FINAL REPORT:
THE RECYCLING AWARENESS PROJECT
A Service Learning Experience

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EXECUTIVE SUMMARY:
RECYCLING AWARENESS PROJECT: 1993-94

Introduction
Portland State University's Recycling Awareness Project was a community-based, service learning experience which used recycling as a vehicle to address the problems facing high school youth and schools. In this project, college, high school and grade school youth learned about recycling and waste stream reduction issues, and taught each other. In the course of this process of multi-leveled recycling education, opportunities were created for youth to learn in enhanced environments that directly addressed the existing inadequacies in the educational system. The purpose of the project was to create a more meaningful educational experience and engage students in their community, producing students with identities as active and involved citizens.

The goals of the Recycling Awareness Project were as follows:
• provide a model of youth in community service learning which enhances educational experience while improving recycling rates in the community;
• demonstrate a method for creating long-term mentoring opportunities integrated into local higher education programs, through college/high school collaborations;
• reduce high school dropout rates;
• develop a curriculum on recycling which can be used by high school teachers;
• increase positive student ties to the local community;
• empower students with a sense of self-efficacy that encourages community involvement.

The Recycling Awareness Project consisted of three major components:
• Portland State University Courses Soc/USP 399A &B: "Impacting People Impacting the Environment: The Social Psychology of Recycling": a two-term sequence of courses, which prepared Portland State University students for the "Recycling Awareness Program" at Roosevelt High School.

• The "Recycling Awareness Program": the two six-week community-based educational classes taught by the team of high school interns and Portland State University students to students in the Natural Resource Pathway Program, at Roosevelt High School. These classes focused on promoting the involvement of Roosevelt High School youth in local recycling and waste reduction issues in their local neighborhoods.

• The "Recycling Intern Project": funded by a local non-profit agency, Portland Youth Advocates, this element consisted of that portion of the larger Recycling Awareness Program that involved the two student interns. This project emphasized the encouragement of on-going recycling activities at the Columbia Villa/Tamarack Housing Development.
Background
The Recycling Awareness Project developed out of Portland Youth Advocates' Recycling Intern Project. Originally designed as an after-school activity for Roosevelt High School students who lived in and around the Columbia Villa/Tamarack Housing Development, the Recycling Intern Project aimed at increasing youth involvement in local recycling and waste stream-related issues.

Through the efforts of two teachers at Roosevelt High School, an opportunity was provided to include an expanded version of the Recycling Intern Project in the sophomore Natural Resources Pathway science curriculum for the 1993-94 school year. During this same time period, the Portland Educational Network (PEN), a federally-funded project under the Endangered Urban Children and Youth Grant, was promoting the development of programs to improve student retention rates at group of targeted area high schools, including Roosevelt. They saw the expanded Recycling Intern Project as a potential vehicle to accomplish this goal. PEN's support was the impetus for a further expansion of the original design, which became the Recycling Awareness Project.

Social Psychology of Recycling Class
The Social Psychology of Recycling classes, developed and taught by the Recycling Awareness Project director at Portland State University during Fall term 1993 and Winter term 1994, examined how techniques of social influence could be used to positively impact an individual's relationship with the environment. Each term of the Social Psychology of Recycling course was structured in the same manner: five weeks of preparation and classroom work at Portland State University, followed by a six week Recycling Awareness Program, conducted at Roosevelt High School for the sophomores in one of the Natural Resource Pathway science classes.

Each Social Psychology of Recycling class included a set of exercises and activities designed to prepare the Portland State University students for their upcoming roles as teachers of the Recycling Awareness Program at Roosevelt. The purpose of these activities and exercises was to allow the students to practice the different tasks that they would be teaching the Roosevelt students in the Recycling Awareness Program.

The Portland State University students became proficient at a variety of skills including:

- administration of a field research instrument,
- conducting field observations,
- development and delivery of recycling-related informational presentations,
- production of a recycling promotional video, and
- small group processes, including leadership.
The design of the overall Social Psychology of Recycling classes, as well as the individual training exercises, was based on specific techniques of social influence and identity building, including: modeling, public commitment, role-identification, cognitive dissonance, self-perception, self-attribution, role-playing, self-persuasion, and self-efficacy.

