead>
<tr>
<th>Program Type</th>
<th>Name of Organization</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>School or community-based nonprofit organization that offers a range of environmental restoration activities to participating school districts, varying in nature, intensity, and duration; adopt-a-watershed model</td>
<td>Nueva Vista Continuation High School, in cooperation with Lindsay Wildlife Museum</td>
<td>Concord, Walnut Creen (Galindo Creek—Mt. Diablo Watershed)</td>
</tr>
<tr>
<td>Court community school operated by a county office of education where service learning is being promoted as an educational methodology</td>
<td>River Community School</td>
<td>Ukiah (Cow Mtn.—Russian River Watershed)</td>
</tr>
<tr>
<td>Continuation and court community schools where environmental service learning is a core activity; formally affiliated with the AmeriCorps program; includes a focus on an inner-city environment; service learning is widely adopted throughout K-12 districts</td>
<td>Project &quot;H.A.W.K.&quot; Cache Creek High School Woodland Mid-Town School</td>
<td>Woodland, Yolo, Davis (Cache Creek—Sacramento River Watershed)</td>
</tr>
</tbody>
</table>

Students: 21
Teachers: 2

Students: 11
Teachers: 2

Students: 35
Teachers: 3
Total students: n = 67
Total teachers: n = 7
Instrumentation

Five instruments were developed by the researcher for use in the study. These instruments included a telephone interview protocol for program directors (appendix C), a survey for students (appendix E), a survey for teachers (appendix H), a focus group interview protocol for students (appendix F), and a focus group protocol for teachers (appendix I). The purpose of these instruments was twofold: to determine the characteristics of each program, and to assess the program characteristics which participants perceived to be most helpful in making gains in school attendance, sense of connectedness to community, sense of social responsibility, sense of personal efficacy in problem solving, and understanding of watershed stewardship.

The format of the two instruments for students and teachers allowed participants of each representative program to rate the degree to which program characteristics were perceived to be part of their experience of the program, and which, if any, characteristics they perceived to be helpful in making gains in the specified areas. Additionally, an open-ended question was provided to the subjects to state influences or other characteristics not identified in the survey that may have contributed to gains made.

Both student and teacher surveys opened by asking respondents for general identifying information (part 1). Part 2 gave students and teachers a chance to describe three major, environmental, community service activities they had done, along with approximate amounts of time spent doing each one. Two follow-up questions asked them to state what they enjoyed most about their
environmental work and what their favorite project had been and why. These
data gave the researcher a basis for determining the nature, intensity, and
duration of their prior service-learning experiences. The literature indicates that
these variables are important determinants in measuring the effects of service
learning on participants (Giles and Eyler 1994).

The student and teacher responses to questions in part 2 were coded with
respect to extensiveness of student service experience (figure 5).

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>extensive service-learning experience (over fifty hours a semester)</td>
</tr>
<tr>
<td>B</td>
<td>moderately-extensive service-learning experience (between twenty to fifty hours a semester)</td>
</tr>
<tr>
<td>C</td>
<td>limited service-learning experience (less than twenty hours a semester)</td>
</tr>
</tbody>
</table>

Fig. 5. Survey Letter-Coding Scheme

Part 3 of the survey allowed teacher and student respondents to rate the
presence of universal and program-specific characteristics using a Likert scale (1
to 6). A rating of 1 indicated the characteristic was "very true of their program"; a
rating of 6 indicated the characteristic was "not at all true of their program."

Students then completed forced-choice questions (part 4) as to whether any of
the program characteristics were helpful to them in making gains in the five
areas. They indicated their answer by circling "not at all," "somewhat," or "a lot."
If the students answered with a "somewhat" or "a lot," they were asked to
indicate what about the program may have contributed to those gains in open-ended formats that followed each question.

Additional questions in part 4 asked respondents to circle, if after participating in the program, they were absent from school, "less than before," "same as before," or "more than before," and, to what extent did they feel more or less engaged in their class work after the program, using the same qualifiers. Respondents also were given open-ended questions about what they liked most about the program and what changes might be made to improve it. Part 5 concluded the survey by asking for any additional information about their experience in the program they wanted to convey.

The survey for teachers followed the same format which allowed them to shed light on the program characteristics they thought had been most beneficial to students. Part 3b of the teacher survey took the place of part 4 in the student survey. Part 3b referred the teacher's attention back to the previously listed, universal and program-specific characteristics, to indicate the characteristics they thought were most helpful to students. "Yes" and "no" questions were posed to them in each of the five variables: Did any of these [characteristics] make them want to go to school more, make them feel like they belonged to their community more, motivate them to help out more in their community, boost their confidence in solving problems, and help them be better watershed protectors? If they answered "yes," they were asked to rank order up to three characteristics that were "most useful," "second most useful," and "third most useful," in helping
students. They indicated their rank ordering by writing its corresponding number found in part 3a. Part 4 of the teacher survey was the same as part 5 of the student survey.

The student focus group interview protocols contained semistructured focus group questions to probe why particular program elements were or were not helpful to students. The questions sought to determine what, if any, influences their service-learning experiences have had on subsequent decisions to engage in environmental restoration or volunteer work in their community.

The teacher focus group interview protocol asked the same kinds of questions asked of students, but from the teachers' point of view. Additionally, teachers were asked to consider the possible impact of program characteristics on students and rank the most useful, second most useful, and third most useful aspect of the program in making gains in the five research variables: school attendance, sense of belongingness to community, social responsibility, confidence in solving problems, and understanding of watershed stewardship.

The surveys and interview protocols were reviewed by the researcher's study committee and a panel of experts to establish the content validity for the instruments, and to further refine them. The panel was made up of Bruce Stewart, Director of the Return of the Natives Restoration Education Project (RON), Laura Lee Lienk, its Education Coordinator who also serves as Service Learning Coordinator for Applied Science and Technology at the Service Learning and Watershed Institutes at California State University, Monterey Bay
(CSUMB), Jane Brown, an outside evaluator for CSUMB's service-learning program, and Angela Schmiede, an expert in focus group research and graduate student at Stanford University.

The expert panel was asked to determine the appropriateness of the surveys for collecting data about the variables outlined in the research questions. According to Gay (1987), establishing content validity for the instrument is an essential step in self-report research. The panel was asked to assess whether the survey questions would: (1) elicit the environmental restoration service-learning program characteristics perceived by at-risk students and teachers as most helpful in making gains; (2) allow for open-ended responses and probes to determine why specific program characteristics were or were not perceived to be helpful; and (3) elicit other impacts their experience may have had on their current attitudes, values, and knowledge, as well as future plans.

**Pilot Study of Student Survey and Student Focus Group Protocol**

An initial field-test of the interview protocol and survey was completed during a focus group of ten former and current students from the RON Project at the Watershed Institute at CSUMB. The field study sample was made up of five students from RON's summer internship program, two students who did Watershed Institute service-learning work with younger students, and three students from Alisal High School's "Women in Science" club. These at-risk students had several intensive WI/RON experiences including: construction of an outdoor classroom, greenhouse propagation of native plants, field restoration
activities, and/or attendance at a daylong habitat restoration symposium during 1996-1997. Since the RON program was excluded from the study because of the researcher's affiliation with it, this school and community-based, nonprofit organization was selected as a field-test site for the survey instruments and focus group interview protocol.

**Data Collection Procedures**

Introductory telephone calls were made to the program directors or coordinators of environmental restoration service-learning programs that were recommended by the expert panel to the researcher. During the initial contacts the researcher asked questions to get an overview of each program, determine if the program had a service component, and if it served at-risk, high school students, in whole or part.

The researcher confirmed with the programs their participation in the study and what it entailed. Program directors received a cash stipend in advance to compensate them for their participation in the study, preparing their organization, and helping with the organizational details of the study in anticipation of the researcher's visit.

During the course of repeated site visits and with the help of phone/fax communications over a five-month period, the researcher interviewed the program directors to obtain program descriptions, obtained the needed attendance data from the school or district office, personally administered the surveys to students and teachers, and conducted two, 1-hour focus groups with
students and one, 1-hour focus group for teachers at each site. General observations were also made of student-teacher interaction at their school site and of their local watershed restoration projects.

Table 2 shows the number and total percentage of students who completed the written surveys by program, and across programs. Over-all, sixty-five out of a possible sixty-seven students (97 percent), completed the survey. Seven out of seven teachers completed the survey for a 100 percent response rate.

Table 2. Number and Percentage of Student Survey Respondents, by Program, and Across Programs (N=65)

<table>
<thead>
<tr>
<th>Program</th>
<th>Number</th>
<th>% of Program</th>
<th>% of Total Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nueva Vista High School</td>
<td>21/21</td>
<td>100.0</td>
<td>31.3%</td>
</tr>
<tr>
<td>River Community School</td>
<td>11/11</td>
<td>100.0</td>
<td>16.4%</td>
</tr>
<tr>
<td>Project H.A.W.K.</td>
<td>33/35</td>
<td>93.9</td>
<td>49.2%</td>
</tr>
<tr>
<td>Totals</td>
<td>65/67</td>
<td></td>
<td>96.9%</td>
</tr>
</tbody>
</table>

Table 3 provides a breakdown of student survey respondents, by grade level. Ninth graders were in the minority (N=7), with the preponderance being older students (N=58), equally distributed across the higher grades.

The totals at the bottom of table 4 show a bell curve distribution of extensiveness of service-learning experience by females and males from extensive experience to limited experience across the three programs. The only exception to this pattern was in the fact that there were almost twice as many
males with extensive experience (N=10) as females (N=6). An equal number of females (25 percent) and males (25 percent) had moderately extensive experience.

Table 3. Student Survey Respondents by Grade Level

<table>
<thead>
<tr>
<th>Grade Level</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>9th</td>
<td>7</td>
<td>10.8%</td>
</tr>
<tr>
<td>10th</td>
<td>21</td>
<td>32.3%</td>
</tr>
<tr>
<td>11th</td>
<td>18</td>
<td>27.7%</td>
</tr>
<tr>
<td>12th</td>
<td>19</td>
<td>29.2%</td>
</tr>
<tr>
<td>Total</td>
<td>65</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Table 4. Number and Percentage of Students in Study, by Extensiveness of Service-Learning Experience, and by Gender (N=65)

<table>
<thead>
<tr>
<th>Program</th>
<th>Extensive Experience</th>
<th>Moderately-Extensive Experience</th>
<th>Limited Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>NVHS (N=21)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>0</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>Male</td>
<td>0</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>RCS (N=11)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>4</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Male</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>H.A.W.K. (N=33)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>2</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Male</td>
<td>7</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>Total females</td>
<td>6 (9%)</td>
<td>16 (25%)</td>
<td>9 (14%)</td>
</tr>
<tr>
<td>Total males</td>
<td>10 (15%)</td>
<td>16 (25%)</td>
<td>8 (12%)</td>
</tr>
<tr>
<td></td>
<td>16 (24%)</td>
<td>32 (50%)</td>
<td>17 (26%) = 100%</td>
</tr>
</tbody>
</table>
When analyzed by program, differences appeared. Nueva Vista High School had no students with extensive, service-learning experience at the time of data collection (more than fifty hours a semester). Many veteran students who had been with the program for several years had just graduated at the end of the last school year, or at the end of the first semester of the 1997-1998 school year. Female NVHS students with limited experience outnumbered their male counterparts five-to-one. The majority of River Community School students had extensive service-learning experience. Since Project H.A.W.K. had twice as many males as females, males also had up to double or triple the amount of service-learning experience as females.

Two, student focus group interviews were conducted at each site, ranging in size from three to six students. The small size of the focus groups provided for frequent, first name-basis interaction throughout the interview. It made it easy for the students and researcher to build up trust and rapport with each other. This was important in order to draw out the richest and most honest feedback from the students. Typically, many at-risk youth have had negative interactions with adults. The researcher wanted the students to have a positive experience, and the small focus groups contributed to that.

Focus group interviews at each site also probed the entire population of teachers (N=7) to find why they thought particular elements were or were not helpful to students. In the case of River Community School, the two teachers were not available at the same time for a focus group interview, so they were
interviewed separately. The respondents' narrative responses that described
why they identified certain characteristics of their program as "helpful" in making
gains were categorized and summarized as part of the analysis of data.

Table 5 shows the number and percentage of students who participated in
the focus group interviews. These data show that the number of students who
participated in focus group interviews from each program ranged from nine to
eleven. Forty-three percent of the total students in the study were interviewed.

Table 5. Number and Percentage of Students Who Participated in Focus Group Interviews, by
Program, and Across Programs

<table>
<thead>
<tr>
<th>Program</th>
<th>Number</th>
<th>% of Program</th>
<th>% of Total Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nueva Vista High School</td>
<td>9/21</td>
<td>42.8</td>
<td>13.4%</td>
</tr>
<tr>
<td>River Community School</td>
<td>9/11</td>
<td>81.8</td>
<td>13.4%</td>
</tr>
<tr>
<td>Project H.A.W.K.</td>
<td>11/35</td>
<td>31.4</td>
<td>16.4%</td>
</tr>
<tr>
<td>Total</td>
<td>29/67</td>
<td></td>
<td>43.2%</td>
</tr>
</tbody>
</table>

The researcher intended to select students randomly from each site to
participate in the focus groups. As it turned out, only one of the six focus groups
was constituted by random selection. That was the focus group with Woodland
Mid-Town Court Community School students (participants in Project H.A.W.K.).
The remaining five focus groups in the study were made up of convenience
samples of students who were present the day of the interviews, had their
informed consent form signed by a parent if they were under age, and were
interested and willing to participate.
Statistical Analysis of the Data

Program descriptions provided by telephone interviews, directors, and analysis of archival data were summarized by program and compared across programs. Common characteristics were noted in summary tables. For nominal variables, frequency distributions (based on both counts and percentages) were compiled for the total sample and the two respondent groups of students and teachers. For ordinal variables, means and standard deviations were used as the summarizing data. Several different data summaries and methods of display were prepared for each of the four research questions.

Data Analysis for Research
Question One

Telephone interview and archival data obtained from the directors or coordinators of the three alternative high school environmental restoration programs were used to ask and answer research question one. Narrative descriptions of the characteristics of Project H.A.W.K., Lindsay Wildlife Museum/Nueva Vista High School, and River Community School were written based on these data. A table was used to summarize the common characteristics of these effective service-learning programs. Semantic coding techniques were utilized in the content analysis of each program and were drawn upon to make cross-program comparisons.
Data Analysis for Research Questions
Two and Three

Research questions two and three were descriptive. Descriptive statistics were used to report the findings for these questions. The statistical techniques of frequency, mean, standard deviation, and percentages were used to report which, if any, program characteristics students and teachers found helpful in making gains. Profile comparisons of mean responses of students and teachers to the presence of the program characteristics and their relative impact provided a visual display of the data.

Transcripts of the in-depth focus groups were made. The data in the transcripts were then content-coded by the researcher and an expert outside reader. Perception checks were made between the two readers to assess the accuracy and consistency of their coding to ensure interrater reliability. Qualitative data analysis techniques were utilized to determine frequency of response and categories of response from the coded, focus group data. Response patterns were used along with quotations from the focus groups to substantiate both positive or negative survey findings.

Data Analysis for Research Question Four

Data from question number four were treated descriptively. Frequencies of response for students and teachers were compared for each variable within each program and then across programs. Mean responses of students and teachers were calculated and compared with the use of simple correlational tests, obviating the need to use the more esoteric Rank-difference (Rho) and
Kendall's Tau correlations. The latter tests only give researchers decimals to look at, whereas the former provide for a more user-friendly and more readily understandable visual display of results. Statistical analyses of mean scores checked for reliability and determined to what extent students' responses correlated with their teachers' responses. Regression runs would have been difficult because of the disparity between the small n for teachers (N=7 teachers) compared with the larger N for students (N=65 students).

Limitations of the Study

The study may have been limited in some way due to the following conditions:

1. This study relied on the perceptions of directors or coordinators of three environmental restoration service-learning programs and participating at-risk high school students and their teachers. "Perceptions are always open to questions relative to reality" (Bader 1994, 56).

2. Some students who had difficulty with the act of writing and spelling gave limited, open-ended, survey responses which may not have been indicative of their complete thoughts and feelings.

3. The terms "problem solving" and "watershed stewardship" are more widely used and understood by educators, scientists, and psychologists than by youth in their everyday life and sense of themselves, contrary to the researcher's expectation and field-testing. The lack of a common understanding of what those terms meant by many student survey respondents and student participants in
focus group interviews could account for the variance and weakness of reports by students to these two variables.

4. The limits of overly conservative, self-report data are in evidence with some of the students' "not at all" responses on their surveys.
CHAPTER IV

THE FINDINGS OF THE STUDY

Introduction

This chapter reports the results of the quantitative and qualitative data gathered from program directors, students, and teachers who participated in the study. The findings of the study are presented by research question, broadly divided into two sections, accompanied by analysis.

Findings of the Study

The first section describes the common characteristics of the three environmental restoration service-learning programs studied with the use of a summary table and narratives to answer research question one. The second section presents and compares the perceptions of participating students and teachers by individual program, to determine the program characteristics which they perceived to be most helpful in making gains in school attendance, sense of connectedness to community, sense of social responsibility, sense of personal efficacy in problem solving, and understanding of watershed stewardship. Research questions two, three, and four were answered by an analysis and presentation of quantitative and qualitative data.
Report of Findings for Research Question 1

What are the common characteristics of effective environmental restoration service-learning programs for at-risk high school youth in selected California watersheds?

This question was answered by reviewing the literature on effective programs for at-risk youth (figure 2, chapter II) and the principles of good practice in combining service and learning (figure 3, chapter II). Content analysis of archival data from the three "effective" programs and phone interview transcripts with their directors allowed the researcher to confirm the program characteristics they thought were key to the successful functioning of their respective programs. Each program characteristic/survey item received a semantic code in the form of a word or phrase which linked it to the literature on effective programs for at-risk youth. Many of the program characteristics received multiple coding which illustrated a powerful point. When programs focus on a relatively few, but key characteristics, they create conditions for the manifestation of many of the other, subsidiary principles of effective practice. Table 6 presents twelve common characteristics found in effective environmental restoration service-learning programs for at-risk youth.

Nueva Vista High School, River Community School, and Project H.A.W.K. (also H.A.W.K. or HAWK) were found to embody these characteristics of effective programs. The narratives that follow illustrate their implementation given the unique circumstances and call of each program.
Table 6. Common Characteristics of Effective Environmental Restoration Service-Learning Programs for At-Risk Youth

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Dedicated, caring staff</td>
<td>Founders, current directors, principal, staff, and community partners are dedicated to working with at-risk youth. They feel a special calling, carry a vision, and possess single-minded determination to succeed. Staff value students and convey that through their personal, respectful, trusting manner. Students receive one-on-one attention from adults, and can access their teachers or support staff if they need help. Staff are fair and consistent. The teachers and the &quot;principal&quot; or &quot;director&quot; are addressed on a first-name basis. This practice is important for two reasons. First, it expresses a genuine feeling of regard and affection for the student and creates an atmosphere of informality and ease. Second, it conveys to the student that the adult is someone who is at his or her side in a mutual, collegial relationship. While teachers and staff retain authority and legal responsibility, they do not hold it over the student with a sense of superiority in a top-dog, underdog relationship.</td>
</tr>
<tr>
<td>2. Interdisciplinary arrangements and collaboration</td>
<td>Programs that thrive are collaborative in nature. Communication and ongoing planning between school, community organizations, businesses, and agencies aim to solve several, interrelated educational, social, and environmental problems using a systems approach.</td>
</tr>
<tr>
<td>3. Hands-on learning that is fun</td>
<td>Active approaches to learning and engagement in real-world problem solving are generally perceived as more interesting and appealing to at-risk youth. They stimulate the brain, excite creativity, raise energy levels, and provide more of an educational challenge. Active participation tends to increase a sense of membership and belonging. Hands-on activities also give students something to look forward to doing when they come to school, rather than just sitting in a chair and reading a book or listening to a lecture. They often take youth outside the classroom into fresh air, and give relief from the penned-in atmosphere of most traditional school settings.</td>
</tr>
<tr>
<td>4. Supportive, success-oriented environment</td>
<td>A nurturing staff and a thoughtfully designed and managed program support incremental learning and success in at-risk youth through their individual work, or participation in cooperative projects. Students are encouraged to achieve goals and to be held accountable for their attitudes and actions. The presence of positive, supportive adult role models can help students remove impediments to learning that formerly spelled their failure. Students learn the relationship between behaviors and outcomes.</td>
</tr>
<tr>
<td>Characteristic</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>5. Opportunities to demonstrate competence before peers and adults</td>
<td>Effective programs provide opportunities for at-risk youth to prove to themselves and to others that they can make a difference. They provide formal, public recognition for their accomplishments, as well as informal acknowledgement and encouragement. The confidence that comes from a developing sense of competence, from making or doing something successfully, or taking on a challenge, breeds genuine self-esteem and a healthy self-concept as one who is capable and valuable. Being seen in a positive light by community members, young and old, is a powerful antidote to the broadly-internalized message that at-risk youth are no good, worthless, and a source of trouble.</td>
</tr>
<tr>
<td>6. Get back into the mainstream</td>
<td>Program directors and program staff share a common aim to help at-risk youth graduate from high school, and get back into the mainstream of society. They assist them in learning to participate in the world of work in a productive, responsible manner. Important social skills, communication skills, and problem-solving strategies are taught so that at-risk youth know how to hold down a job, and care for themselves and others in an interdependent world.</td>
</tr>
<tr>
<td>7. Service learning tied to applied academics</td>
<td>Effective programs help at-risk youth make connections between their academic subjects and their community service work. In doing so, they help them discover a sense of relevance and motivation to learn that may have been missing or weakly instilled. This can drive them to put out the effort to acquire the basic skills and course credits they need to graduate, and additional skills, more in line with their personal interests and life goals. Reflection, journaling, and discussions help build greater personal, social, and career awareness. This leads to at-risk youth taking a more proactive stance. Their success or failure is in their hands, not someone else's.</td>
</tr>
<tr>
<td>8. Sense of ownership cultivated</td>
<td>Successful environmental service-learning programs offer participants a chance to do meaningful, exciting work which fuels a sense of belonging and continued involvement. These programs develop positive track records and a reputation for doing good. Participants develop a sense of pride and ownership in them. They become their best spokespersons and advocates. The ownership and loyalty that excellent programs cultivate is exhibited in a greater sense of caring and commitment to program staff, program goals, and fellow participants.</td>
</tr>
</tbody>
</table>
Table 6—Continued

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9. Leadership skill and initiative fostered</td>
<td>Service-learning programs cultivate the leadership ability of student, teacher, and community participants. They build on a person's interests and strengths and treat problems or weaknesses as opportunities. Cooperative problem-solving and communication skills are modeled and taught. Students are encouraged to find their voice and share it in advocacy and outreach roles. Challenges are sought after or faced when encountered. Students learn not to give up when something unexpected or difficult threatens the accomplishment of their objective.</td>
</tr>
<tr>
<td>10. Choice in activity selection</td>
<td>Students are offered a choice of service-learning activities to participate in based on their interests. They have varying degrees of involvement in program design, implementation, and evaluation based on their maturity and experience levels. The extent and variety of activity choices available within a given project, or among several projects, vary from program to program.</td>
</tr>
<tr>
<td>11. Parental assistance and involvement generated</td>
<td>Each program uses some form of initial suitability screenings to ensure that at-risk youth admitted into the program have the support of their family or guardians. Positive bonds between the family and school are forged that support the at-risk youth in learning and maturing to take more personal responsibility for their life and education. Subsequent contacts reinforce this mutually beneficial support network.</td>
</tr>
<tr>
<td>12. Sense of stewardship</td>
<td>Effective programs help participants care about their school, community, and landscape. They learn to demonstrate this ethic through the individual choices they make in their lives with their friends and families. They develop commitment to helping others in need, and to healing the land. As at-risk youth learn to give back to their community in various ways, they learn to feel renewed hope for their own lives. They experience a process of individual redemption as they assist in the restoration and revitalization of their natural world.</td>
</tr>
</tbody>
</table>

Nueva Vista High School

Setting, background, and description of Nueva Vista High School's program in partnership with the Lindsay Wildlife Museum—Contra Costa County, California. Nueva Vista High School (NVHS) is located in Concord, California,
and the Lindsay Wildlife Museum, its chief partner, in the adjacent community of Walnut Creek in Contra Costa County, northeast of the San Francisco Bay. These communities lie in the Livermore Valley which receives the north drainage of the Mt. Diablo watershed. The most significant water-related problems which the locale faces are: nonpoint source pollution of tributary streams and creeks in the urban and suburban areas, rural hillside and creek erosion due to overgrazing and habitat loss, point-source pollution of the tidal sloughs and bay waters downstream in the Carquinez Straits and San Pablo Bay from oil refinery and transport activity, and deterioration and loss of native grassland, oak woodland, riparian, and slough habitat from housing, commercial development, roads, and overgrazing.

NVHS is a small, necessary high school established in 1991 to serve the alternative education needs of youth in the Mt. Diablo Unified School District. The school is two classrooms and a portable located on the western corner of Clayton Valley High School. The staff consists of one full-time administrator, two full-time teachers, and two, part-time, support personnel. They serve a maximum of forty students mainly from comprehensive high schools in the district.

The environmental restoration service-learning program at NVHS is four years old, and occurs in partnership with the Lindsay Wildlife Museum, the Jane Goodall Institute, the Koret Foundation, and the City of Concord. It grew out of the combined vision of its principal and founder, Julie Hernandez, and Jeff Hicks, Youth Program Outreach Manager with the Lindsay Wildlife Museum. Julie
desired to give Nueva Vista students a broader experience of life by teaching them "to be good citizens and community members" through their experience as volunteers and leaders. Jeff's goals were to create opportunities for students to be involved in job skill training that relates to the environment, and to create a sense of ownership for natural resources through student participation in the actual care of those natural resources.

**Program characteristics.** NVHS's service-learning program, in partnership with the Lindsay Wildlife Museum, emphasizes environmental cleanup, water quality monitoring, and environmental enhancement projects along nearby Galindo Creek, an important drainage and wildlife corridor between Mt. Diablo and Pacheco Creek. It also conducts community advocacy, educational outreach, and cross-age mentoring to promote greater stewardship of the surrounding watershed.

A special "Science Projects" class created by NVHS faculty serves the academic and service-learning needs of students in the program. Approximately eighteen students participate in the class on a daily basis. Their specific function is to plan, implement, and promote the partnership throughout Contra Costa County. Students are accomplishing this function through the following roles:

- Weekly water quality monitoring
- Habitat clean-up and enhancement
- Public presentation development
- Web page construction and publishing
• Database management

• Project planning and implementation

Program accomplishments. The partnership organized two major cleanups and a tree-planting project along Galindo Creek during its first year of operation in cooperation with the City of Concord Parks and Recreation Department. The cleanups "netted over 2.5 tons of trash and over fifteen cubic yards of green waste which were mulched and reused in the planting projects" (Hicks 1997, 1). The Galindo Creek is now cleaned up annually, with noticeably less litter to pull out of the waterway and adjacent city park. Students participated in an enhancement of a Monarch butterfly habitat along three sections of the creek by out-planting four species of favored, host plants of the insect. They also learned to raise butterfly larvae and catch, tag, measure, record, and release butterflies as partners in the Lindsay Wildlife Museum's Monarch Research Program. NVHS students taught preschool museum visitors about the Monarch butterflies' migration to Mexico and translated messages into Spanish to be sent to students in Mexico who are participating in a cultural and scientific exchange on butterflies.

The proximity of NVHS to Galindo Creek makes it a natural organizer of an ongoing water quality monitoring program. Students are trained in how to scientifically collect valid water quality data using proper protocols. Data are collected from the field weekly, then entered into an electronic database at school. Five water quality parameters are tested to gauge and track the health of
the creek: dissolved oxygen, pH, turbidity, conductivity, and temperature. These water quality data are useful to citizens and government officials interested in the health of the creeks. NVHS has established communication links with other schools, and is participating in international, state, and regional data exchanges. A student-designed web page has been created. Current and potential service-learning partners and funders have been invited to the campus to observe and enjoy the creek projects in action.

**Program evaluation.** The Lindsay Wildlife Museum has no formal evaluation to measure the impact of its environmental restoration service-learning partnership with Nueva Vista High School. While formal evaluation is done on other programs of the museum, Jeff has relied on informal interviews with students and faculty, and monthly records and reports submitted of volunteer hours which individuals have put into the museum's partnerships and youth programs, to assess their effectiveness. Jeff's informal criteria for success are participation and enthusiasm of volunteers. A five-year, longitudinal study was begun in January 1998, to follow students through the program and track where they go, and what they do.

Julie's program evaluation measures are also informal in nature. Students don't receive grades for their participation in service-learning projects, but they do earn academic credits toward their graduation. Her main criterion is effort shown. Full-group discussions and journaling take place after significant projects to determine and reflect on what was done and learned.
Program recognition. The NVHS Galindo Creek partnership with the Lindsay Wildlife Museum has received three distinctions in recognition of its efforts to provide alternative education to students that meet both student and community needs.

1. The program was selected as a Program of Excellence by the Contra Costa Charter Association of California School Administrators.

2. Nueva Vista was the only continuation high school represented at the National Adopt-A-Watershed Leadership Training Institute in the summer of 1997. This program was a national competition and groups from fifteen different states were represented.

3. The State of California Volunteer Monitoring Coordinator has chosen the Galindo Creek partnership as a model for related student populations throughout California. (Mt. Diablo Unified School District 1998, 11)

Schools in Walnut Creek, Oakland, Crockett, Rodeo, Pinole, Lafayette, and Richmond are in the early phases of environmental restoration service-learning program development with the Lindsay Wildlife Museum. Their programs are patterned after NVHS's model, but with local adaptations.

Summary of program characteristics of Nueva Vista High School's environmental restoration service-learning program. An analysis of the program characteristics of NVHS's environmental restoration service-learning program shows that it possesses many of the traits of effective schools and programs that meet the needs of at-risk youth (see figure 2 in chapter II). It is also implementing many of the principles of good practice in combining service and learning (see figure 3 in chapter II).

NVHS staff are dedicated to creating a supportive, academic and social
environment while maintaining reasonably high expectations. The sense of community which is nurtured at NVHS encourages student membership and vital engagement in both school and service activities. The student body is reflective of the ethnically diverse population of California with Hispanic, Anglo, Black, Asian, and Native American students currently enrolled.

Staff are noted for being consistent and fair in their treatment of students. Their flexible use of individual and group instruction, hands-on activities, technology, and frequent field trips entice disinterested students to get involved in their own learning. The energy and air of new things constantly being planned at school arouse interest, and create an educational setting to which most students look forward to coming to every day. The choice students have to participate in various activities, though limited, is a further incentive to active involvement in their own learning. NVHS believes that learners who have a choice in activity selection can more readily discover what their personal interests, values, and talents are, which are important components to self-knowledge and maturity.

NVHS students who are engaged in hands-on, environmental restoration service learning have many natural opportunities to demonstrate their competency in new skills before their peers. Conversely, they have the freedom to fail, or fall short of their expectations. This characteristic of psychological and emotional safety is a key ingredient in effective learning environments. It is especially important for at-risk students who may be trying to counter many past
experiences where they "succeeded in failing" and have painful memories around doing so. Encouragement and rewards are offered which emphasize the intrinsic joy and satisfaction which comes from accomplishing individual and group goals, and the good feeling one receives when one acts on behalf of others or the environment. The school and its community service-learning partners also provide at-risk youth with more extrinsic, public acknowledgements of their contributions in the form of end-of-the-year, or end-of-the project, certificates and letters of appreciation. Articles and photographs about the school's creek partnership appear in the local newspaper and school district newsletter. This publicity underscores the interagency cooperation that takes place; the positive roles which at-risk youth play; how the project channels the energy and creativity of youth to address the social and environmental problems in their community; that the kids are problem solvers, not problem makers. Project participants feel increased pride in themselves and their community. Adults who have worked with NVHS students develop a renewed belief in youth. They see their capacity to work together and make a difference. The career counseling and job placement service which students have access to on a weekly basis further prepares them for active, responsible roles in the community.

The school's service-learning partnership is designed to provide participants with a new view of themselves, a new way of looking at the world, a kind of renormalization. This significance is embedded in the heart of the
school's name, "Nueva Vista." These words of its founder and principal, Julie Hernandez, give practical expression to this vision to meet the needs of at-risk youth: "For our student population, the creek projects are particularly meaningful. It represents an initial phase in restoring their confidence. They once again believe that they can succeed in this work, in school, and in their lives. They see hope for the future" (Hicks 1997, 2).

River Community School

Setting, background, and description of River Community School's program, in partnership with the Mendocino County Office of Education—Mendocino County, California. River Community School (RCS) is located in the town of Ukiah, California, two hours north of San Francisco. The town itself is located in the Ukiah Valley in southern Mendocino County. Two-thirds of the entire county population live in Ukiah. The Russian River flows nearby and is the main drainage for a vast, surrounding watershed. It courses south/southeasterly into Sonoma County, then west into the Pacific Ocean.

The most important environmental problems affecting the watershed are hillside and stream erosion and habitat loss due to past and present clear-cut logging and monocultural forestry and viticulture practices. A subwatershed of the Ukiah Valley is Cow Mountain, 150,000 acres of hill and canyon country managed by the United States Bureau of Land Management. This is an area where past RCS students have done a lot of restoration work.

More recently, community service endeavors of RCS have focused away
from the environmental needs of the wilderness and onto the social, economic, and educational needs of people in the city of Ukiah and outlying areas of the county. The chief partners of the program are Mendocino County Office of Education, the City of Ukiah, Mendocino Private Industry Council, United States Forest Service and Bureau of Land Management, California Department of Fish and Game, California Conservation Corps, a nonprofit organization called Keep Mendocino Beautiful, and local service clubs. Current community service projects focus on organic community gardening, food service, neighborhood cleanup and painting projects, light construction and carpentry work, assistance to the elderly, the poor, and the homeless, light clerical and graphics work, and cross-age, intergenerational mentoring of primary grade, special education students, in partnership with senior citizens.

The school is several nicely painted and landscaped portables, an open space commons, a basketball court, community garden, and access to a wood and metal shop owned by the adjacent Mendocino County Office of Education. There are two full-time teachers, one an ROP teacher and the other, a court-community school teacher, two teacher aides, and a counselor. Additionally, students have access to a nurse, their probation officers, and vocational experts that volunteer in their food service and construction modules.

Youth are referred to the program by their probation officer or school counselor, and primarily come from Ukiah Unified School District. A quasi-job interview is used as the mode of meeting and screening new students for
admission into the program. Students are admitted on a trial basis, during which time they have to prove they will be regular attendees who are sincerely committed to the program. A minimum time commitment of 120 days is required of students. The average length of stay is three semesters.

The community service-learning program at RCS had its beginnings in 1989, guided by its current coordinator, Dennis Azyltine. His eight years as a lead teacher for incarcerated youth at Mendocino County Juvenile Hall gave him a chance to learn what worked with them, and what didn't. Kids that were in crisis and who had committed crimes often complained to him that "school had no relevancy to them." They became disinterested in school and were usually truant because "it offered them no challenges." Dennis found out about service learning and saw connections that could benefit youth who fit the juvenile offender profile. It met a lot of their developmental needs, gave them a challenge, and opened up youth to their leadership potential. Besides building up a positive work ethic, job readiness skills, and confidence in accomplishing concrete tasks, it allowed them to "become part of the community in a positive way, and make a difference in their communities."

Another factor which makes participation in RCS’s style of learning attractive to prospective students is the possibility of qualifying for a paid job in their particular service-learning module. Federal Job Training Partnership Act (JTPA) monies channel into the program for economically disadvantaged youth who show merit, willingness to work, and drive. They can work eight hours a
week on their various projects, or around two hours a day after school. Many students are using this money to offset shortages in their family's budget.

Program characteristics. Students at RCS can choose to participate in one of four service-learning modules. They are horticulture, food service, construction, and mentoring (cross-age tutoring in reading). Academic lessons at RCS are tied into vocational skills training which students receive in their module of choice. The academics are presented in the morning and center around basic reading and writing assignments with some math. They are integrated into hands-on, service-learning activities which occur in the afternoon. Schedules remain flexible though, and evolve around the needs of the various projects in which students are engaged. For example, if food service module students were making lunches for employees in the adjacent County Office of Education building with produce from their organic garden, they would work most of the morning preparing them, leading up to their service at lunch time.

Students are taught to show up for their module courses on time and ready to work. "Applied Communication" materials are integrated into the module programs, as well. Topics include the use of problem-solving strategies, communicating with co-workers, participating in groups, following and giving directions, communicating with supervisors, presenting personal points of view, making and responding to requests, communicating to solve interpersonal conflict, upgrading, retraining, and changing jobs, and improving the quality of communication.
A four-part, metacognitive skill is taught to RCS students. They are taught to learn about the job they have to do, to start and finish that job, to reflect on what they have done, either through a written format or group process, and lastly, to "internalize the good things that are going on in the program . . . that they are helping others." They know that they are making a difference, because they can see the results of their work, be it graffiti removed, a stream cleaned, a check dam built, poison oak removed from a mountain trail, or a harvest in hand of fresh food and flowers.

To reinforce the message that at-risk youth are working constructively in the community, efforts are made to get the word out with the media. Cash incentives or bonuses obtained from local service clubs are given to students as "Employee of the Day" awards, which may amount to an extra three dollars of pay. The students themselves reflect on who worked the hardest, who had the best attitude, who was most helpful to others, and vote accordingly.

Other incentives that are used to motivate and acknowledge students' effort are end-of-the-year field trips, barbecues, picnics, and overnight camp outs, even scholarships to attend service-learning conferences. The program's staff also makes sure that any press coverage and notable accomplishments are conveyed to the students' probation officers or families so they know they are doing a good job. Probation officers will sometimes write letters of recommendation to the court the next time they go for a court hearing on their probation.
Program accomplishments. The following are examples of service-learning projects which RCS students have engaged in, both past and present:

- Design, develop, and maintain a sustainable, organic community garden and greenhouse project that provides food to the food service program, as well as fresh and dried cut flowers
- Plan, prepare, and serve daily lunches or meals for conferences, special events, and needy people in the community
- Build baby cradles and sew bedding materials to be presented as Christmas gifts to girls attending the school district's "Young Parent" program, to the homeless and the indigent, and at a community dining room called "Plowshares"
- Stream cleanup, stream bed restoration, and tree-planting
- Cleanup of illegal dump sites along county roads with follow-up sorting and recycling of materials recovered
- Establish a mentoring program that brings volunteer seniors who want to work in the school system together with RCS reading tutors who together teach special education, first, second, and third grade students
- Assist the elderly and homebound with home and yard maintenance, cooking, and shopping
- Graffiti removal and large-scale, exterior painting projects of buildings and fences
- Conduct a state-mandated, waste audit of materials flowing into the
local landfill to determine their composition, relative volume by percentage of materials analyzed in the survey sample, and recyclability (in partnership with the City of Ukiah Parks and Recreation Department, which is also the Sanitation Department)

While the ROP and court-community school teacher and program administrator plan out the service activity calendar for the year, students are involved in deciding what work is to be done, how, and by whom. Students have made referrals of "hot spots" in the town or "impoverished zones" that need clean up or rehabilitation. Some of the students who actually live in some deteriorated, ghetto housing have started to help clean it up on their own.

Program evaluation. Extremely formal program evaluation of the JTPA aspect of RCS is done by the Mendocino Private Industry Council. Rigorous compliance review documents have to be completed twice a year, and fiscal evaluations occur monthly. Student progress is measured by teacher observation of their performance in one of the four modules and through written work. The more informal, yet important, criteria which Dennis uses to measure the effectiveness of his program for students are school attendance patterns and recidivism rates. A student is successful if he or she stays in school, maintains a regular attendance pattern, does not violate probation, and does not commit any new crimes. Monitoring of school attendance and probation reports, and observation of students' affect toward school, are the sources of data that are used to make these determinations. Students' affective relationship is measured
by school attendance, ability to follow directions, and interest level demonstrated. This is evidenced by the number of projects they participate in and how many products they finish.