The Recycling Awareness Program
The Recycling Awareness Program was a six week environmental education class, conducted by the Portland State University students for each of two Natural Resource Pathway science classes at Roosevelt High School. The Recycling Awareness Program consisted of four elements:

• **a series of informational presentations** - Made by members of the Portland State University teaching team, topics included: types of materials which can be recycled, and how to prepare them for recycling; a history of recycling, with a local emphasis; the 3 R’s: “Reduce, Reuse, Recycle; “composting; packaging/wise consumerism; and waste characterization.

• **field research** - Two four-week sets of field observations of selected recycling collection systems at Columbia Villa, conducted by teams of Roosevelt students.

• **production of videos promoting recycling** - Each Natural Resource Pathway science class produced three pro-recycling promotional videos.

• **“kids-teaching-kids”** - A multi-level educational program, where students at one level became the teachers at the next level. The Portland State University program staff taught the college students and interns, who then taught the Roosevelt High School students, who then taught students at nearby Clarendon Elementary School.

In much the same manner as the Social Psychology of Recycling classes, the Recycling Awareness Program utilized several innovative teaching techniques:

• credibility enhancing activities,

• use of video to promote: commitment, motivation, role identification, student bonding, and empowerment; and

• a program to increase students’ feelings of self-efficacy.

The Recycling Intern Project
The Recycling Intern Project utilized Roosevelt students, who lived at Columbia Villa, as part of the “Recycling Awareness Program” teaching team. These student interns:

• supervised the field research conducted by the Roosevelt students,

• directed the data entry process,

• facilitated communication between the Roosevelt students and the project staff, and
• communicated feedback to Columbia Villa residents as to the effectiveness of their recycling efforts.

Outcomes
The outcomes associated with the Recycling Awareness Project fall into three areas:
• outcomes related to recycling participation at the Columbia Villa/Tamarack Housing Development,
• outcomes related to the different groups of project participants, and
• outcomes related to the development of an ongoing Recycling Awareness Project.

Outcomes Related to Recycling at Columbia Villa
Recycling participation at the Columbia Villa/Tamarack Housing Development was measured using a “Participation Rating System” developed by the Recycling Education Projects, Center for Urban Studies, at Portland State University. It was primarily a measure of recycling quality. There were two key dimensions to the rating system: 1) the amount of time it took the hauler to rectify the problem, and 2) the volume of recycling materials involved. Depending upon the amount of time needed to rectify the recycling problem, and the amount of volume present, collection systems were rated on a scale which utilized values from “no stars” (lowest) to “five stars” (highest).

The average participation rating score for all the monitored collection systems before the Recycling Awareness Project was 2.56 stars; after the project, 2.78 stars. While some systems improved more than others, overall the Recycling Awareness Project seemed to be associated with an improvement in recycling at Columbia Villa.

Outcomes Related to Project Participants
Three different groups of students were positively affected as a result of their participation in the Recycling Awareness Project: the Portland State University students from the Social Psychology of Recycling classes, the Roosevelt High School students who participated in the Recycling Awareness Program, and the recycling interns.

Portland State University Students
The students in the Social Psychology of Recycling classes showed significant increases in their respective levels of recycling information, including those students who began the course with a strong, positive identification with the role, “recycler.” Many of the students also increased their frequency of enacting specific positive recycling behaviors after participating in the project. While the majority of these students reported “never” engaging in these behaviors, several students dramatically decreased the frequency of which they enacted negative recycling-related behaviors. Of perhaps the greatest
importance, each of the students showed an increase in level of identification with the role, "recycler," after participating in class.

The Portland State University students benefited from being part of this service learning project. They received opportunities to conduct field research in a real world environment, not always available to college students. Also, the teaching and mentoring opportunities which developed in the course of conducting the Recycling Awareness Program at Roosevelt, led many of them to become more involved in the community as a result of their experiences. More than 70% of the Social Psychology of Recycling students went on to work on other recycling-related projects in the community. More than 40% became active in mentoring and other youth-related programs.

Roosevelt High School Students in the Natural Resources Pathway Science Class
The students from the Natural Resources Pathway science classes who participated in the Recycling Awareness Program learned valuable lessons in both recycling and community organization. These student participants showed significant improvement in level of recycling information, frequency of enactment of recycling related behaviors, and level of identification with the role "recycler," post-program, compared to pre-program.