The RCS community service-learning program has received the Presidential Nomination for its region three out of five years. The region encompasses Sonoma, Lake, Mendocino, Humboldt, and Del Norte counties. It was also chosen by the United Nations to participate in the United Nations Global Youth Forum in 1993 and 1994. It is a model program and has received numerous awards.

Summary of program characteristics of River Community School's environmental restoration service-learning program. RCS offers its students and staff an attractive, small school setting. The school's appearance shows that pride is taken in it. Both students and staff are involved in its maintenance and enhancement. Even though it is a school for "troublemakers" in the community, its peaceful, beautiful setting is conducive to rebuilding people and reestablishing a sense of harmony in social interactions. Its limited enrollment and small size make it easy for students to be known and treated as individuals. There is a high level of accountability expected of students. Goals are made clear. Teachers and students notice what each is doing. If a student is absent, sick, or in trouble, it is immediately noticed. The sense of caring and responsibility which staff show to students is reflected in the easy, respectful, first-name-basis communication which occurs between them. There is a friendly atmosphere on campus with a
marked absence of fear and distrust. Students view the school community as a kind of extended family, a source of dependable structure, support, and encouragement that may be missing in their home life. RCS requires the conscious commitment and cooperation of youth and their families in order to attain its goals of getting them back on track.

Staff members are dedicated and talented individuals. They take joy and demonstrate pride in what they do. Lessons, activities, and service projects are planned and implemented in an engaging manner. The diversity of learning and service activities offered by program staff generates student interest and motivation to participate.

The students and teacher within each service-learning module have a great degree of autonomy. RCS youth are involved in decision making related to their service at the level of the provision of service, determining its manner, and evaluating it effect. For example, in painting a building, students will need to discuss and plan out the surface preparation and taping that will need to take place prior to picking up a brush. They will have to learn to paint the trim surfaces first before doing the walls. Jobs are shared and rotated naturally so each participant has an equal opportunity to pick up the skills and knowledge to be a competent painter on their own in the future. This program characteristic enables participants to learn and practice individual and group decision-making skills in a democratic atmosphere. This allows not only for the natural development of a greater sense of responsibility and ownership on the part of
students for what they do in the program, but contributes to the overall flexibility of the school to respond to changing needs. This organizational adaptability is exemplified by the shift in service settings over time from environmental projects to social, educational, and economic-based projects.

Students have a sense that the decisions they make are important and consequential to their jobs. Academics are clearly integrated into the service modules, and students see more reason to learn the thinking, reasoning, problem-solving, and communication skills which form the basis of academics. They come to see them as an aid to understanding and relating themselves to the world. Students are more inclined to put out the effort required to master academics, or at least improve in them, because they see their relevance.

Opportunities are made available to RCS students to earn pay for their service, to develop technical job skills that enhance their desirability as future employees. They are encouraged to learn about themselves through reflection on the choices they've made and the experiences they've had. The expectations and standards which school staff hold, and the interactions which students have with them, support the development of mature attitudes which foster individual and group success in any job or community. Participation in applied academics through the vehicle of service learning is seen to enhance the self-esteem and self-worth of at-risk youth. As individuals grow and heal in themselves, and live with a greater sense of possibility, they are able to be more productive, helpful, accepted members of their community.
Project H.A.W.K.

Setting, background, and description of Project H.A.W.K.'s Program, in partnership with the Yolo County Superintendent of Schools and the Yolo County Flood Control and Water Conservation District—Yolo County, California. Project H.A.W.K. (Habitat Alliance and Wildlife Keepers) has its home in the offices of the Yolo County Superintendent of Schools in Woodland, California. It is active at Cache Creek High School in Yolo, a small town north of Woodland, Woodland Mid-Town School, West Side School in West Sacramento, and to a lesser extent in the Agriculture Department at Woodland High School. Students from these three communities and the city of Davis to the south are served through its educational outreach programs.

This program lies in the agricultural heartland of the Sacramento River Valley. Cache Creek, the site of a thirty-acre restoration and environmental education program, is an important, western tributary to the Sacramento River. Cache Creek rises in the hills of the Inner Coast Range in Lake County to the west, and flows east through range and cultivated lands into the Sacramento. Besides mercury contamination thought to be caused indirectly by geologic strata and disturbance by mining activities upstream, the watershed has been adversely affected by chemical residues and soil erosion from industrial-scale farming practiced in the region. Oak woodland and riparian habitats have been eliminated from most of the valley floor as the result of land clearing right up to the edge of creeks. Flora and fauna species that frequent or depend on these
components of the ecosystem have been reduced in population or eliminated. Waterways have also experienced a loss of gravels and sands from aggregate extraction industries.

H.A.W.K. began in 1992 on the heels of a successful, experimental, project-based classroom initiated by the program's founder, Lauri Bailey. She was motivated to look for other ways to give relevance to the learning of high-risk kids through active engagement and contributions to their community. The three original partners were the Yolo County Flood Control and Water Conservation District, Cache Creek High School in the town of Yolo, and Woodland Mid-Town Community School. Cache Creek High School is a continuation high school serving about 160 students. Woodland Mid-Town School is a court community school program for youth on probation who are no longer eligible to attend schools with the Woodland Unified School District. It serves about forty students.

**Program characteristics.** Since the spring of 1993, H.A.W.K.'s primary focus has been to help at-risk youth become successful adults by assisting them in their own initiatives in habitat restoration and monitoring, cross-age environmental education, community gardening, and child-care program development. Additionally, students have received training in the use of technology to further their effectiveness in their service roles, and document them for academic and promotional purposes. The program aims to give at-risk youth relevant adult roles, wherein they can prove themselves successful, and gain a sense of purpose and a sense of place.
Cache Creek High School students, under the direction of their teacher and Project Coordinator, Lauri Bailey, have turned thirty acres of Flood Control District land along Cache Creek into an environmental education center for K-12 students. In 1992, the site was overgrown with weeds. Since then, the site has been cleaned, a master plan has been developed, native plantings have been initiated, drip irrigation systems installed, and ongoing water quality and fauna counts have been implemented. Recently, students built a wheelchair access trail to the H.A.W.K. site so physically challenged students and visitors could enjoy its oak woodland, grassland, and riparian habitats.

At-risk youth plan and organize Environmental Field Day programs (field trips) at the H.A.W.K. site for area teachers and students at cost. Students have developed a promotional brochure for this service and actively market it to the educational community. Of special note is a "scavenger hunt" or "learning station" format which Cache Creek students utilize to teach the younger students ecological and resource conservation concepts. A three-day environmental science camp for the H.A.W.K. site is under development.

The logistics and planning for Environmental Field Days, as well as ongoing restoration and monitoring activities at the H.A.W.K. site, occur within a project-based, science class at Cache Creek High School. The students' service learning at the H.A.W.K. site is connected to core academic subjects through the hands-on study and work skills the project requires and develops in its enthusiasts.
Another important service-learning project which H.A.W.K. students have initiated at Cache Creek High School is Project TEACH (Teenagers Educating and Actively Creating Hope). Students who sign up for this class work with a teacher and get involved in teaching elementary school students core subjects, theatre, environmental science, and nutrition. Students "look at and identify what makes a good teacher." They learn how to write lesson plans and deliver them in community schools once a week. This volunteer teaching is followed by a debriefing with the elementary teacher, group and self-reflection on the efficacy of the lesson, and lesson planning for future lessons. A comparable Project TEACH program exists at Westside School. There, at-risk high school youth are preparing and delivering reading lessons in English, Spanish, and Hmong to elementary school children.

While the various schools in the Project H.A.W.K. partnership share common principles of service learning, and unify them throughout the region, their responses to their individual communities are unique. Individual programs vary because of the differences in the perceived needs in their respective communities. "Each one has their own little special characteristics that serve them best and serve their population best" (Bailey 1997a, interview).

The court community school students at Woodland Mid-Town School have developed a three-acre, Urban Garden Learning Center on vacant land next door to their portables. It was started by two students who wrote a grant to the 4-H Club. Now the setting includes a multivariety, fruit and nut orchard, berries and
grapes, traditional row crops, organic crop cultivation, a story telling teepee, raised beds, a twenty-four by thirty-six foot greenhouse, and a twenty-by-thirty-six foot shade house. The garden is the classroom for year-round, interdisciplinary lessons for Woodland Mid-Town students who are involved in its care and management. It is also the focal point for annual community celebrations of the Fall Harvest and Spring Planting which they host for hundreds of local school children. During these two yearly festivals, alternative education and mainstream, comprehensive high school students from H.A.W.K. partner schools join together as staff to teach visiting children the history, culture, and traditions associated with those seasons.

Students at Cache Creek High School in Yolo and West Side Community School in West Sacramento were pioneers in expanding the concept of "habitat" to include the circumstances of their day-to-day lives in built environments. They saw that their community needed improving. An urgent problem to which they responded was that of many pregnant teens dropping out of school for want of quality child care. A group of students and their teacher decided they wanted to empower teens to stay in school. "They literally took on the task of developing a proposal to get a child development center on their campus" (Bailey 1997b, interview). They had to research the law and finances, and they had to go before the school board several times. They got $90,000 which resulted in an on-site, child development center. Now, two such programs exist to serve the needs of
pregnant teens or school-age mothers on the Cache Creek and West Side School campuses.

At-risk students learned how to reach out to their community to ask for help, for materials, for advice, for partners. Students have learned to give informative and persuasive informal and formal presentations. They have learned to use the telephone and write letters of request and thank-you letters. They have learned to make multimedia presentations.

As with the NVHS and RCS programs, at-risk students in Project H.A.W.K. classes receive a lot of personalized, small-group instruction. Full-group teaching occurs, but is provided only when needed. Teachers and teacher aides are conscious to use a variety of teaching modalities to reach and involve the individual learners in their classes. The researcher observed generally respectful and friendly interaction between staff and students. Staff members were addressed by their first names. Students valued informal, personal relationships with their teachers, and the ready attention and feedback they could receive from them if they had a problem, or didn't understand something. Students supported each other in the successful completion of classroom and field-based studies. Physical proximity, words of praise and encouragement, and friendly kidding contributed to a "we are learning together" attitude, even though much academic work was individualized and self-paced.

Staff had the authority of their position as teachers, and used it on occasion, but an egalitarian atmosphere predominated. One was struck more by
the strong force of their characters, their serious but gentle nature, or their infectious enthusiasm, dedication, and love for their students and the goals of their programs. Students have learned that they can depend on their teachers, teaching assistants, counselors, and directors/principals. The psychological mileage that students and teachers have built up together by sharing the same experiences contributed to a closeness between them.

A basic feature of Project H.A.W.K. service learning is that students negotiate with their teachers for academic credit. It is expected that students will document and keep a portfolio of work, work products, and reflections which they are to draw upon when they "negotiate" with their teachers for how much credit toward high school graduation they feel is warranted from their participation in each activity. The number of credits given, and the academic subject area toward which they will be applied, vary from student to student. The quality and quantity of student participation is considered by the teacher and student mutually. The roles assumed and tasks accomplished in their specific service setting are additional factors that are taken into account.

Students learn to make the metacognitive connections between the needs of the community and their own capacity to contribute; the quality and effectiveness of their work, and the amount of preparation, time, effort, and attentiveness put into doing it. Students also see the value of planning, reasoning, computing, problem solving, and communicating skills which are traditionally taught in isolation from each other.
There is a very clear, open expectation that teachers will support student initiatives. Students know that teachers will walk their talk of "saying if you (the student) come up with an idea, a plan, or a thought, we (the teachers) will help you implement this. But you will be the person who will do this. And the responsibility really does fall on the student" (Bailey 1997b, interview). An important counterpoint to the student success in adult roles and completion of formal schooling planned for by Project H.A.W.K. teachers and its coordinator is the allowance for failure. "Sometimes there are logical consequences. Things don't work out the way you want them to" (Bailey 1997b, interview). This expectation to succeed, but freedom to fail, provides for powerful lessons if the student sticks with it and decides to do it better next time with the proper planning. An example would be a student putting fifty actual hours into a given project, but only remembering or showing documentation for thirty. That oversight on a student's part may have an important bearing on his or her rate of movement towards graduation.

Several community partners have come forward to give students at the different schools help with their respective service-learning projects. This help has come in the form of expert advice, enthusiastic support for the students' entrepreneurial spirit, or the benefit of their labor and machines. Staff members from the Natural Resources Conservation District have come out to the H.A.W.K. site on Cache Creek to help with restoration planning and biological interpretation of its natural features. Agency staff from the Yolo County Flood Control and
Water Conservation District have also been on hand and lent their help. A private company, AG Property Services, has come out on several occasions to give help to students in the tilling of the land, the layout of the orchard, and the long-term pruning and care of vines and orchard trees. Volunteers from the Future Farmers of America Club and Regional Occupation Program at Woodland High School helped with the planning and construction of the greenhouse and shade structure on-site.

Program accomplishments. Two self-supporting miniprojects have spun off of Project H.A.W.K. activities along Cache Creek. The Chevron Corporation has funded a $10,000 a year, bird adaptation study over a three-year period from 1997 to 2000. The purpose of the study is to determine if the Swenson's Hawk, a migratory bird of prey, will accept and use artificial nesting sites constructed in riparian and oak-woodland habitats. The second project is a two-year, macro-invertebrate study of Cache Creek funded by the State Water Resources Board. Eleven thousand dollars a year is provided to take biannual samples of the macro-invertebrates living in the creek. The variety and number of macro-invertebrates found in water samples are indicators of relative water quality levels.

In 1993, Apple Computer donated $180,000 in training and equipment to Project H.A.W.K., as one of eleven "Partners in Education" grants awarded that year out of about nine hundred applications. In the past five years, a network of five elementary school gardens have been established in addition to the three-
acre urban garden, the twenty-acre environmental learning site, and two child-care centers for teen parents. The program has grown from an initial group of 45 to 150 at-risk students, and serves approximately 2,500 students throughout Yolo County.

Project H.A.W.K. has become recognized around the state as a leader in environmental service learning for at-risk youth. The active partnerships it has cultivated with the Yolo County Superintendent of Schools and other community agencies have been instrumental in building additional, administrative support and teacher buy-in necessary for long-term growth and expansion. Every year for the last five years at least one component of Project H.A.W.K. has been recognized by the Association for California School Administrators and the California School Board Association. Project H.A.W.K. and the Yolo County Office of Education have received grant monies from the CSBA's Concept Revolution Fund for the development of new and innovative programs. A "Striving for Excellence Alliance" is in place which is creating a network of shared commitment and support for more use of project-based education and service learning in K-12 schools in Yolo County.

Program evaluation. Project H.A.W.K. is evaluated formally and informally. Each year, the project has been formally evaluated by the assistant superintendent in charge of instructional support for Yolo County Schools. In coming years, outside evaluators from the University of California at Davis and California State University, Sacramento, will perform the program evaluation to
see how Project H.A.W.K. has met its goals and objectives. Samples of at-risk service-learning students are compared with nonservice learning, at-risk students with respect to their school attendance and academic growth.

The project coordinator, Lauri Bailey, assesses the program using more informal criteria. "Do I have young people who are engaged in projects and do I have teachers who are excited about doing the project and working with the kids and teachers who are not throwing up barriers, but rather kind of moving them around and getting kids out. . . . Is it working? Is it doing?" Lauri is less concerned with measuring numbers of students because those will ebb and flow over the years "depending on the type of student, what's going on in the community, and what's happening." Other informal criteria, which Lauri considers, are level of support from their community partners, receipt of donations and in-kind support, and degree to which the project is valued by their partners and the community.

**Summary of the program characteristics of Project H.A.W.K.'s environmental restoration service-learning program.** Project H.A.W.K. is a partnership of dedicated teachers, administrators, community members, and at-risk youth committed to an expanded notion of "habitat" as including the built environment, as well as wild and open space. Project H.A.W.K's success lies in its ability to share this larger vision and understanding of habitat stewardship among its partner schools and communities, while fostering diverse applications of that vision in service responses to the particular needs and interests of its
partner schools and communities. In this way, the program encourages autonomy rather than uniformity. The goals of Project H.A.W.K. are clear and well-articulated by its adult leaders and more experienced, student participants.

In each of its partner schools, Project H.A.W.K. has strong administrative advocates. Positive energy is generated by caring, collegial relationships between staff and students in an atmosphere of mutual respect and love. Staff members communicate a strong belief in students. They have self-selected to stay in alternative education, because they are dedicated to supporting the efforts of at-risk youth to succeed. Students enjoy one-on-one relationships with their teachers and teacher aides. These relationships are marked by consistency, fairness, and high expectations in the formal setting of the classroom and the informal settings between classes or out doing projects.

Students learn that the amount of academic credits they earn is directly related to their attitude and effort. Youth learn that the choices they have are contingent on their individual and group performance in class and at their service-learning sites. This logical standard based on natural consequences fosters maturity, independence, and interdependence. Classroom environments allow for reasonable social interaction, appropriate, on-task behavior, and even some good-natured, off-task behavior giving the classes a relaxed, yet dignified atmosphere. Regular feedback on students' behavior, effort, and service work is provided to facilitate self-understanding, academic growth, and social maturity.
Students have primary responsibilities to make things succeed in their selected areas of service. This empowers them as learners and generates leadership ability, group cooperation skills, and a sense of community. Project H.A.W.K. demonstrates the research claim that effective programs for at-risk youth provide opportunities for youth to have successful experiences and demonstrate their competency before their peers and adults. Such demonstrations of competency are critical to building genuine self-esteem, problem-solving ability, and confidence in participants that is founded on achievements, not words.

Government dignitaries have given H.A.W.K. glowing praise for pioneering environmental and social recovery strategies, one having to do with endangered wetlands, the other with struggling youth and communities. Lauri Bailey (1997b) sees Project H.A.W.K. as "the restoration of students' lives in the context of restoring the land," "one acre and one student at a time."

Report of Findings for Research Question 2

Which service-learning program characteristics did students report to have an impact on their school attendance, sense of connectedness to their community, sense of social responsibility, sense of personal efficacy in solving problems, and understanding of watershed stewardship?

School Attendance

Survey item six asked students to respond to the question, "Did the program make you want to go to school more?" with the choices, "not at all,"
"somewhat," and "a lot." These data were summarized first by individual program and across the three programs using means and percentages, as can be seen in figure 6. A large majority of students across the three programs indicated that the program motivated them to attend school more. The bulk of the respondents indicated they were motivated at least "somewhat." Only one student from River Community School (RCS) said "not at all."

![Bar chart](chart.png)

Fig. 6. Student reports of the impacts which their program had on their motivation to attend school, by program. Note: Results shown in percentage; total N=65.

What service-learning program characteristics did NVHS students report to have an impact on their school attendance? One hundred percent of NVHS students gave positive responses that their program made them want to go to school more. Ten of twenty-one students (47.6 percent) indicated it had motivated them a lot, while the remaining eleven students (52.4 percent) said it had motivated them somewhat.

Open-ended responses to the follow-up question, 6a, "What was it about
the program that made you want to go to school more?" were analyzed semantically and summarized by frequency of response. Nueva Vista High School (NVHS) students (N=21) offered twenty-one responses which clustered into six categories. The most-frequently mentioned descriptors were "high-interest/fun" and "active, hands-on" followed by "getting outside/change of pace" and "desire for involvement." The least-mentioned reasons why NVHS's program motivated them to attend school more were "sense of social responsibility" and "pride in self/community."

Focus group comments provided examples of why community service-learning activities may or may not have affected the way students felt about going to school. Getting outside, engaging in active learning, the cooperative, social, interdependent nature of the projects, and personal, supportive relationships with teachers were the key themes in NVHS student focus groups.

Having a chance not to be cooped up in a classroom was a motivator for many students to come to school, because in a converse way, it wouldn't be like school. "I would rather be out than indoors." "Yeah, to be outside with nature."

A young lady who discovered her leadership potential by helping manage the school's watershed restoration service-learning projects said:

I used to like never go (to school). . . . I went to Mission Valley and I never went to school. And as soon as I got here I never missed a day. I got right into the project. I didn't even know what it was. I just basically got into it so I could get out of class and then I realized it was what I really like to do. Researcher: Did you feel like you were learning? Yeah. . . . what I like the best is the hands-on learning, how to do everything. Doing it, not like reading it out of a book.
The value of engagement can be heard in these comments: "I like it because it gives us something to do and we're not staying in class." "We have like a total schedule, you know, all these things. If you miss one (activity) you miss a lot... I like doing it." "It keeps you busy. I mean you're constantly doing stuff and learning new things. And the other people who aren't involved, aren't, and that is what makes them less motivated."

"I feel that I learn more because the teachers are more one-on-one. They know you. And they totally want to help you out." "And the teachers here, they don't have to be here. We luckily got them because we didn't have a teacher. They kept walking out on us." "Yeah, we didn't have teachers last year." "One of the teachers got up in the middle of class and left." "Um huh, another one had a nervous breakdown and didn't come back."

"So are the teachers different here?" "Oh yeah." "Way different. See, we're on like a mutual respect around here." "It's not like a "Mrs..." "Yeah, we actually call them by their first name." "You don't go, 'Ms. S__________, can I get some help?' You be like, 'L____, can I get some help?' "That is the way it should be, I think anyway."

What service-learning program characteristics did RCS students report to have an impact on their school attendance? Of River Community School (RCS) students, 90.9 percent gave positive responses that their program made them want to go to school more. Four of the eleven students (36.4 percent) said it had motivated them a lot. Six of the eleven students (54.5 percent) said it had
motivated them somewhat, and one said not at all.

RCS students (N=11) gave ten open-ended responses. These responses boiled down to six reasons why they wanted to come to school more. They are listed here in order from most-frequently mentioned to least: "having a job/earning money," "learning new things/job skills," "getting out of class," "earning credits," "making things better," and "friends."

Conversations with RCS students reinforced the motivational value of getting paid for some of the work they do, of having choices, of changing pace which service modules offer as a departure from the routine, of receiving the helpfulness of teachers, of experiencing caring, small school atmosphere, and of developing a sense of ownership with the campus itself. Students in the focus groups spent a great deal of time talking about the supportive quality of their relationships with their teachers, whereas in the surveys this attribute received only passing mention as impacting their school attendance.

You know the school staff here, all the teachers, they care about you. I don't know how many times I used to hear, "I'm going to get my paycheck no matter what." I don't think I've ever heard L. say that, "I'm going to get my paycheck" you know. He plays basketball with us. You know you never find no other teacher that really does that. Whenever you want to talk to L. or any other teachers here and you tell them you want to talk, you know it is not like, "Wait, I've got another class to do right now." It is like you get that attention right there. Like the students here also they don't try to run over the teachers or nothing you know. It is like a student and teacher friendship you know.

"We've made this school. . . . This is our school. This school wasn't even like this when I first started coming. . . . the students put it together. That's what's good about this, this is our school." A young lady added, "And people have
respect for the campus, because it is their school. And like if you go to the high school, people, they tag all over the walls and stuff." Personal safety concerns and tolerance for differences came up in the discussion immediately. "Stuff is stolen from you at the high school." "We don't have many fights here and stuff." "Arguments, not fights."

When asked if they would recommend this program to someone else and why, a young man with extensive RCS learning experience said: "Because it is fun, and you get paid for it, and it is learning how to work out in the real world."

What service-learning program characteristics did H.A.W.K. students report to have an impact on their school attendance? One hundred percent of Project H.A.W.K. (H.A.W.K.) students gave positive responses that their program made them want to go to school more. Thirteen of the thirty-three students (39.4 percent) said it had motivated them a lot, while twenty of the thirty-three (60.6 percent) said it had motivated them somewhat.

Thirty-one, open-ended responses were received from (H.A.W.K.) students (N=33). "Getting outside/taking field trips" was the top reason why students wanted to go to school more. "Ownership/sense of social responsibility," "fun," and "high interest/motivating" were the next, most-frequently mentioned reasons. "Active/hands-on learning," "easy credits," "learning new skills," and "belongingness/working with children/plants" were the least-mentioned reasons.

Focus group comments by H.A.W.K. students centered around the
dynamics of *anticipation* and the *fun/natural learning* that comes from doing *interesting, hands-on projects*. *High expectations, dedication, sense of ownership,* and *commitment to others* were also spoken to as effecting their school attendance. "It (school) is easier to cope with and makes you want to go to school. Because when you're in the traditional high school or even not in the H.A.W.K. program, there's not really nothing to look forward to and stuff." "Just another day." "The same old boring stuff. But once you're in H.A.W.K., there is something to do. You're doing a lot of hands-on stuff and it makes it a lot funner to come . . . It makes it where you want to come."

"If I wake up in the morning and I don't want to go to school but I think, okay well I already made a promise to someone to go out in the garden, then I get up and go to school." The relevancy and value of hands-on work came through several times, particularly with this student: "Going outside to work helps us relate to the actual subject." "You can see the plants. You don't see pictures of them. We actually get to plant it, and watch it grow and develop." "If you go out in the garden, you can talk individually with your friends while you're digging in the dirt. But if you just sit in class all day and just twiddle your thumbs or zone out at the teacher, it just gets really boring."

Other students said they are in class because they have made a commitment to come and feel a sense of responsibility. "You can't be in the class if you're going to miss two-to-three days a week." "Yeah, it is like 80 percent attendance." "We're on a little contract where if you miss more than one
day a week you can get kicked out of the class." When asked, "Why is it important to come to class everyday?" they responded: "Because there is a lot of responsibility on us with our projects and everything. If you're not here, you can't finish your project, and if your project don't get done then it means someone else has to do it or something." "You're holding someone else back." "If you sign up for the Field Day, you're expected to come that day." "It is like your obligation." "If you're late or something those days. . . . And he (the teacher) might just rely on somebody else next time. He'll tell you that."

Students liked the engagement, the freedom to choose activities. "There's always something to do." "We have choices and stuff." "We've got decisions we can make. It ain't just like well, you're going to do this and that. He (the service-learning teacher) brings you some projects and you get to pick the ones you want to do. . . ." "Not everyone in your class is going to do the exact same thing all the time."

**Self-reported attendance change of NYHS, RCS, and H.A.W.K. students.** Students were given a chance to self-report degrees of attendance change they made, or did not make, as a result of participation in their respective programs in item 11. Possible responses to the question, "After participating in the program, I was absent from school" were: "less than before," "same as before," and "more as before." Data from item 11 are summarized with means and percentages, by program, in figure 7. These data were compared with actual attendance records gathered.
Fig. 7. Student reports of their absence from school as a result of participation in their respective service-learning programs. Note: Results shown in percentages; total N=65.

Roughly two-thirds of the total respondents said they were absent from school less than before. No one self-reported a worsening of his or her attendance after participation in the program, even by the outlier individual in RCS who was a pretty hardened individual after having suffered traumatic family instability and periods of incarceration. The researcher confirmed that a majority of the individuals' actual attendance changes were of the nature or direction they had indicated. When there was a discrepancy, it was usually because the student had been conservative and underreported what actually proved to be an improvement in attendance. A few individuals self-reported changes that were disconfirmed against actual records.

Actual attendance changes of NVHS, RCS, and H.A.W.K. students. Nineteen of the twenty-one NVHS students had attendance data available (N=19). Of those nineteen, one student had been in reform school with
mandatory attendance prior to NVHS which meant his data could not be considered. Eighteen (N=18) self-reports were checked. Ten of the eighteen students (55 percent) actually improved their attendance compared with a self-report of 57.1 percent. Five of the eighteen students (27.5 percent) actually had the same school attendance as before the service-learning program compared with eight of eighteen (42.9 percent) who self-reported no change. Of those eight students who claimed their attendance was the same as before, three actually improved their attendance, which evened out the score. Three of the eighteen NVHS students (16.5 percent) were absent from school more than before, contrary to their self-reports.

One hundred percent of the eleven ReS students showed improved attendance when actual school attendance records were checked even though only seven of them (63.6 percent) self-reported they were absent from school less. A further discrepancy showed up with the remaining four students who claimed they were absent from school the same amount after the program as before, when actually, they too, improved their attendance.

An intervening variable exists in ReS's community service-learning program that needs to be considered to temper the discussion of these wonderful results. ReS is a court community school for adjudicated youth. That means each member of the student body has broken the law, is on probation, and has a probation officer watching him or her. Students who are admitted to ReS, do so knowing they have to make a greater commitment to attend school and make it
work for them, for it is their last chance. It is likely that the nature of the
school contributed to causing 100 percent of the at-risk participants surveyed to
show improvement in school attendance, aside from the programmatic influence
which participation in a community service-learning module may have had.

Of the thirty-three H.A.W.K. students studied, data were available on thirty
students. Of these thirty students (N=30), twenty-four actually improved their
attendance, or (79.9 percent). This actual improvement in attendance is
compared with the twenty out of thirty students (66.6 percent) who self-reported
improvement. The self-reports were close to the actual data, and when they
were off, they were off in the majority of cases, because respondents judged too
conservatively. These results offer substantiating evidence to the use and
reliability of self-report data in research methodology with at-risk high school
students.

Survey responses by NVHS, RCS, and H.A.W.K. students regarding
degree of engagement in class work. Degree of engagement is a key
operational concept in one's motivation to attend school. Responses to item 12,
"To what degree did you feel more or less engaged in your class work after the
program" offered insight into this variable. These data are illustrated in figure 8.

The clumpings of data in figure 8 look similar to those presented in figure
6, only more pronounced numbers of students indicated they felt more engaged
in their class work after the program. Fifteen of the twenty-one NVHS students
(71.4 percent) felt more engaged as the result of their program, with the
remaining five students (28.6 percent) indicating no change in sense of engagement. Seven of the eleven RCS students (63.6 percent) had the same level of engagement as before entry into the program, while three students indicated more engagement (27.3 percent). Only one of the RCS students said he had less sense of engagement. This individual was treated as an outlier in the data. Twenty-two out of thirty-three H.A.W.K. students (66.7 percent) indicated more engagement with eight students stating no change (24.2 percent), and three students (9.1 percent) less engagement.

**Sense of Connectedness to Community**

Item 7 asked respondents "Did the program make you feel like you belonged to your community more?" These data are summarized by percentage of response in figure 9. Its follow-up question, item 7a, asked "What was it about the program that made you feel you belonged to your community more?"
data in figure 9 show that the three environmental restoration service-learning programs did provide at-risk students with a greater sense of belongingness to their community. Only two students out of sixty-five said their programs had no effect on their sense of belongingness, one person from H.A.W.K. and one person from RCS.

Figure 9. Student reports of their sense of community connectedness as a result of participation in their service-learning program, by program. Note: Results shown in percentages; total N=65.

What service-learning program characteristics did NVHS students report to have an impact on sense of connectedness to community? One hundred percent of NVHS students gave positive responses that their program had motivated them to feel a greater sense of belonging to their community. Twelve of twenty-one NVHS students (57.1 percent) felt their program made them feel like they belonged to their community a lot, while the remaining nine students (42.9 percent) said it helped somewhat.

Open-ended comments were received from all twenty-one of the NVHS respondents (N=21). Students valued the most, the chance to be "doing good,"
and having a sense of helping others, which made them feel better about themselves (N=9). One person wrote, "I'm helping out the community so I feel like I'm part of it." Another put, "I was doing something good for a local park that everyone could benefit from." The second most frequently reported response had to do with the "hands-on nature of the work, really accomplishing something." Six individuals made comments that clustered in this area. Typical comments were: "That our science projects were based around the creek. It's the natural resource we've had in our backyards for years." "I felt like I was actually doing something" wrote one person. The "involvement in community/cooperative partnerships" was mentioned as impactful by four students. "We got out in the community and in other schools we normally don't see." "Working with the City of Concord workers." Two respondents noted the "recognition" they received. While this characteristic was least reported out of the four, it was very important for those two individuals who mentioned it. "I helped clean up and people gave me recognition for that, and I like to see peoples' reactions for our good job."

Two focus groups were conducted with NVHS students. The following themes emerged from the analysis of the transcript data as helpful in developing a sense of connectedness to community: productive/leadership roles, helping/sharing relationships, tangible community support and acknowledgement, a developing ethic of environmental responsibility.

"You're doing something for your community, cleaning [it] up so it is not
trashed. It is like helping your little environment." "I guess when you share something, it sort of makes it like a community too. Like sharing Newhall Park (the park the creek flows through) with other people." "Well, if I'm walking through Newhall Park with my friends or my brother or someone, I'm like, 'Look, I did that there.'"

On several occasions NVHS students conveyed an ethic of caring for their park and creek. "Yeah, it is sort of like Clayton Valley (kids at the comprehensive high school next door to NVHS), when they roll through the park, they probably throw garbage. Well, when we roll through the park, we pick up garbage."

Students mentioned being acknowledged by their community with awards, some media coverage, financial and material donations from foundations, and offers of field trips and participation in expanded collaborative environmental service efforts. The interest which one student's parents took in their son as a result of his community service stood out. "Well, it is just I've never been involved in anything at school and now this is something that I'm involved in and they're happy for me. Parents even ask what you're doing next. What is up? What is going on? They always ask me, 'What are you doing today? . . . Are you going to the creek?'"

What service-learning program characteristics did RCS students report to have an impact on sense of connectedness to their community? One hundred percent of RCS students gave positive responses that their program had motivated them to feel a greater sense of belonging to their community. While
only one RCS student's survey indicated his service-learning program had
made a big difference in his sense of belongingness to his community, nine out
of the remaining ten students said it made some difference (81.8 percent).
Interestingly, another individual other than the outlier marked "not at all." The
outlier indicated the program contributed somewhat to giving him a feeling like he
belonged to his community. Though a modest statement, this says something
coming from someone who had been kicked out of one school after another, then
taken out of the larger community, locked up, and put away. To turn around a
hardened person who has been put away because he didn't belong, to feeling
like he belonged, says something.

Open-ended comments were received from ten of the eleven RCS
students (N=10), and clustered into four areas. Concurring with the most-highly
valued characteristic of NVHS's program, RCS students mentioned "sense of
helping/feeling good/doing one's share" most often (six out of ten respondents).
"I help out and do my part." It made me feel good knowing I made someone else
feel good." Two of the ten respondents shared that they had a negative feeling,
that they didn't feel appreciated by their community. "I don't think we are
appreciated in the community." "There was nothing that made me feel
connected to my community." The two remaining semantic clusters, mentioned
each by one person, were "rewards/recognitation" and "active involvement/sense
of learning."
RCS students identified their friends, teachers, and family as part of their community during the focus group interviews. Helping/productive roles, acknowledgement, financial rewards (extrinsic) and peoples' gratitude (intrinsic), and understanding the give and take nature of social relationships were key factors in helping them feel more connected to their community. "You get to help the community by working, making the garden, planting stuff, digging trenches, and building greenhouses and stuff like that." Students valued peoples' appreciation. "They really appreciate what you do for them because you're really helping them and they're really helping you to get ahead in life." "It is like that is what a community is, helping each other." People thank them with smiles, gifts, lunch, and plugs in the local media. Students said they feel better about their community when they can help make it better.

What service-learning program characteristics did H.A.W.K. students report to have an impact on sense of connectedness to their community? Of H.A.W.K. students, 96.9 percent gave positive responses that their program had motivated them to feel a greater sense of belonging to their community. Eight out of thirty-three students (24.2 percent) said it had helped them a lot, while twenty-four (72.7 percent) reported their program had helped somewhat. One person said it hadn't helped at all.

Thirty-two out of thirty-three H.A.W.K. students (N=32) gave open-ended comments. Being given a chance to have a "sense of helping/working with others/cooperating" was the aspect of the program they mentioned most.
frequently as impactful in making them feel they belonged to their community more. "Making a difference" and "having responsibility" were also mentioned, each by five people. The following sample gives a flavor of the comments written: "Working with kids on Field Days." "Helping out at Fall Festival and working with kids." "It made me feel as part of the community, because we were doing good things for them." "When you are doing something for others, you are doing for yourself." "It made me feel I was responsible for the teaching of others." "It wasn't so much my community, but my school that it made me feel a part of."

H.A.W.K. students in the two focus group interviews identified "where you are, your surrounding, your peers, your friends, what you make of it" as being their community. They brought up helping/leadership roles, positive communication and interaction with community members, recognition, and a sense of social responsibility as influential in building their sense of connectedness to community.

"I feel that I can communicate better with people now, like when I go to the store or something, where I wouldn't even say nothing or look at anybody, and act kind of snobby, not that I realized it." "It kind of opens you up." "You get used to having to talk in front of all those people and you get used to being put in different roles and different situations to where it's not as bad."

H.A.W.K. students expressed appreciation for the positive recognition they've received, be it thank you notes from children, or friendly hellos when seen
in town. "It is rewarding because it is saying that they enjoyed the day and they got something out of it, and you taught them. So for that day, you're like their teacher and when they give you notice as positive feedback, it makes you want to do it again." "I don't know, some of them (the community) look up to us now you know. Like some of the parents that we work with out there, they look up to us. Like they're not these kids that go out to a continuation school or whatever." "Instead of looking down on us, you know, and dwelling on the fact that it is a continuation . . . they're looking up and realizing that we are doing something and we are helping preserve the environment. We are achieving goals and we're doing a lot of good stuff to where it is like, well hey, these kids are really doing good." The positive recognition "makes you feel good because you feel responsible. It makes you feel like you're wanted again." "You're needed."

Sense of Social Responsibility

Survey item 8 asked respondents, "Did the program motivate you to help out more in the community?" A summary of their responses is found in figure 9. Follow-up, open-ended comments were obtained from item 8a, "What was it about the program that motivated you to help more in your community?" A majority of respondents from each of the three programs said the program affected their motivation to help out more in their community at least somewhat. Figure 10 shows that these majorities ranged from 60.6 percent to 72.7 percent of the program participants.
What service-learning program characteristics did NVHS students report to have an impact on their sense of social responsibility? Of the NVHS students, 81.8 percent gave positive responses that their program had motivated them to help out more in their community. Seven of the twenty-one students (33.3 percent) said it had motivated them a lot, while fourteen of the twenty-one NVHS students (66.7 percent) said it had helped them somewhat.

Each of the twenty-one students surveyed gave follow-up comments which clustered into six areas. Subtle similarities in their motivation made semantic analysis of their comments difficult. Comment analysis had to be done repeatedly, then double-checked by an outside reader to ascertain that indeed, closely-related, but distinctly different rationales were apparent in their comments. For example, was it the hands-on activities or the positive feeling
which those activities engendered that was the most significant motivator? Such questions were answered by looking for the dominant value embedded in the subject position of the sentence or phrase which might have had a causative or modifying influence on its corresponding object or action.

"Sense of efficacy/good feeling" was mentioned the most. Five of the twenty-one respondents spoke of the influence which having made a positive effect on their community had had on their future motivation to serve. "It made me feel good." "The fact that our work was having a positive effect on the community and we were influencing others as well." "I got to go out and show everyone that just one person can make a difference." An equal number of students, four each, testified to "pride in their community/program," their "increased ecological awareness/knowledge--keener ethical sense," and "hands-on activities/getting out in the community," as impacting their motivation to serve more. "I wanted my community to be at its best—I wanted to help a habitat to restore it to its natural beauty." "Wanting to educate individuals on what our projects are all about, and what we are doing to make our community better." "Since I know what to do to clean up our community, it makes me want to do more stuff to help the environment." "Cleaning the park made me want to keep it clean."

A perception of a "preciousness/sense of relationship with plants, animals, habitat" and "high-interest/fun" were least mentioned as factors influencing NVHS students; each was voiced by two students. Yet these students were as sincere
as the others in speaking to these particular factors as having influenced their desire to serve. "I felt the fish, plants, and animals were relying on us to take care of them." "When it was fun, I was impelled to help out."