In response to a survey asking students in the two Natural Resources Pathway science classes "What was the most important or useful information you learned in this class this year?" 64% identified the material on recycling. The Roosevelt students also benefited from the mentoring relationships that they developed with the Portland State University students. In a series of letters to the Portland State University students, they expressed their feelings of friendship and appreciation.

Recycling Interns
The two recycling interns also showed significant improvement in level of recycling information, frequency of enactment of recycling related behaviors, and level of identification with the role "recycler," post-project, compared to pre-project. Furthermore, based on interviews at the end of the project, both interns took pride in their roles as members of the teaching team for the Recycling Awareness Program.

Over the course of the Recycling Intern Project, both student interns made several trips to Portland State University where they were able to observe the day-to-day workings of the University. One intern, a graduating senior, spent a whole day at Portland State in the company of students with whom he had developed friendships during the Recycling Awareness Program at Roosevelt. As a result of the encouragement of these students, this intern has applied and been accepted as a freshman for Fall term, 1994, at Portland State University.
Outcomes Related to the Development of an Ongoing Recycling Awareness Project

The greatest single benefit of expanding the original Recycling Intern Project was the opportunity to incorporate the project into the natural Resources Pathway science curriculum at Roosevelt High School. The Recycling Awareness Project is scheduled to be conducted again at Roosevelt High School during the 1994-95 school year with a new class of sophomores. The materials used by the Portland State University class in the 1993-94 program have been collected, and organized into a packet of lesson plans so that teachers at Roosevelt and other high school can continue the Recycling Awareness Program even after the collaborative effort with Portland State University is finished.

Conclusions

An examination of the results of a short survey, administered to the students in the two Natural Resources Pathway science classes at the beginning and end of the 1993-94 school year, sheds light on some of the real problems in our high schools that need to be addressed. There is a major contradiction in the findings that 100% of students expect to graduate, with 75+% expecting to attend college; while at the same time many students considered dropping out, either before or during their sophomore year. On one hand, the high percentage expecting to graduate and even continue on to college reflects the common knowledge that an education is necessary to find satisfactory employment in today’s economy. Yet the high percentage of students considering dropping out after the freshman year (26%), and the even higher percentage (41%) considering dropping out during the sophomore year, suggest a lack of hope and perhaps fear that these goals are beyond students’ reach. This is why an intervention such as the Recycling Awareness Program is so important. By coming in contact with college students of varied backgrounds, some of the “doubting” high school students realize that others have been in similar circumstances and succeeded. They begin to see that college is not beyond their reach. As one Natural Resource Pathway science class student noted, “After a while I noticed the college students were just like me, only older.”

The Recycling Awareness Project was a successful service learning project. It enriched the educational experiences of the Portland State University, Roosevelt High School, and Clarendon Elementary School students; it promoted the recycling program at the Columbia Villa/Tamarack Housing Development, it facilitated high school student involvement in their local neighborhood, and it strengthened the connection between Portland State University and the North Portland community. This is an example of the kind of community-based learning that is only possible at an urban university such as Portland State.
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VIII. Recycling Awareness Project Summary

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Portland State University Students

The North Portland Community
1993-94 Recycling Awareness Project

I. Introduction

The Recycling Awareness Project was conducted in Portland, Oregon during the 1993-94 school year. This project used recycling as a means of providing a service learning model in which college, high school and grade school youth learned about the topic and taught each other. The purpose of the project was to address the problems facing youth and schools which included large classrooms with high student/teacher ratios, low levels of student self-esteem, increased levels of student alienation accompanied by decreased motivation, and a lack of ties to the local community. By bringing together students from various levels—college, high school and grade school—opportunities were created for youth to learn in enhanced environments that directly address the existing inadequacies in the educational system. The purpose of the project was to create a more meaningful educational experience and engage students in their community, producing students with identities as active and knowledgeable citizens. By doing so, students had a greater personal investment in their education, and were motivated to stay in school and to continue their education beyond high school.

The goals of the Recycling Awareness Project were as follows:

• provide a model of youth in community service learning which enhances educational experience while improving recycling rates in the community;
• demonstrate a method for creating long-term mentoring opportunities integrated into local higher education programs, through college/high school collaborations;
• reduce high school dropout rates;
• develop a curriculum on recycling which can be used by high school
teachers;
• increase positive student ties to the local community;
• empower students with a sense of self-efficacy that encourages community
involvement.