Focus group comments supported the survey claims that doing good is its own motivation in a social context. "It makes you feel like doing something good. This feels great. You just want to do more." "At first, I wasn't up to it. Then I started doing it, and it was fun."

A student who helped make informative presentations to the community on NVHS's environmental restoration service-learning program said: "Yeah, it's pretty cool when you walk into a place with a whole bunch of adults and they're like, 'Wow, they know what they're talking about'."

Positive role models were also mentioned as impacting their sense of social responsibility, both having them and being them for others. NVHS students repeated the concern expressed by at-risk youth at the other programs studied. They're concerned about changing the negative stereotype which society has of them. They want people to look at them for what they are, not for where they are.

NVHS students were also in general agreement that their service-learning experiences made them want to volunteer more in the future in their community, but mainly in the context of their ongoing school projects. They weren't real keen on going out of their way to do extra, but they had an ethic of concern and responsibility.
What service-learning program characteristics did RCS students report to have an impact on their sense of social responsibility? Eighty-two percent of RCS students gave positive responses that their program motivated them to help out more in their community. Eight of eleven RCS students (72.7 percent) indicated their program "somewhat" motivated them; one student indicated "a lot"; and two students indicated "not at all."

Eight of the eleven students gave valid open-ended comments. "Helping others/being good" was most frequently mentioned as the root of their increased motivation to serve, reported by three of the seven respondents. "It made me want to be nice and help." An equal number of students, two each, indicated that "working with others/social relationships," and "sense of accomplishment" contributed to their sense of social responsibility. Their mention of "friends" and "working with others" shows that social interaction was what was most valuable to these particular students. A comment like "it was so nice to work on the garden—at the end it looked so nice and it made me feel good" shows the impact which getting things done can have on an individual's future motivation to serve. The least frequently mentioned characteristic was a "sense of connectedness."

"It made me feel part of the community."

Focus group interviews with two sets of RCS students reinforced enjoyment and seeing how much they were able to help out others (sense of accomplishment) as powerful factors that increased their sense of social responsibility. Two additional factors were brought up that made a difference for
them: understanding the dynamics of give-and-take, and seeing a sense of responsibility and teamwork skills as valuable job skills to have. "We're more responsible. We're growing up and noticing that if you give to your community, it'll give back." "It gives you ideas of what kind of job you can get." "You work as a team. That was the best benefit I think, was learning team skills." Students were unanimous in their observation that the adult community (society) doesn't offer them enough opportunities to serve or be productively engaged.

**What service-learning program characteristics did H.A.W.K. students report to have an impact on their sense of social responsibility?** Seventy-nine percent of Project H.A.W.K. students gave positive responses that their program had motivated them to help out more in their community. Twenty of thirty-three students (60.6 percent) indicated it had helped somewhat. Six students out of thirty-three (18.2 percent) said it had motivated them a lot. The remaining seven students (21.2 percent), said it had no effect at all.

Valid open-ended comments were obtained from twenty-six of the thirty-three H.A.W.K. students. Semantic coding generated six categories, presented here in order from most-frequently mentioned to least-frequently mentioned. Eight of twenty-six students mentioned "helping others learn/importance of helping" (31 percent), and seven mentioned "activities/active participation" (27 percent). "Satisfaction/improving something/efficacy" was mentioned by four students (15 percent). *Personal "relationships with teachers/coworkers" was*
also mentioned by four students (15 percent). "Fun" was the motivation for two students and "commitment/follow-through" for one other.

The open-ended data regarding gains in social responsibility given by H.A.W.K. students are similar in pattern to those of the other two programs. *Having a chance to help others, presence of engaging hands-on activities, the satisfaction, recognition, and sense of efficacy derived from doing hands-on activities, and personal, supportive relationships are valued most highly across the three programs with respect to this variable.*

A sampling of open-ended comments given by H.A.W.K. students illustrates the program characteristics they perceive to be most helpful in wanting to serve more in their community. "It helped me help others." "When I get out and do stuff at school, it makes me want to go out and do more." "The Fall Festival, because it made me feel good because I was doing something good." The previous comment could equally apply to illustrate the sense of potency, efficacy, and satisfaction gained from doing good. "It helped me see what I could do to help." "I see now that I can really help out a lot." "The people I worked with." "I did not know it could be this fun." "I made a commitment and it was the drive to follow through that motivated me."

Focus group data reiterated the themes that came out of the open-ended survey comments. *Those students who felt H.A.W.K. had contributed to gains in sense of social responsibility, attributed it to: increased confidence due to knowledge and experience gained, and abundance of opportunities and
challenges to face. Students also stressed understanding the importance of giving back to society, and seeing how effective people can be when they match their interests with the community's needs. Students were very clear in saying that they view volunteering not so much as work, but as fun. They aren't likely to go out of their way to volunteer in community projects, but they would be willing to help if asked and if they had time.

Sense of Efficacy in Solving Problems

Survey item 9 was "Did anything about the program boost your confidence in solving problems?" A majority of students in each of the three programs answered favorably, as shown in figure 11. However, a more noticeable percentage of students said their programs did not help them in becoming better problem solvers. Four of the twenty-one NVHS students, eight of the thirty-three H.A.W.K. students, and four of the eleven RCS students are reflected in the "not at all" responses in figure 11. A follow-up question for those students who answered "somewhat" or "a lot" was item 9a, "What was it about the program that boosted your confidence in solving problems?"

The researcher believes that several factors confound the data collected from students regarding their sense of efficacy in solving problems, and so, caution should be used in reviewing these results. First, the term "problem solving" is more widely used and understood by educators and psychologists than youth in their everyday lives and sense of themselves. This circumstance could account for variance among students in understanding its usage.
Secondly, the limits of overly conservative, self-report data are in evidence with some of the "not at all" responses. Thirdly, differences in developmental levels, personal histories, home settings, and peer relationships among at-risk students could offer explanations for those who reported that their environmental restoration service-learning programs did not help them improve their problem solving, when teacher comments indicated they had. Many youth still feel they have lots of problems, and can't yet separate in their minds, problem-solving ability from having problems. This discussion is taken up further in chapter V.

What service-learning program characteristics did NVHS students report to have an impact on their sense of efficacy in solving problems? Of the NVHS students, 80.9 percent gave positive responses that their program had boosted
their confidence in solving problems. Seven of the twenty-one NVHS students (33.3 percent) reported their program had boosted their confidence a lot, while ten students indicated it had somewhat (47.6 percent). The remaining four students (19 percent) reported no effect.

Seventeen of the twenty-one students gave valid open-ended comments. Their comments were clustered into five areas and are reported in order from most-frequently mentioned to least-frequently mentioned. Six of the twenty-one students mentioned the "teamwork/cooperation skills" they learned as most impactful. "I was able to work with others better and share more of my ideas and it worked out nice." "Just getting out there and working as a team." Four students reported on the impact which "increased knowledge/sense of environmental responsibility" had on their problem-solving ability. "If there was a problem I would look at the situation and try to resolve it with my knowledge of the creek." Being able to confront "real problems frequently/doing projects" was noted by three of the twenty-one students. "We had to solve the problem of watering the plants." Having "control/autonomy/input into decisions" and "making a difference/efficacy" were each mentioned by two students as having boosted their problem-solving ability. These positions are reflected in the following open-ended comments: "With our program, each student has a lot of input. We make all the decisions." "You felt more in control of what you were doing, more responsible." "The problem of our environment is a large one, and I've learned that when individuals organize and come together, we can make a difference."
Focus group comments by NVHS students reinforced sense of satisfaction/accomplishment, cumulative impact of service experiences, autonomy/ownership, and ethic of caring as factors which contributed to their increased self-confidence in solving problems. Other factors were mentioned. They were: understanding the importance of taking baby steps in tackling a big problem, increased pride in themselves and the efficacy of their group, and supportive school staff and environment.

"Well, we were able to turn a desolate area into a butterfly habitat and take all the trash out of there." "If I had just been sitting up at school and they said we're going to do something like that, I wouldn't believe it. Like it never can happen." "Yeah, it makes you believe that you can actually change something." "It builds your confidence." "Before I used to walk through the park and I'd see someone throw trash down and I wouldn't say nothing [sic]. But now after cleaning it and having to go out and work, you're like, 'You better go pick that up.'"

"Yeah, it shows you that [with] a problem that large (watershed restoration), all you can do is take a step. That is what we've done. It's taught me that. All you can do is take a step. You can't expect it to be solved overnight." "They (teachers) provide the connections to get things done. . . . but the major work, the brunt labor, is done by us."

What service-learning program characteristics did RCS students report to have an impact on their sense of efficacy in solving problems? Sixty-four percent
of RCS students gave positive responses that their program boosted their confidence in solving problems. Seven of the eleven RCS students (63.6 percent) reported their program boosted their problem-solving ability "somewhat," while the remaining four students (36.4 percent) said it had no effect. No one reported it had helped them "a lot."

Seven valid open-ended comments were obtained from eleven respondents. With the exception of "reflection/discussion" which was mentioned by three students, each of the four other comments was in its own category. They were: "feeling like an adult," "sense of skill," "seeing myself as a helper," and "persisting with the project." The most-frequently mentioned program characteristic "reflection/discussion" came across in these comments: "Talking with different kinds of people." "Talking about it." The most telling of the other comments were: "It showed me I could do things to help." "In the garden you cannot give up on something. You have to work it out."

Focus group discussions of RCS students supported the majority opinion that their service-learning experiences had somewhat helped them gain more confidence in their problem-solving ability. Some perceptive comments were made that explained why their program had helped them, even though their claims were modest. They valued supportive staff and students, a renewed belief in themselves, the spirit of cooperation that prevails, and cumulative service experiences. "I like how the leaders... give you that extra push. Not
I like telling you, you've got to do this, but they kind of help you. . . . And you're like, 'Man, I thought I couldn't do this.' You feel good."

After completing a discussion of the most important problems facing them in their life and how their service-learning program may or may not have helped them face those with more confidence, the students said other schools should offer service learning. "They should make more schools like this because it really helps." "The problem is they're not really giving the kids at the other schools experience." "Because like over here you get job skills and school skills. Like at regular school, you just get school skills. So it is like you get two different things at the same time." To the researcher's question, "Why would you be willing to do that now than then, to be a volunteer, to help solve a problem?" they answered, "Because we've done it before and we've learned." "We're more responsible . . ."

**What service-learning program characteristics did H.A.W.K. students report to have an impact on their sense of efficacy in solving problems?** Of the H.A.W.K. students, 75.8 percent gave positive responses that their program boosted their confidence in solving problems. Thirteen of its thirty-three student participants (39.4 percent) said the program had boosted their problem-solving ability a lot, while twelve students (36.4 percent) said it had helped somewhat. The remaining eight students (24.2 percent) answered in the negative.

Twenty-four usable open-ended comments were obtained from the thirty-three who completed the survey. These were reviewed and semantically coded into eight initial categories which collapsed into five final categories. "Handling
"challenges/taking risks/striving" was mentioned the most; nine of the twenty-four comments pointed to opportunities to face challenges. "Handling things under pressure and always having problems." "I've had to solve a lot of problems and it has gotten easier." "Knowing that I could do some tough thing on my own." "I took more chances." "Expanded thinking/problem-solving skills" was a close second, commented on by eight students. "Knowing there is more than one right answer and getting to try out my answer." "I learned to think things through." "Yes, now I don't solve my problems with violence." "It helped me to learn that solving problems is easier than fighting." "Doing projects/helping" was the next most-frequently mentioned program characteristic heard in four out of the twenty-four comments. "It kept me from sitting around getting into trouble." "Planting things and working in the garden." "Helping the community is what motivates me to solve problems." Two of the twenty-four open-ended comments had to do with "teamwork/support."

Many of the same motivating factors mentioned in the survey data were brought out in the focus groups. Assuming personal responsibility/receiving responsibility, personal desire/aspiration, repeated hands-on experiences/teamwork, transferable communication skills, recognition, supportive teachers and peers, and will power/persistence were key themes. "Yeah, you know you're used to going to school everyday all your life, it's kind of weird. And you're about to graduate and you've got to think about what you're going to do to make your
own way. You just can't kick it, stay at home, watch TV and eat your parent’s food."

Receiving responsibility and doing things over time enhances one’s confidence. "A young lady said, "You build it." The young men in the group chipped in: "You build it. . . . It builds up all the time." "You have something that's your responsibility and B. (the teacher) and other people are counting on you to do, and you do that and do a good job, and they give you good feedback, and the next time you go to do something like that you have more confidence, because you've done something like that before." "And you're always having to come up with something quick, so you get used to solving problems like that, and it makes it easier on other things."

"And they think just because you're in high school or whatever they don't give you none of those awards and stuff like that, but some people need those awards to let them know they're doing good." "Let them know they're important." "In elementary we used to get them. When we got to high school, we never got them no more."

Staying with a problem and not giving up came across next in the conversation: "You've got to have will power too because you'll be doing stuff and you'll come along to something that will stump you for a while and you can't just quit. You've got to keep on going. . . . You've got to do it until it's done. At least do your best to where you can get somebody else to help you maybe."
One-on-one attention was mentioned several times by Project H.A.W.K. students. "They tell you that you can do it and if you can't do it on your own, they'll help you. They show you how." "I think there's a better learning environment out here." Researcher: "What makes it a better learning environment?" "The teachers." "The fact that you can be comfortable." "You know everybody. You know all the teachers. You get to know them real well." "I was getting straight 'Es' at high school. I come here and I'm on the honor roll the first quarter I'm here. So there's got to be something in that." "I think it's a better learning place just cause it's one-on-one, but there's way more opportunities." "It depends on what your goals are too."

"It's more hands-on." "You can learn better like this." "It's more comfortable calling them (their teachers) by their first names. It doesn't really feel like a superior. It feels like they help you." "Yeah, like a friend."

"It teaches us about communication skills and stuff like that, because on some stuff, you have to be able to communicate with the person you're working with." "You have to be open too, you can't be all nervous and shy like when you're first meeting somebody, like going on a job interview or whatever. Because on Field Days, you're meeting all the kids for the first time. Sometimes there's a parent in the group and that can make you feel even more nervous when you've got a parent. And you've just got to have fun with it."

A review of the semantic categories mentioned by students across the three programs reveals that no one program characteristic was mentioned more
than once in the most-frequently mentioned category on the survey.
However, each was a potent, easily-recognized program characteristic supported
by the research literature.

NVHS students were most impacted by the "teamwork/sense of
cooporation" engendered by its projects and school community. RCS students
spoke of the power of reflection and discussion in boosting their problem-solving
ability. HAWK students claimed that the opportunities presented to them to face
challenges and take risks had the greatest impact on them. NVHS mentioned
"increased knowledge/environmental responsibility" and Project H.A.W.K.
mentioned "expanded thinking/problem-solving skills." These categories are
closely allied and suggest that the particular settings, student bodies, and
service-learning goals of the three programs contribute to the different
characteristics articulated as most effective by their participants.

Focus group comments across the three programs show the importance
of supportive teachers/peers, opportunities/challenges, renewed belief in oneself,
recognition, teamwork, and ownership/autonomy in building a sense of personal
efficacy in solving problems. It is clearly difficult to distinguish between the
characteristics of their alternative school setting and the service-learning
component, module, or experience that was or was not instrumental in helping
the at-risk student make gains in this area.

Understanding of Watershed Stewardship

Responses to survey item 10, "Did the program help you to be a better
watershed protector?" are summarized in figure 12. These data show that a majority of participants responded that their individual programs had helped them be better watershed protectors. River Community School had the greatest number of "not at all" respondents (N=5) out of eleven who completed the survey. RCS currently is focusing on community gardening, food service, light construction and painting work, elementary reading tutorials, and aid to the elderly in their service work. Only a few of the current students had participated in the school's direct watershed cleanup and restoration efforts in years past.

Fig. 12. Student reports of the degree to which their service-learning program helped them be a better watershed protector, by program. Note: Results shown in percentages; total N=65.

The general orientation of the school's current service projects away from purely environmental problems explains the large percentage of students who said they didn't do watershed stewardship or didn't know what that meant.
In general, the researcher found that the term "watershed stewardship" was not clearly understood or widely used even by the students who were currently engaged in explicit watershed restoration activities. Students across the three programs used other terms to describe what they did, such as "helping the environment," "working with nature," "working outdoors." This lack of use and understanding of the term "watershed stewardship" contributed to some of the "not at all" responses. In one case, a very motivated, environmentally aware senior wrote a question mark next to the term, and left both the question and the open-ended comment portion blank, when in fact, she had grown significantly while in the program through dedication to environmental restoration and teaching. This positive change was noted in teacher observations communicated to the researcher, and improved attendance as indicated by her records. The researcher thinks that had he used a more familiar term to students, they would have given more positive responses.

What service-learning program characteristics did NVHS students report to have an impact on their sense of understanding watershed stewardship?

Of NVHS students, 90.5 percent gave positive responses that their program helped them be better watershed protectors. Eleven of twenty-one NVHS students (52.4 percent) responded that their program had helped them a lot, while eight (38.1 percent) said it had helped them somewhat. Only two students said their program had no effect on their commitment to watershed stewardship.
Open-ended responses to the follow-up question, 10a, gave respondents who answered "somewhat" or "a lot" a chance to explain "What was it about the program that helped you to be a better watershed protector?"

Nineteen comments were given by twenty-one students. These comments are clustered into two categories, presented here from most-frequently mentioned to next most-frequently mentioned. Twelve students attributed their "hands-on experiences" with their local creek to their increased commitment to watershed stewardship. One person said, "Seeing the creek at its dirtiest, it makes me want to clean and make it nice for people to look at. Still another put her learning into a nutshell: "Because with me, when I usually learn something hands-on, the info. will stick so I will know the info.. I want to learn more. I want to keep the water clean." Five of the nineteen comments suggested that their "increased knowledge and awareness of their watershed/eco\logy" helped them be better watershed protectors. "It taught us about protecting things that are necessary for us to live clean and healthy." "I have learned that all the trash we have doesn't just disappear so I am more conscious of where I put my trash, and I don't just let my friends trash this earth either." "Now I know what a watershed is and I know how to help." "I notice when I visit natural creek[s] or other water environments, I look closer at them, i.e., water quality, flow, and inhabitants. Two of the nineteen comments dealt with outcomes, not specific program characteristics. While it was hard to determine which category to put them in, they could have easily been attributed to one or the other, they unequivocally communicate the essence
of watershed stewardship. "Every time I walk through Newhall [Park] with my friends, or go fishing with my brother, I don't allow anyone to pollute." "It made me care about the earth and how we treat it."

*Focus group comments reinforced the power of hands-on experiences and increased knowledge and awareness in generating greater understanding of watershed stewardship.* Students showed mindfulness of the individual and societal implications of an expanded watershed awareness, even though their specific knowledge of the details of their region's watershed was sketchy.

"We're more aware of the surroundings, because we've been through it. We've seen it. So we're more aware of what is going on, what people are doing to it." "It causes you to do more to protect." "Well, this is just one little part, you know. There is tons of other creeks and reservoirs and lakes and ponds around here."

NVHS students see themselves as watershed protectors by their actions and by the examples they set for others. "We do cleanup. We test the water. We make sure it is clean. We try to make sure the water is running." They see and feel a realistic sense of efficacy. "There needs to be more programs like this to even make more of a difference. Because we're only, not to say anything bad about our group or anything, I'm just saying we can't do everything. So, there need to be a lot more programs." "Yeah, because like we have one section and we're educating people that maybe could implement something in another section of it. It is like you start at point 'A' and work all the way to point 'B' and
then finally if you can imagine like the whole entire watershed just being
totally from the first day (in the old days) it started being like. . . . That would be
totally awesome."

"We are very lucky to have this kind of chance to do this stuff. Maybe for
the younger kids. Maybe for the freshman or middle school kids this would be
good to get involved." "Especially at Willow (a local school). They jump right in."
"Yeah, the little kids would have a lot of fun just being outside. I mean, they're at
school, but still they're doing some fun." "But there needs to be a way that we
can get some of the adults into it."

Students who have been with the program for some time really have a
vision of how to involve others in hands-on, service learning in their watershed.
They demonstrate their capacity to apply their knowledge to new situations and
take advantage of opportunities.

I suggested it to Jeff Hicks like a couple of months ago. Ignatio Valley
(comprehensive high school next door) would be a good place because they
have a creek running right by their school and near their classrooms. There
is this whole dirt area. When I had gone there we planted flowers and grew
gardens, but now it is just all dirt. So that would be a cool place. Their
biology classes or science classes could do that. Because the water is right
there. They could test the water. And they have the perfect area back there
to plan a butterfly habitat. You can go and take a caterpillar into the
classroom and everybody can watch how it crystallizes (chrysalises). And
that is a really cool thing.

What service-learning program characteristics did RCS students report to
have an impact on their sense of understanding watershed stewardship? Of
RCS students, 54.6 percent gave positive responses that their program helped
them be better watershed protectors. One of the eleven RCS students reported
it had helped him a lot, while five students (45.5 percent) said it had helped somewhat. Five students (45.5 percent) said the program did not help them be better watershed protectors.

Five valid open-ended comments were obtained from the eleven survey respondents. These clustered into three areas. Three students mentioned "physical activities/direct involvement in watershed." Comments such as "being there more" and "We would clean things up and build things" suggest they valued active, in-context learning. One mention was made of "helping others," and one of "learning how to help keep the community clean." The former comment emphasized cooperation, while the latter valued obtaining know-how.

Focus group comments regarding watershed stewardship were understandably sparse. A couple of students who had prior service-learning histories with RCS when it was more involved in watershed cleanup and restoration affirmed that they were watershed protectors. The rest did not. The two that did said they express their care for their watershed by cleaning up and growing plants.

What service-learning program characteristics did H.A.W.K. students report to have an impact on their sense of understanding watershed stewardship? Of H.A.W.K. students, 83.9 percent gave positive responses that their program helped them be better watershed protectors. Twelve of the thirty-three H.A.W.K. students (32.3 percent) felt their program had helped them a lot,
while seventeen students (51.6 percent) said it had helped them somewhat. Four students (16.1 percent) said it hadn't helped them at all.

Twenty-five, usable open-ended comments were received from the thirty-three respondents. The five semantic clusterings are presented in order from most-frequently mentioned to least. "Greater knowledge/environmental awareness" was mentioned by twelve people as the determinant in their becoming a better watershed protector and are typified in the following comments: "It made me aware of my environment." "I now use less water and I express how I feel about it." "I know now what is important to take care of." The "hands-on restoration, planting, and creek monitoring activities" were mentioned the second most frequently. Nine students made reference to them: "We plant trees, native grasses, and clean up trash." "The plants because I can see them bloom." "Yes, because when I help out in the garden it makes me want to help out at home." "It helped me learn how to plant trees at my own house. The other three semantic clusters were each mentioned by one person. They were: "living close to the creek," "working with other people," and "working in the community."

Focus group interviews with H.A.W.K. students surfaced several explanations for increased understanding of watershed stewardship, though they used other terms. One student was so bold as to say: "You know we answered that question in the survey but probably none of us understood it." "Something about keeping something safe." "Yeah, keeping your environment clean and your community safe." Another youth ventured to define a watershed:
It's just keeping what you hold dear to you inside so nothing else can get it, you know. If it was something like your community and you like to help out in your community and that's what you're doing, you keep it inside sheltered from everything else. So it can't get hurt or nothing like that. You want to kind of protect it.

An internalized ethic of caring and social responsibility, seeing the relationship between their teaching and societal change, and getting a sense of the long-term nature of watershed restoration/ stewardship were stated as factors that influenced their understanding. They see themselves as watershed protectors, especially in their teaching roles. "We're kind of teaching—getting the kids out there on Field Day. We're teaching them about that too. So they're going to keep that in mind when they get older." Another person said, "Well, that and plus once they learn it, it's something new to them and they go home and tell it to their parents . . . and they start doing it too."

H.A.W.K. students also conveyed their understanding of life cycle and sense of responsibility as contributing to their sense of watershed stewardship. "Because they'll be around when we're dead (the younger children they teach), so they might as well take care of it." "There's a lot of stuff that needs to be done out there. It takes more than just our lifetimes, because you plant trees and trees live a lot longer than we do, right? And we're not even close to being done out there." "I'd like to see in ten years some of the habitat being brought back to the creek right there. Because a lot of the native animals have been chased off just by all the expansion and everything."
The two program characteristics most-frequently mentioned across the three programs as efficacious in motivating students to be better watershed protectors were "hands-on experiences in their local watershed/environment," and "increased knowledge/environmental awareness."

**Summary of Findings for Research Question 2**

The pie charts in appendix J show to what degree students across the total study (N=65) perceived their programs to impact their school attendance, sense of connectedness to community, sense of social responsibility, sense of efficacy in solving problems, and understanding of watershed stewardship. Table 7 summarizes those findings and show that students reported their service-learning program impacted them positively in each of the five variables.

With respect to **school attendance**, 42 percent of the total students surveyed (N=65) said the program made them want to go to school "a lot." Fifty-six percent of the students said the program made them want to go to school "somewhat," while 2 percent indicated "not at all." Sixty-five percent said that after participating in the program, they were absent from school less. Thirty-five percent said their attendance was the "same as before." No one said they were absent from school more after participating in the program (appendix J).

With respect to **sense of connectedness to community**, 32 percent of the students said their program made them feel like they belonged to their
Table 7. Percentage of Students in the Total Study Who Perceived Their Programs to Positively Impact their School Attendance, Sense of Connectedness to Community, Sense of Social Responsibility, Sense of Efficacy in Solving Problems, and Understanding of Watershed Stewardship

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>Positive Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did the program make you want to go to school more?</td>
<td>98%</td>
</tr>
<tr>
<td>Did the program make you feel like you belonged to your community more?</td>
<td>97%</td>
</tr>
<tr>
<td>Did the program motivate you to help out more in your community?</td>
<td>86%</td>
</tr>
<tr>
<td>Did anything about your program boost your confidence in solving problems?</td>
<td>86%</td>
</tr>
<tr>
<td>Did the program help you be a better watershed protector?</td>
<td>81%</td>
</tr>
</tbody>
</table>

community "a lot," while 65 percent answered "somewhat." Only 3 percent answered "not at all" (appendix J).

With respect to sense of social responsibility, 22 percent of the students surveyed said their program motivated them to help out more in their community "a lot." Sixty-four percent answered "somewhat," and 14 percent answered "not at all" (appendix J).

With respect to efficacy in problem solving, 22 percent of the students surveyed said that their program boosted their confidence in solving problems "a lot," 64 percent answered "somewhat," and 14 percent answered "not at all" (appendix J).

With respect to understanding watershed stewardship, 35 percent of the students surveyed said their program helped them to be a better watershed
protector "a lot." Forty-six percent said their program helped them "somewhat," and 19 percent answered, "not at all" (appendix J).

Students perceived the following program characteristics to be most helpful in making gains in their school attendance: high-interest/fun activities, active, hands-on learning, having a job/adult roles, learning new things/job skills, getting outside, and development of a sense of ownership and social responsibility.

Students perceived the following program characteristics to be most helpful in making gains in their sense of connectedness to community: having chances to do good/help others, having hands-on work, feeling a sense of accomplishment, receiving rewards, and developing a sense of cooperation.

Students perceived the following program characteristics to be most helpful in making gains in their sense of social responsibility: feeling a sense of accomplishment/doing good, feeling pride in their program/community, having chances to help others, developing a sense of cooperation, social relationships, and active, hands-on learning.

Students perceived the following program characteristics to be most helpful in making gains in their sense of efficacy in solving problems: developing a sense of cooperation, increased knowledge and sense of environmental responsibility, time for reflection/discussion, having adult responsibilities, facing challenges, and developing expanded thinking/problem-solving skills.
Students perceived the following program characteristics to be most helpful in making gains in their understanding of watershed stewardship: having hands-on experience, increased knowledge and sense of environmental responsibility, physical, direct involvement in their watershed, and developing of a sense of cooperation.

Students with more extensive service-learning experience (fifty or more hours per semester) were generally more perceptive of their program's characteristics and rated them as more helpful on outcome measures compared to students with less extensive (between twenty and fifty hours a semester) or limited experience (less than twenty hours a semester).

The researcher confirmed that a majority of the individuals' actual attendance changes were of the nature or direction they had indicated in their self-reports. When there was a discrepancy, it was usually because the student had been conservative and underreported what actually proved to be an improvement in attendance. A handful of individuals self-reported changes that were disconfirmed against actual records.

Relationship between student perceptions of program characteristics and their degree of service-learning experience. Three line graphs (figures 13, 14, and 15) show the degree to which students perceived program characteristics to be present in their respective programs, by degree of service-learning experience. The general finding is that there was a relatively close correlation
Fig. 13. Mean responses of NVHS students when asked to what degree they perceived specific characteristics to be true of their program, by extensiveness of service-learning experience. Note: N=21.
I understood the goals of the project and what was expected of me.

I received immediate feedback on the quality of my work.

I had the opportunity to develop my leadership skills.

I had the opportunity to participate in habitat cleanup and restoration efforts.

It gave me a sense of social responsibility.

I had the opportunity to face challenges.

I could choose from a variety of tasks/modules.

Teachers and project leaders were friendly to me.

I had a chance to do cross-age mentoring.

I felt like I was part of the solution to important social and environmental problems in my community.

I was given adult responsibilities.

I was free to explore my interests.

I had opportunities to volunteer off campus.

I was given time to think about what I was learning from my experiences and to keep a journal.

I received recognition for my accomplishments.

I had the opportunity to develop job skills and get a job.
Fig. 15. Mean responses of Project HAWK students when asked to what degree they perceived specific characteristics to be true of their program, by extensiveness of service-learning experience. Note: N=33.
between the degree to which students perceived a characteristic to be true of
their program (shown in means) and its perceived helpfulness. Students with
more extensive service-learning experience appeared to be more aware of
specific program characteristics than students with less extensive experience.
They gave generally higher ratings than their less-experienced classmates
indicating they perceived the stated characteristics to be more true of their
programs.

A direct correlation was found to exist between those program
characteristics which students most frequently mentioned as being helpful, and
their being stated as important by program directors. NVHS was an exception to
this rule in one instance. Its program director said cross-age mentoring was an
important feature of the service-learning program she provided her students.
Figure 13 shows that students perceived that characteristic to be only somewhat
true of their program. The mean score for that characteristic was 3.70. It also
had the largest standard deviation of 1.75 where the minimum score reported
was 1.0 and the maximum, 6.0. In the findings that follow, the teachers report
that it was not at all true of their program either, at least up to that point in the
school year when the data were gathered.

Report of Findings for Research Question 3

Which service-learning program characteristics did teachers
perceive to have an impact on their students' school attendance, sense of
connectedness to their community, sense of social responsibility, sense of
personal efficacy in solving problems, and understanding of watershed stewardship?

School Attendance

Part 3b of the survey asked teachers to indicate the program characteristics (listed in figures 13, 14, and 15) which they thought were most helpful to students. A ranking was obtained for each variable of what was "the most valuable," the second most valuable," and the "third most valuable."

What service-learning program characteristics did NVHS teachers report to have an impact on their students' school attendance? Item 6 questioned them with reference to their students: "Did any of these make them want to go to school more?" Both NVHS teachers said "yes" they had. The most useful program characteristics for motivating students to want to go to school more were: "They were given adult responsibilities" and "They had the opportunity to do natural resource monitoring and be part of real research projects." The second most useful characteristic in the teachers' opinion was "It gave them a sense of social responsibility." The third most useful characteristics were: "They were free to explore their interests," and "They could choose from a variety of tasks."

Item 11 asked, "After the program, they were absent from school: less than before, same as before, or more than before." Both NVHS teachers said students were absent from school less than before. Item 12 posed the question, "To what extent were students more or less engaged in their class work after the
program?" Possible answers were "less engaged," "no change," or "more engaged." To this question, both teachers answered "more engaged."

*Focus group comments from NVHS teachers supported their survey claims that participation in real research, hands-on environmental enhancement, and natural resource monitoring projects motivated students to attend school more and be more engaged once they got there.* They said that *these projects gave them a sense of ownership and responsibility.* People were counting on them. Teachers also said *students enjoyed school more because of the variety of activities* going on. The *school's flexibility and spontaneity to pursue field trip or service opportunities off-campus* made *school more interesting.*

Particularly with water quality testing in nearby Galindo Creek and the maintenance of the butterfly habitat which they created next to it, "they feel responsible for it. It's their thing. Something they need to do." Students look forward to days when they know a guest speaker is coming or when a hands-on activity is planned. If kids are not motivated to come to school, it's "because they're so involved in other aspects of their life. They're so consumed with the boyfriend or the family, the job." "Having a home." "They're preoccupied with outside things."

*What service-learning program characteristics did RCS teachers report to have an impact on their students' school attendance?* RCS's two teachers both said their service-learning program had made their students want to go to school more. Both said their students were absent from school less, one with a
footnote, "much less." And to be expected, both teachers said their students were more engaged in their class work after the program. Their surveys showed they were of one mind on the most useful, and second most useful program characteristics in getting RCS students to school: "I had the opportunity to develop job skills and get a job" and "I received recognition for my accomplishments." The third most useful characteristics were: "Teachers and project leaders were friendly to me" and "I was given adult responsibilities."

The teacher interviews reinforced the factors mentioned in the open-ended survey comments and brought out others. They said students were more motivated to come to school and be involved in their work because they valued the positive status of being part of the school, the positive, responsible roles they get to play, the chance to get outside, the sense of belonging and connectedness their school community engenders and its safe, supportive, success-oriented atmosphere.

"Yeah, but part of it is that they like being physical. They know for the most part that they aren't going to college. They need some kind of trade and skill. Almost right down the line, every single one of them really wants to be productive and find a place in society and have something positive so they won't be in trouble. This is a way to start the process, and they know that."

School is "something to look forward to. They like the physical part of work. They like the monetary part of work. They like the buy-ins. It gives them a buy-in for our community." "I'm part of this place." "This specific community.
There is a definite status that goes along with our community service, our work program. It's a positive status. It's a belonging."

Students may come into RCS thinking its school system is just like the one they were kicked out of.

It doesn't take very long for them to find that it is a smaller, more caring environment. The classes are more individualized. First name basis. It is more friendly. There is very little pressure except from the students to be cool, to not get in trouble. As A. was saying, there is no fights here. And almost all of these students have fight histories and being kicked out of public school for their fight involvements. So there is a community at this community school which starts to then be a positive one. That you can be successful at school. That you can work to earn a high school diploma. That you can work. That you can be service learners. So all those things start happening. And it takes about a year, a year and a half to sort of shed some of the old skin.

Knowing that sometime during the day they will get the chance to get outside the classroom motivates some students to come to school. "The activities are both "an incentive and . . . just a more balanced way to spend the day."

What service-learning program characteristics did Project H.A.W.K. teachers report to have an impact on their students' school attendance? Project H.A.W.K.'s three teachers each agreed that their program made students want to go to school more, and that they were absent from school less. In assessing the extent to which their students were more or less engaged in their class work after the program, two of the three teachers said they were more engaged. One teacher was a little bit more realistic and circled a "4" in the "no change" category.
leaning toward more engaged. The scale was one to six, where one was less engaged and six was more engaged.

H.A.W.K. teachers thought the most useful program characteristics for students were "teachers taking a personal interest in them;" "being expected to take responsibility for the success and natural consequences of their actions;" and "being given adult roles and responsibilities." The second most useful program characteristics in making students want to come to school more were: "letting kids choose from a variety of tasks," "teachers showing a personal interest in their students," and "expecting them to take responsibility for the success and natural consequences of their actions." "Giving students positive adult roles and responsibilities," "expecting them to take responsibility for the success and natural consequences of their actions," and "giving them a sense of social responsibility" were named to be the third most useful program characteristics. The repeated mention of personal interest shown to students, placing high expectations on them to take responsibility for themselves, and positive adult roles and responsibilities is indicative of the H.A.W.K. program, and their potency as protective factors for at-risk youth.

Focus group data concurred with the survey data. Program characteristics mentioned as helpful in motivating kids to come to school more included: the variety and number of service-learning experiences, the acceptance and sense of belonging they feel, and the feeling their teachers are in there for the long haul with them.
H.A.W.K. teachers were as realistic as RCS teachers in saying that not all students are going to show improved attendance and engagement in learning. Most will. After recounting a story of a student who shared a remarkable turn-around over time, the teacher went on to say: "Yeah, you see the kids definitely do better and attend school more often. But then you also kind of attract that kid more too. So it is kind of a fine line. You know the kids that attend more tend to take on that kind of challenge." Another teacher expressed this difficulty to distinguish between the role the school played in bringing about improved attendance and the role which Project H.A.W.K., the service-learning program at the school played.

Extensiveness of service-learning experience was said to be a major determinant in kids maturing, in some cases, very dramatically. If they stay with the program, they come to see that the program supports them in being successful and reaching their goals. These positive changes are hard to put a finger on but the teachers recognize something different in the student "that you can't really document on paper. It's a feeling that you get."

But it might take you two years to see that type of change. And I don't know if it is a function of maturity or if it has to do with the student finally realizing, hey, I've got to graduate, or if what you're doing in this type of classroom setting has all of a sudden really changed that kid's outlook on school. I've had one kid in my class now for, if he stays until June, it'll be four years. I mean the kid is twenty years old. I've had him in there since he first came to Cache Creek High School. But the level in which he can communicate and the quality of his work and those types of things have changed dramatically because of this. I attribute it a lot to this class.

Like we do portfolios and every time I'd say, 'What is your opinion about H.A.W.K. How do you feel about the class? I've gotten responses that I'm
sitting there reading in this grading and I almost start crying because of the way these kids respond to questions like that. I've had one kid say, "HAWK to me is like my family. Every time I come in the classroom I feel accepted. I feel that I can be who I am. I can communicate with everybody in the class. I'm an equal." Other kids write, "This is the best class in the world. It has given me the chance to learn about myself, to teach kids, to experience all these things."

Sense of Connectedness to Community

Item 7 posed the question, "Did the program make them feel like they belonged to their community more?" Each of the seven teachers surveyed across the three programs answered, "Yes."

What service-learning program characteristics did NVHS teachers report to have an impact on their students' sense of connectedness to their community?

NVHS teachers listed a diverse set of program characteristics to which they attributed this positive effect on students. The most useful characteristics were perceived to be that it gave them "a sense of social responsibility" and "an opportunity to do natural resource monitoring and be part of real research projects." The second most useful characteristics were that students "had the opportunity to face challenges" and felt like they were "part of the solution to important social and environmental problems in their community." The third most useful ones were thought to be the opportunities they had "to volunteer off campus" and the "encouragement to participate in habitat cleanup and habitat enhancement efforts."

Analysis of focus group comments showed these same themes were repeated. Teachers perceive students feeling a greater sense of pride in their
school and community. "For so long some of them feel like they're kind of like a juvenile delinquent. But they feel like they're part of it when they come in here." The projects the school is involved in "make them proud of being a student at Nueva Vista." Exposure to positive role models such as Jeff Hicks from the Lindsay Wildlife Museum and personnel from the City of Concord Public Works Department makes them respect the community more. "They're seeing adults also that respect the community and we get to know these adults and they respect the adults." For example, they learn that the city parks personnel are people just like them. "Instead of it doesn't matter if I litter because someone will clean it up, they're seeing faces of people that have to clean it up. And I think that makes them (show) more appreciation . . . for their community." "They feel like they're not doing enough . . . they need to do more. They feel they need to be in contact with the community."

What service-learning program characteristics did RCS teachers report to have an impact on their students' sense of connectedness to their community? RCS teachers reported that their most useful program characteristics for helping students feel a greater sense of belonging to their community were the "opportunity to face challenges" and "opportunities to volunteer off campus." The second most useful characteristics were that "teachers and project leaders were friendly" to students and that "students were made to feel part of the solution to important social and environmental problems in their community." RCS teachers thought their third most useful program characteristics to be the "adult
responsibilities" they were given and "opportunities to develop their leadership skills."

Follow-up interviews with the teachers revealed other driving forces at work to help students feel more connected to their community. As with NVHS, RCS teachers perceive that there is a status associated with belonging to their program which students feel. Positive contacts with authority figures and lots of praise and recognition help students overcome their anti-social conditioning and counter years of negative messages which they have internalized about themselves.

"And I hear a lot of our teenagers that have started getting these positive experiences and have been able to sustain themselves here for a few years that they feel compelled to do other service-learning volunteer work, working with youth, giving back some of what they've gotten back."

Teachers thought students would define their community as those people with whom they are closest, their friends, their school, maybe their family, mainly their everyday relations. They would not necessarily include the larger community of Ukiah or beyond into that conception of community, though that is something they are working on, to stretch their connectedness and feeling for community. They might feel good about volunteering at a homeless kitchen but they are not quite at the point where they think that it is part of their community. What they do belong to is their school community. The beautiful, well-kept grounds of the court community school were cited as testimony to the sense of
belonging which students feel for their "community" closest to home. Taking care of that, building picnic benches, shade structures, decks, and a softball field that is used and enjoyed by neighbors after hours, have helped them come to "believe and even form the inner enjoyment or realization that they can make an impact on their immediate surroundings. They can impact their community."

What service-learning program characteristics did Project H.A.W.K. teachers report to have an impact on their students' sense of connectedness to their community? Project H.A.W.K. mentioned some of the same types of program characteristics as NVHS and RCS teachers. Real hands-on service projects, adult roles and responsibilities, recognition, a sense of social responsibility and efficacy in solving important problems were the common characteristics mentioned the most by H.A.W.K. teachers. Two of them reported that it was the "opportunities to perform habitat cleanup, plant propagation, restoration, and monitoring efforts" which made students feel more connected to their community, while the other teacher said it was because they were "given positive adult roles and responsibilities." "Positive adult roles and responsibilities" was again mentioned, this time as one of the second-most useful program characteristics. The other two mentioned as second-most useful were that students were made to feel like they were "part of the solution to important social and environmental problems in their community" and "understood the goals of the project and what was expected" of them. The third most useful program characteristics were that students were "given time to think about and
discuss what they were learning from their experience with others," that they received recognition for their accomplishments," and that it gave them "a sense of social responsibility."

During the focus group discussions, the teachers said service-learning opportunities, leadership and helping roles, positive adult support, and acknowledgement helped their students feel more connected to their community, but there were a lot of mixed feelings. Part of the focus group discussion was given over to the teachers expressing their own ambivalence about how some people in their own school district looked down at them for working with at-risk kids. They are lauded and ostracized at the same time and are kind of working under the same stereotypes that their students face that get in the way of feeling connected to their community. "Because for mine, and also to a certain extent at Cache Creek, those students are not welcome in the community and have already done something that the community looks down on them for. And this way it changes their perception and the kids' perception of them." "You just plunk them right down in the community and they make a difference." "And they see that."

Teachers thought that students would define community as that which is close at hand, their surroundings, the day-to-day folks they spend time with. Two of the three teachers thought that H.A.W.K. activities didn't affect the way their students feel about their community. They like getting out to the creek, helping
kids, working on their own projects. "I don't think they ever really walk away with, 'Oh, I've made Woodland a better place. They talk about experiences.'"

**Sense of Social Responsibility**

Item 8 on the teacher survey related to developing a sense of social responsibility. It asked, "Did any of these (program characteristics) motivate them to help out more in their community?" While NVHS and RCS teachers unanimously affirmed that they had, and ranked their respective program characteristics accordingly, Project H.A.W.K. teachers unanimously said their program hadn't and so offered no rankings. Two of them did offer the following explanatory footnotes: "With the exception of a few students, most limit their community service to their weekly teaching." "Not after school—unless it was for a school project."

None of the program characteristics mentioned by NVHS teachers as most useful were repeated by RCS teachers in their rankings. The program and student population differences between the two could account for the wide range of characteristics reported to have affected their students' sense of social responsibility." RCS is helping to give a second chance to students with a criminal record. Their emphasis has to be at least initially on developing and reinforcing positive attitudes, work skills, and social awareness so that they can be successful, and build up their low self-esteem.

NVHS serves students that are not so far out of the mainstream and so their teachers reported characteristics that are built on basic skills and attitudes,
but take them to a higher level. Examples of these would be "facing challenges" and "feeling part of the solution to important social and environmental problems." NVHS teachers ranked the latter and "giving their students a sense of social responsibility" as most useful. RCS teachers put "opportunities to develop job skills and get a job" and "recognition received for their accomplishments" in the first position. NVHS teachers ranked as second most useful the "opportunities to face challenges" and being "given time to think about what they are learning from their experiences and to keep a journal."

"Recognition for accomplishments" and "opportunities to develop leadership skills" were ranked as second most useful by RCS teachers. Both NVHS teachers ranked "the opportunity to do natural resource monitoring and be part of real research projects" as third most useful in motivating their students to help out more in their community. RCS teachers placed "opportunities to volunteer off campus" and understanding "the goals of the project and what was expected of me" in the third ranking.

What service-learning program characteristics did NVHS teachers report to have an impact on their students' sense of social responsibility? When asked in the focus group interview, NVHS teachers brought out the opportunity for students to work socially and cooperatively with each other as a prime motivator for them to want to volunteer in the future. Rather than separate students because they're going to talk to each other, "in a way sometimes it works because they're together. They're comfortable so they tend to work a little
better." And actually, C. ______, she's been really coming to school more because we've got students that she really gets along with."

What service-learning program characteristics did RCS teachers report to have an impact on their students' sense of social responsibility? Interviews with RCS teachers reinforced opportunities for students to be helpful and productive, recognition of student accomplishments, and cultivation of student leadership as helpful in promoting a sense of volunteerism. Promotion of team concept was an additional helpful factor mentioned. Both teachers reported that they see students reach a threshold in their life after spending time in the program.

I think in my gut what it is, it's just that they're starting to feel okay about themselves. They know what it feels like first-hand, how it feels to be disenfranchised, really out of the loop, really looked at with scorn and they want to share that because they know that there are others out there just like that. And they know that they can put some positive energy back into those kinds of people. And as they've said, they can make a difference just like we've made a difference for them.

What service-learning program characteristics did Project H.A.W.K. teachers report to have an impact on their students' sense of social responsibility? In contrast to the unanimous opinion expressed by H.A.W.K. teachers on the survey that their program hadn't helped their students volunteer more in their community, the focus group interview heard them say that it did under certain conditions. One of the three teachers said: "The ones that are very active would volunteer at other programs as well, I'm sure, because that is their family culture. You know they do things like that." Two of the three teachers said their students would volunteer again if asked. One of those two teachers said
students would not volunteer "because of the greater sense of being good people," but to please their teacher or "just because they want to be away from home, and be out of there and going out and doing something."

The teacher that thought her kids would not be likely to volunteer more because of H.A.W.K. explained her reasoning, akin to what NVHS teachers have said. When her at-risk students volunteer with Project H.A.W.K., they volunteer with their peers. They're in a familiar social network. The teacher thought that if her students volunteered on their own they would not be with their peers, and as a result "would feel dumb, awkward. Our kids won't let themselves feel awkward. That is horrifying to feel awkward."

One of the two teachers that gave qualified conditions under which his students would volunteer said many of the kids he works with are not too good on follow through on weekends; that is, doing what they say they're going to do. He also thought many lacked a clear sense of the interconnectedness of their life. While not sure if it was a developmental issue, he remarked: "I don't think that they see just the big picture. They don't have the ability to step back and look at all the things they're doing, or one thing they've done and how it affects so many different people."

**Sense of Efficacy in Problem Solving**

Item 9 asked teachers, "Did any of these boost their confidence in solving problems?" Each of the teachers from NVHS and RCS answered "yes" as well as did two of the three H.A.W.K. teachers. *Overall, teachers perceived their*
programs to help boost their students' confidence in problem solving.

Having "the opportunity to face challenges" was mentioned the most, appearing in five different rankings. "Adult roles and responsibilities" was mentioned on three occasions, while "being expected to take responsibility for the success and natural consequences of their actions," "being free to explore their interests," and "encouragement to participate in habitat clean-up and habitat enhancement efforts" were each ranked twice.

What service-learning program characteristics did NVHS teachers report to have an impact on their students' sense of personal efficacy in solving problems? NVHS teachers ranked "recognition of student accomplishments" and "encouragement to participate in habitat cleanup and habitat enhancement efforts" as the most useful in boosting their students' sense of personal efficacy in problem solving. The program characteristics that were second most useful were "I had the opportunity to face challenges" and "I had the opportunity to do natural resource monitoring and be part of real research projects." Those characteristics ranked third most useful were: "I was free to explore my interests" and "I felt like I was part of the solution to important social and environmental problems in my community."

During the focus group interview NVHS teachers said they didn't see many of the current students having more confidence in their problem-solving ability. "I don't think they're there yet." "I think later on it will help them." They reminded the researcher of the turnover of their student body and that they
recently got a lot of new students. "They’re still getting the feel of the program." "I think right now they’re still kind of experimenting." For those students who have been in the program long enough for it to have an effect on them, the teachers reinforced the value of positive recognition, leadership roles, and opportunities to reach out to the community and communicate with people outside their age and family group as helpful in becoming more confident in themselves and their abilities. Specifically, they see students become more proficient in solving problems in a group context because "when they go out they really have to work together and learn to lean on each other." It is "a skill which a lot of them seem to lack." Teachers see students able to take this confidence in problem solving into employment situations where they have to resolve differences with bosses or coworkers.

What service-learning program characteristics did RCS teachers report to have an impact on their students' sense of personal efficacy in solving problems? The most useful program characteristics to enhance student confidence in problem solving in the eyes of RCS teachers were: "I had the opportunity to face challenges" and "I was given adult responsibilities." The characteristics ranked second most useful were "I had the opportunity to develop my leadership skills" and I understood the goals of the project and what was expected of me." RCS teachers ranked "immediate feedback on the quality of their work" and "the opportunity to face challenges" as third most useful program characteristics with respect to this variable.
Analysis of interviews with RCS teachers showed a concurrence with their survey data. Both teachers were emphatic in saying the program helped their students' problem-solving ability. One said, "Oh yeah, definitely." The other said, "I think incredibly so, yeah. And especially the ones that don't just come here for a quick fix or seemingly quick fix, a few months, six months. The ones that are here for a year or two years, they start feeling more healthy. They start feeling okay again. They start feeling like they could even make a goal, let alone try to work toward it."

It is like they have to deal with their own issues first before they have any kind of confidence level to be able to deal with the larger problems of the community and society in general. And it is pretty clear that personal issues are the first ones for these students. And the ones that are able to deal with that, they're going to be able to go ahead and be able to be successful people in their lives, personally and professionally. And be able to be the ones that go out and work in the community and solve some of the community problems too.

The chance to develop job skills, face challenges, take risks in a safe environment, receive recognition, and feel a sense of accomplishment were mentioned as additional contributors to students' developing sense of confidence in solving problems.

What service-learning program characteristics did Project H.A.W.K. teachers report to have an impact on their students' sense of personal efficacy in solving problems? Two H.A.W.K. teachers ranked "the opportunity to face challenges" as most useful in building students' confidence in their problem-solving ability. The other teacher gave first ranking to "opportunities to perform habitat cleanup, plant propagation, restoration, and monitoring efforts."
adult roles and responsibilities," "being free to explore their interests," and expectation "to take responsibility for the success and natural consequences of their actions" were ranked as second most useful to students. The program characteristics that were ranked as third most useful were "being expected to take responsibility for the success and natural consequences of their actions," "positive adult roles and responsibilities," and "feeling like their teachers showed a personal interest in them." "The positive evaluations by teachers really boosts their confidence."

Focus group data from teachers supported their survey rankings, and then some. Having the right to take risks and fail, safe, supportive environments, high expectations, being expected to stick with difficult tasks and finish them, and opportunities to communicate with others and learn useful skills applicable to other settings were cited as helpful to building students' sense of efficacy in problem-solving ability. Two of the three teachers said they thought H.A.W.K. experiences gave them more confidence in being able to tackle a larger world problem. Teachers particularly noted that their students come away with stronger communication, creative thinking, and reasoning skills than many traditional high school students. "They're willing to speak their mind." A small percentage from the Project TEACH class, maybe two or three students out of twenty, show exceptional problem-solving ability and get really involved in researching and advocating for a particular issue, such as child abuse prevention and reporting.
Teachers perceive their programs as giving their at-risk participants opportunities to serve with adult roles and responsibilities in their respective projects. Their service settings provide students with opportunities to face challenges and develop the skills and competence necessary to meet them. Further, students are perceived as having opportunities to pursue their interests and receive acknowledgement for their accomplishments.

Understanding of Watershed Stewardship

Item 10 probed teachers’ perceptions about the impact of their program relative to understanding watershed stewardship. The question read: "Did any of these help them to be better watershed protectors?" Four of the seven teachers in the study said that their programs did not make the student participants better watershed protectors, while three said they had.

What service-learning program characteristics did NVHS teachers report to have an impact on their students' understanding of watershed stewardship? The NVHS teachers who answered "yes" gave the following rankings listed in order from most useful, to second most useful, to third most useful: "I had the opportunity to do natural resource monitoring and be part of real research projects." "I was encouraged to participate in habitat cleanup and habitat enhancement efforts." "I was free to explore my interests."

Teachers reported in the focus group interviews that involvement in habitat enhancement and monitoring activities was key to helping students be better watershed protectors. Their understanding of watershed stewardship
builds up over time with repeated, hands-on experiences and immersion in nature. It also makes them want to do more on behalf of nature. They become more committed. They "want to be out and do what [they're] supposed to do, clean the creek and keep it nice . . . they want to stay working and focused on that." Students are more aware of how individual actions affect water quality, plants, and wildlife in a given watershed. Teachers thought they would carry this understanding with them and be able to apply it to new areas they moved to or vacationed at. "I think now they can get the overall concrete picture of how it all connects to each other, whereas before, I don't think they really saw themselves as connected to that."

What service-learning program characteristics did RCS teachers report to have an impact on their students' understanding of watershed stewardship? None of the RCS teachers answered "yes" to the question. As a result, no responses were received. It became clear after discussions with its program director and interviews with its students and teachers, that RCS's service-learning emphasis had shifted from environmental work to social and educational work. The "no" responses given by RCS teachers are in concurrence with their interview statements and data gathered from students.

Interviews with teachers did give indications that when RCS was doing more environmental cleanup and restoration work, their students definitely developed an understanding and commitment to watershed stewardship. After helping clean up the illegal dumpsite on Mill Creek, the students were appalled
that anyone could litter and pollute so vagrantly something so pristine as a waterway and its surrounding habitat. Since then, the school has gone back to that spot from time to time to check on it, and there has been significantly less litter.

One of the two teachers observed that contact with the garden, especially composting, provided students with a basic understanding of living things and the delicate interrelationships which support them. "Many of these students come from families where there isn't empathy. There isn't the ability to, like, think of another living thing. So that is another kind of threshold that does extend their sense of community, their sense of connectedness to something outside themselves. And that is, like, a big one." While teachers thought that it would be "a pretty far stretch" to call their students watershed protectors, "they have started to gain some appreciation for plants that grow and the kind of frog, lizard, toad, butterflies and birds, animal life" that live in their area. They've gained a sensitivity to them which is the basis of watershed stewardship.

What service-learning program characteristics did Project H.A.W.K. teachers report to have an impact on their students' understanding of watershed stewardship? Two of the three Project H.A.W.K. teachers responded that "yes" their program did make students better watershed protectors. These were the two teachers who were most directly involved with their students in habitat cleanup, restoration, monitoring, and educational interpretation of their local waterway, Cache Creek. With the Project TEACH teacher who answered "no" to
the question, only one of the four groups she works with was involved in environmental restoration service-learning projects along Cache Creek. Her no answer makes sense bearing in mind this contextual information.

The most useful program characteristics ranked by the two H.A.W.K. teachers that answered affirmatively were: "I understood the goals of the project and what was expected of me," and "I had opportunities to perform habitat cleanup, plant propagation, restoration, and monitoring efforts." This latter characteristic was mentioned again as the second most useful characteristic along with "having opportunities to volunteer off campus." No rankings were offered of characteristics that were third most useful.

Focus group comments by the three teachers were in accordance with their survey responses. Students are exposed to their local environment and come to understand how their actions affect it. Their participation in habitat restoration, monitoring, field studies, and teaching are "making people aware and they're becoming aware themselves, and those activities I think are protecting the area." The background information they receive is also hopefully helping them become more informed voters on land-use and water issues that affect their watershed.

In summary, teachers perceive opportunities to volunteer off campus and doing environmental restoration service in their local watershed to be most helpful in making their students better watershed protectors. These explicitly watershed-related service projects were the main emphases of two of the three
service-learning programs studied. Where students clearly understood the goals of their respective projects and could follow their interests, teachers perceived those students to further their sense of stewardship.

**Summary of Findings for Research Question 3**

Teachers perceived the following program characteristics to be most helpful in their students making gains in *school attendance*: having adult responsibilities, having opportunities to do natural resource monitoring/real research, having opportunities to develop job skills/get a job, receiving recognition for their accomplishments, teachers' personal interest in their students, and expectations for students to take responsibility for themselves.

Teachers perceived the following program characteristics to be most helpful in their students making gains in *sense of connectedness to community*: having a sense of social responsibility, opportunities to do natural resource monitoring/real research, opportunities to face challenges, opportunities to volunteer off campus, having adult responsibilities and having opportunities to do environmental restoration.

Teachers perceived the following program characteristics to be most helpful in their students making gains in *sense of social responsibility*: making students feel part of the solution to problems, having a sense of social responsibility, opportunities to develop job skills/get a job, and receiving recognition for accomplishments.
Teachers perceived the following program characteristics to be most helpful in their students making gains in *sense of efficacy in problem solving*: receiving recognition for accomplishments, encouragement to participate in habitat cleanup and enhancement projects, having opportunities to face challenges, and having adult responsibilities.

Teachers perceived the following program characteristics to be most helpful in their students making gains in *understanding of watershed stewardship*: having opportunities to do natural resource monitoring/real science, encouragement to participate in habitat restoration cleanup and enhancement projects, and understanding project goals and expectations of participants.

Report of Findings for Research Question 4

Was there a difference between the program characteristics that students perceived to have an impact on them, and those identified by their teachers?

A comparison of the program characteristics which students perceived to have an impact on them and those identified by their teachers shows considerable correlation. To facilitate the comparison between these two groups, tables 8, 9, and 10 were created. They merge the perceptions of students and teachers from each program onto single pages. The correlational line charts (figures 16, 17, and 18) plot the mean scores of student and teacher ratings of the degree to which they perceived universal and program-specific characteristics to be true of their respective programs. Survey respondents rated
each of these characteristics on page two of their surveys using 1-6 Likert scales. Before statistical analyses of these data were begun, the numerical value for a rating of "very true of their program" was reversed from a "1" to a "6" so that it would be in keeping with common practice; that is, the more positive the response, the higher the number value given to it on the Likert scale. The final discussion to answer research question 4 will utilize both the semantic summaries of tables 8, 9, and 10 and the numerical scale correlations found in figures 16, 17, and 18.

Comparison of Program Characteristics

Differences between program characteristics which NVHS students perceived to have an impact on them and those perceived by their teachers. Table 8 shows that students and teachers agreed that active, hands-on learning/real science projects in their local watershed were most impactful in motivating students to attend school. Students emphasized the down-to-earth appeal of such projects, the sheer fun and change of pace involved in getting outside and doing them. In contrast, the teachers thought that it was the more mature nature of the tasks and responsibilities that are associated with monitoring natural resources that would compel students to want to come to school more.

Students and teachers were in agreement on what motivated students to feel more connected to their community. The differences were mainly semantic. Having the chance to do hands-on projects in the community was key. Students
Table 8. Program Characteristics which NVHS Students and Teachers Perceived to be Most Helpful in Making Gains

<table>
<thead>
<tr>
<th>Variable</th>
<th>Students</th>
<th>Teachers</th>
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<tbody>
<tr>
<td>School attendance</td>
<td>- High interest/fun&lt;br&gt;- Active, hands-on learning&lt;br&gt;- Getting outside</td>
<td>- Adult responsibilities&lt;br&gt;- Opps. to do natural resource monitoring/real science&lt;br&gt;- Sense of social responsibility</td>
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<tr>
<td>Connectedness to community</td>
<td>- Doing good/helping others&lt;br&gt;- Hands-on work/sense of accomplishment&lt;br&gt;- Involvement in community</td>
<td>- Sense of social responsibility&lt;br&gt;- Opps. to do natural resource monitoring/real science&lt;br&gt;- Opps. to face challenges&lt;br&gt;- Be part of solution to problems</td>
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<tr>
<td>Social responsibility</td>
<td>- Sense of accomplishment/doing good&lt;br&gt;- Pride in community/program&lt;br&gt;- Increased ecological knowledge</td>
<td>- Be part of solution to important social and environmental problems&lt;br&gt;- Sense of social responsibility&lt;br&gt;- Opps. to face challenges&lt;br&gt;- Reflection on learning/journals</td>
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<td>Problem solving</td>
<td>- Cooperating with others&lt;br&gt;- Increased knowledge/environmental responsibility&lt;br&gt;- Facing real challenges</td>
<td>- Recognition of accomplishments&lt;br&gt;- Encourage participation in habitat cleanup/enhancement&lt;br&gt;- Opps. to face challenges&lt;br&gt;- Opps. to do natural resource monitoring/real science</td>
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<tr>
<td>Watershed stewardship</td>
<td>- Hands-on experience&lt;br&gt;- Increased knowledge/environmental awareness</td>
<td>- Opps. to do natural resource monitoring/real science&lt;br&gt;- Encourage participation in habitat cleanup/enhancement</td>
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and teachers saw these as opportunities which provide students with a natural entry into their community, a chance to be in helping relationships with others and productive capacities in the eyes of others. Students noted the simple "doing good" nature of their service, whereas teachers intellectualized the same phenomena into "sense of social responsibility." The teachers' term is more academic but is in essence like the students' term, just "helping others."

Students also were motivated by their sense of accomplishment. Teachers said
the same thing in suggesting it was their chance to face challenges and be part of the solution to problems that contributed to a greater feeling of belongingness.

NVHS students and teachers agreed on what contributed to a sense of social responsibility. It was their involvement, their efforts, and their sense of accomplishment in facing challenges. Students had a slightly different twist. They accentuated pride they took in their community/program and increased ecological knowledge as supporting factors. Teachers put weight on the challenges inherent in cooperative, hands-on work and the powerful learning that comes from reflection/journal writing.

Students attributed the program characteristics of cooperation, increased knowledge/environmental awareness, and real challenges as most helpful in making gains in problem-solving ability. Recognition of accomplishments was the only characteristic mentioned by teachers that was not mentioned by students.

There were no significant differences between the perceptions of NVHS students and teachers with respect to what contributed to gains in understanding watershed stewardship. Both students and teachers perceived that these gains come from hands-on experiences in one’s own local watershed. Activities like water quality monitoring which requires both visual and chemical analysis of samples and maintenance of a computer database of observations and test results are examples of real science. These activities increase knowledge and
environmental awareness in participants. They lead to greater understanding. Cleanup and restoration of habitat builds a sense of ownership and caring for land. Both sensibilities are implied in the concept of stewardship.

Figure 16 gives a more visual comparison of the perceptions of students and teachers which, in general, were within one standard deviation of each other's means. Thirteen of fifteen characteristics were perceived to be very true of NVHS's environmental restoration service-learning program. Teachers did not perceive cross-age mentoring to be true of their program, while students said it was somewhat true of their program. The opportunity to develop job skills was only perceived by teachers to be somewhat true of their program. Students rated it about three-quarters of a standard deviation higher than teachers did.

In general, NVHS teachers rated program characteristics slightly higher than students. They did so for eleven out of fifteen characteristics. They were most closely in agreement on students being part of the solution to important social and environmental problems, understanding the goals and expectations of the project, that they were given time to reflect on what they learned, that they were given adult responsibilities, that they were free to explore their interests, that they could volunteer off campus, that teachers were friendly to students, and that students received recognition for their accomplishments. Teacher perceptions differed more from students over the variety of tasks students could do, that students could face challenges, and that they were encouraged to participate in habitat cleanup and restoration efforts. Students thought they had
<table>
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<tr>
<th>Very True of My Program</th>
<th>6</th>
<th>5</th>
<th>4</th>
<th>Somewhat True of My Program</th>
<th>3</th>
<th>2</th>
<th>Not At All True of My Program</th>
<th>1</th>
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<td>I understood the goals of the project and what was expected of me.</td>
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<td>I had the opportunity to do natural resource monitoring and be part of real research projects.</td>
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<tr>
<td>I was encouraged to participate in habitat cleanup and habitat enhancement projects.</td>
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<td>It gave me a sense of social responsibility.</td>
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<td>I had the opportunity to face challenges.</td>
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<td>I could choose from a variety of tasks.</td>
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<td>Teachers and project leaders were friendly to me.</td>
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<tr>
<td>I had a chance to do cross-age mentoring.</td>
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<tr>
<td>I felt like I was part of the solution to important social and environmental problems in my community.</td>
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<td>I was given adult responsibilities.</td>
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<td>I was free to explore my interests.</td>
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<tr>
<td>I had opportunities to volunteer off campus.</td>
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<tr>
<td>I was given time to think about what I was learning from my experience and to keep a journal.</td>
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<tr>
<td>I received recognition for my accomplishments.</td>
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<tr>
<td>I had the opportunity to develop job skills.</td>
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</table>

Fig. 16. Correlation of mean ratings of participating students and teachers of the degree to which specific program characteristics were perceived to be true of NVHS’s environmental restoration service-learning program. Note: N=21 students; N=2 teachers.
less variety, less challenges, and less encouragement when compared with
the perceptions of teachers.

Differences between program characteristics which RCS students
perceived to have an impact on them, and those perceived by their teachers.
Table 9 shows a comparison of program characteristics which RCS students and
teachers perceived to be most helpful in making gains. While there were areas
of agreement, there were also significant areas of difference in their opinion over
factors which contributed to gains in connectedness to community, social
responsibility, and confidence in problem solving. Teachers didn't perceive that
their program developed a sense of watershed stewardship in students, while the
students thought that it did.

Opportunities to develop job skills, get a job, and have adult roles were
perceived by both students and teachers as motivators to attend school.
Teachers differed from students in that they mentioned recognition for
accomplishments as an additional motivator, while students mentioned getting
out of class as what mattered to them. Teachers and students agreed on helping
others/volunteering and active, challenging, hands-on learning as most helpful in
making gains in connectedness to community. Students differed in their
perceptions from teachers by identifying rewards as having an impact. Teachers
did not mention rewards. Teachers differed from students in identifying getting
off campus, their friendliness to students, and the opportunity to be part of the
solution to problems as additional program characteristics they thought helped students develop a stronger sense of connection with their community.

Table 9. Program Characteristics which RCS Students and Teachers Perceived to be Most Helpful in Making Gains

<table>
<thead>
<tr>
<th>Variable</th>
<th>Students</th>
<th>Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>School attendance</td>
<td>-Having a job/adult roles</td>
<td>-Opps. to develop job skill/get job</td>
</tr>
<tr>
<td></td>
<td>-Learning new things/job skills</td>
<td>-Recognition for accomplishments</td>
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<tr>
<td></td>
<td>-Getting out of class</td>
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</tr>
<tr>
<td>Connectedness to community</td>
<td>-Helping others</td>
<td>-Opps. to face challenges</td>
</tr>
<tr>
<td></td>
<td>-Rewards</td>
<td>-Opps. to volunteer off campus</td>
</tr>
<tr>
<td></td>
<td>-Active/hands-on learning</td>
<td>-Teachers friendly to students</td>
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<td></td>
<td></td>
<td>-Be part of solution to problems</td>
</tr>
<tr>
<td>Social responsibility</td>
<td>-Helping others</td>
<td>-Opps. to develop job skill/get job</td>
</tr>
<tr>
<td></td>
<td>-Cooperating with others/social relations</td>
<td>-Recognition for accomplishments</td>
</tr>
<tr>
<td></td>
<td>-Sense of accomplishment</td>
<td>-Opps. to develop leadership skill</td>
</tr>
<tr>
<td>Problem solving</td>
<td>-Reflection/discussion</td>
<td>-Opps. to face challenges</td>
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<tr>
<td></td>
<td>-Adult responsibilities/beings treated as adult</td>
<td>-Adult responsibilities</td>
</tr>
<tr>
<td></td>
<td>-Accomplishment/self as helper</td>
<td>-Opps. to develop leadership skills</td>
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<tr>
<td></td>
<td></td>
<td>-Understood project goals/ expectations of participants</td>
</tr>
<tr>
<td>Watershed stewardship</td>
<td>-Physical, direct involvement</td>
<td>-No responses</td>
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<td></td>
<td>-Cooperation</td>
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<tr>
<td></td>
<td>-Increased knowledge</td>
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</tr>
</tbody>
</table>

Students differed from teachers in their identification of program characteristics that contributed to gains in social responsibility. Students kept to the basics: helping others, cooperating, and the sheer act of being able to relate with others. Teachers mentioned opportunities to develop job skills/get a job and develop leadership skills as more impactful. Both teachers and students mentioned the accomplishments they made that gave them a sense of social
responsibility. The interesting difference between the two groups appeared in students having placed emphasis on their internal experience of accomplishment, independent of someone telling them they had done a good job, whereas teachers saw the emphasis more as public recognition, the external approbation from others.

RCS teachers and students were alike in their identification of adult responsibilities and potency ("accomplishment," "facing challenges," ) as contributing to gains in confidence in problem-solving ability. They differed in other ways. Students mentioned reflection/discussion and teachers did not. Teachers mentioned opportunities to develop leadership skills and understanding project goals and expectations of participants as helping students' confidence. Students did not mention these characteristics as helpful.

Teachers gave no comments about factors that contributed to understanding of watershed stewardship, because they didn't perceive their program geared to that purpose any more. Interestingly, some students said it did. Those students who said RCS helped them make gains in understanding watershed stewardship said it was because of the physical, direct involvement with their environment, a sense of cooperation they felt, and increased knowledge that came as the result of their activities.

Figure 17 provides a correlation of mean scores of RCS student and teacher perceptions of their program's characteristics. More than one-third of the characteristics of RCS were perceived by its students to be only "somewhat true
Fig. 17. Correlation of mean ratings of participating students and teachers of the degree to which specific program characteristics were perceived to be true of RCS's environmental restoration service-learning program. Note: N=11 students; N=2 teachers.
of [their] program." The perceptions of students and teachers were closest in the following areas: students having opportunities to volunteer off campus, to explore their interests, to have adult responsibilities, and to have the opportunity to develop leadership skills, and that teachers were friendly to students. Their perceptions were most different over time for reflection and receiving immediate feedback. The mean ratings of students on time to think about what they were learning from their experiences and to keep a journal was 4.09, a little above "somewhat true of my program." Teachers rated that characteristic almost one-and-a-half standard deviations higher with a 5.50 mean rating as "very true of my program." Teachers gave a response of "6," "very true of my program" to their giving immediate feedback to students on the quality of their work. This rating was 1.18 standard deviations higher than the 4.82 rating of students. Students agreed they got feedback from their teachers, but not to the extent that teachers perceived their giving it.

Students gave higher ratings than teachers on their chance to do cross-age mentoring and be part of the solution to important social and environmental problems. Though this latter rating by students fell within the "somewhat true of my program" scale, the positive directionality of their perceived involvement in solving important problems is to be noted.

During completion of the rating of program characteristics on page two of the survey, one of the two RCS teachers crossed out student engagement in habitat cleanup and restoration efforts and wrote in as a replacement "community
service and organic gardening." To that statement, the teacher gave the highest rating, "very true of my program." The other teacher rated the statement as is with a "3," only "somewhat true of my program." Numerical analysis of their two scores gave a deceptive mean rating of 4.5, which is in sharp contrast with their open-ended responses which downplayed the environmental education they thought their students were getting. This deception also makes the teacher rating appear more positive than the mean rating of students.

Differences between program characteristics which Project H.A.W.K. students perceived to have an impact on them, and those perceived by their teachers. A comparison of the program characteristics perceived as most helpful by H.A.W.K. students and teachers shows areas of mutual agreement in four of the five variables (table 10). Students and teachers held common perceptions regarding school attendance, connectedness to community, problem solving, and watershed stewardship. Teachers sharply differed from students in their perceptions of the program's impact on sense of social responsibility.

Students and teachers agreed that ownership and a sense of responsibility in the success of one's individual and cooperative ventures help students improve their school attendance. Teachers suggested that personal interest shown to their students was also effectual. Personal interest was not mentioned by students; however, they mentioned getting outside and high interest/fun activities as also being helpful to motivate them to attend school.
### Table 10. Program Characteristics which Project H.A.W.K. Students and Teachers Perceived to be Most Helpful in Making Gains

<table>
<thead>
<tr>
<th>Variable</th>
<th>Students</th>
<th>Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>School attendance</td>
<td>- Getting outside</td>
<td>- Personal interest in students</td>
</tr>
<tr>
<td></td>
<td>- Ownership/social responsibility</td>
<td>- Expectations to take responsibility for self</td>
</tr>
<tr>
<td></td>
<td>- High interest/fun</td>
<td></td>
</tr>
<tr>
<td>Connectedness to community</td>
<td>- Helping others/cooperation</td>
<td>- Opps. to do environ. restoration</td>
</tr>
<tr>
<td></td>
<td>- Making a difference</td>
<td>- Adult roles and responsibilities</td>
</tr>
<tr>
<td></td>
<td>- Having responsibility/adult roles</td>
<td>- Part of solution to problems</td>
</tr>
<tr>
<td>Social responsibility</td>
<td>- Helping others</td>
<td>- No responses</td>
</tr>
<tr>
<td></td>
<td>- Active/hands-on learning</td>
<td></td>
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<tr>
<td></td>
<td>- Sense of accomplishment</td>
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<tr>
<td></td>
<td>- Personal/social relationships</td>
<td></td>
</tr>
<tr>
<td>Problem solving</td>
<td>- Facing challenges</td>
<td>- Opps. to face challenges</td>
</tr>
<tr>
<td></td>
<td>- Expanded thinking/problem-solving skills</td>
<td>- Opps. to do environmental restoration</td>
</tr>
<tr>
<td></td>
<td>- Doing hands-on projects</td>
<td>- Adult roles/responsibilities</td>
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<td></td>
<td></td>
<td>- Free to explore interests</td>
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<tr>
<td>Watershed stewardship</td>
<td>- Greater knowledge</td>
<td>- Understood project goals and expectations of participants</td>
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<tr>
<td></td>
<td>- Hands-on activities</td>
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</tbody>
</table>

H.A.W.K. students and teachers agreed that adult roles and responsibilities and making a difference contributed to building a stronger connectedness in students to their community. Students also emphasized the cooperative nature of the helping activities they were engaged in as having an impact on this variable. The acknowledgement that teachers gave to opportunities to perform environmental restoration incorporates the cooperative nature of such large-scale actions.

Students saw four program characteristics as being valuable in developing their sense of social responsibility. They named helping others, active hands-on
learning, sense of accomplishment, and personal and social relationships as helpful. The three Project H.A.W.K. teachers chose to make no responses as they felt their students did not make significant gains in social responsibility as a result of their participation. Interestingly, as shown in figure 18, H.A.W.K. teachers rated the variable that dealt with students being part of the solution to important social and environmental problems in their community as "very true" of their program.

Students and teachers agreed on the helpfulness of facing challenges, having adult roles and responsibilities, and participating in hands-on projects in building personal confidence in problem solving. Freedom to explore interests was mentioned by teachers as helpful but not by students in this regard.

Students perceived greater knowledge and hands-on activities as helpful in developing their understanding of watershed stewardship. The same was implied in the perceptions of teachers which emphasized student understanding of project goals and expectations of participants. Hands-on participation in habitat restoration projects is one of the key goals of Project H.A.W.K. Teachers see students' environmental awareness and understanding growing naturally out of their service projects.

Figure 18 shows a correlation of mean scores of student and teacher ratings of Project H.A.W.K.'s program characteristics. The majority of characteristics were perceived to be very true of the program in the eyes of both students and teachers. A very close correlation (one half a standard deviation or
Fig. 18. Correlation of mean ratings of participating students and teachers of the degree to which specific program characteristics were perceived to be true of Project HAWK's environmental restoration service-learning program. Note: N=33 students; N=3 teachers.
less) was seen between their perceptions in seven of the fifteen characteristics. Students and teachers agreed that students: understood the goals of the project and what was expected of them, had freedom to explore their interests, had an expectation to take responsibility for the success and natural consequences of their actions, were given a sense of social responsibility, had opportunities to volunteer off campus, and could choose from a variety of tasks. The four areas of greatest difference, though not significant, were concerning opportunities to perform environmental service, personal interest in students, students as social and environmental problem solvers in their community, and opportunity to develop job skills and get a job. Mean scores of students for these program characteristics were about one standard deviation below those reported by teachers.

H.A.W.K. teachers gave higher ratings than students in twelve out of fifteen program characteristics. Teachers gave the highest ratings to the opportunities for students to face challenges, that teachers showed a personal interest in their students, that they were given positive role models and adult responsibilities, and received recognition for their accomplishments. Students gave the highest ratings to the expectation to take responsibility for their own success, could choose from a variety of tasks, had opportunities to volunteer off campus, received recognition for their accomplishments, had the opportunity to face challenges, were given positive adult roles and responsibilities, and understood the goals and expectations of the project.
Summary of Findings for Research Question 4

Teachers generally rated program characteristics from one-half to one-and-a-quarter standard deviations higher than students. They perceived both the universal and program-specific characteristics to be more present, "more true" of their programs than students. Teachers and students were most in agreement over the program characteristics that had an impact on students' sense of connectedness to community, personal efficacy in problem solving, and understanding of watershed stewardship. Their perceptions were most different over the program characteristics that affected students' school attendance and sense of social responsibility.

With respect to school attendance, teachers repeatedly overlooked the value which students placed on getting out of the classroom and getting outside. Students consistently mentioned getting to be outside as a motivating factor to come to school. H.A.W.K. teachers suggested that personal interest shown to students was also effectual. This characteristic was not mentioned by their students. Teachers and students agreed that high interest, hands-on, community-based, environmental research/service activities, opportunities to develop job skills/learn new things, adult roles and responsibilities, and ownership in the project/school make school more engaging. Sense of engagement is critical to motivation to attend school.

NVHS students emphasized the down-to-earth appeal of participation in
watershed restoration projects, the sheer fun and change of pace involved in getting outside and doing them. Their teachers thought it was the more mature nature of the tasks and responsibilities associated with them that would compel students to want to come to school more. RCS teachers differed from their students by mentioning recognition for accomplishments as an additional motivator.

In two of the three programs, RCS and H.A.W.K., students differed from teachers in their identification of program characteristics that contributed to gains in social responsibility. RCS students were tuned in to the basic good feelings and connectedness they got from helping others, cooperating, and just relating with others as impacting their sense of social responsibility. RCS teachers, on the other hand, thought it was the opportunities to develop job skills/get a job and develop leadership skills that were more impactful. H.A.W.K. teachers sharply differed from students in thinking students weren't more socially responsible as a result of participation in the project. Teachers saw students as having done their part during the school day, but that their socially concerned activities stopped there and didn't carry over to other contexts. As a result, they offered no program characteristics as being helpful. H.A.W.K. students did see their program as having an impact on their sense of social responsibility. They identified helping others, active, hands-on learning, sense of accomplishment, and personal/social relationships as program characteristics that had made a difference for them in developing their sense of social responsibility.