The Recycling Awareness Project consisted of three major components:
• Portland State University Courses Soc/USP 399A &B: "Impacting People
  Impacting the Environment: The Social Psychology of Recycling": a two-
term sequence of courses, which prepared Portland State University
students for the "Recycling Awareness Program" at Roosevelt. The courses
included instruction on techniques of mentoring, social influence, field
research, as well as concepts of recycling and program development

• The "Recycling Awareness Program": the two six-week community-based
  educational classes taught by the team of high school interns and Portland
State University students to students in the Natural Resource Pathway
Program, at Roosevelt High School. These classes were designed to
involve Roosevelt High School youth in local recycling and waste
reduction issues in their local neighborhoods. At the same time, the
program promoted on-going recycling activities at the Columbia
Villa/Tamarack Housing Development.

• The "Recycling Intern Project": funded by a local non-profit agency,
  Portland Youth Advocates, this element consisted of that portion of the
larger Recycling Awareness Program that involved the two student
interns. It also included additional activities the interns carried out
beyond those included in the Roosevelt classes. This project focused on
the promotion of recycling activities at the Columbia Villa/Tamarack
Housing Development.

Setting
Roosevelt High School is located at 6941 NE Central Ave., in the St. Johns
area of Portland, Oregon. The Columbia Villa/Tamarack Housing
Development is a low-income, Housing Authority of Portland complex
located approximately five minutes from Roosevelt High School. There are
458 units in the Columbia Villa section; 120 units in the Tamarack section.
This project was conducted exclusively at the Columbia Villa section of the
complex.

Recycling Background
Columbia Villa was the first public housing complex, in the state of Oregon,
to have an organized multi-family recycling collection program. In Summer,
1989, students from the Recycling Education Project, at Portland State
University, along with youth recycling interns, initiated the program. Since
that time, Columbia Villa -- due to its large size and high turn-over rate of
residents -- has been the focus of several other recycling education programs.

During 1992-3, the director of the current Recycling Awareness Project headed
a year-long, City of Portland-sponsored project to increase recycling
participation at the Columbia Villa/Tamarack Housing Development. A
highly successful sub-project involved the utilization high school-aged youth
as spokespeople to the larger community in an effort to reduce problems
associated with recycling at this complex (Collier, Hansen-Carr, Freeman, & Tracy, 1993).

Evolution of Recycling Awareness Project
The Recycling Awareness Project has been expanded in several areas in the process of reaching its current state.

Original Design
The Recycling Awareness Project developed out of Portland Youth Advocates’ Recycling Intern Project. The Recycling Intern Project had three major objectives:

- to increase the level and quality of recycling participation at the Columbia Villa/Tamarack Housing Development through a community education program.
- to offer learning experiences in the areas of recycling and community organization to local youth, and
- to incorporate community-based learning experiences into the relevant curriculum at Roosevelt High School.

As initially proposed, the Recycling Intern Project consisted of a team of three “teachers” -- the project director, a graduate assistant, and a youth intern (qualification: must live in the Columbia Villa complex, and attend Roosevelt H.S.). This team was scheduled to teach 2 different groups of 5 to 6 high school youth about recycling and waste reduction issues as part of a five week “after-school” program.
Natural Resource Pathway Program

Conversations with teachers from the Natural Resource Pathway Program, at Roosevelt High School, indicated significant interest in their school participating in an expanded version of this project. They saw this project as a vehicle for developing community-based learning experiences in the area of recycling for students in the Natural Resources Pathway classes. It was proposed that an expanded Recycling Intern Project be incorporated as part of the curriculum for the sophomore-level, Natural Resources Pathway science class for the 1993-94 school year.

This was a tremendous opportunity to realize one of the Recycling Intern Project's major objectives -- "to incorporate community-based learning experiences into the relevant curriculum at Roosevelt High School."

Roosevelt services the students who live in and around Columbia Villa.

Another positive benefit derived from the expansion of the program to the high school, was the opportunity to increase the number of youth who could participate in the project. Instead of working with two groups of 5 to 6 students, as originally planned, the expanded program called for having the teaching team present their program to two classes of high school sophomores. Each class consisted of between 18 and 24 students. The original plan allowed 10 to 12 students to participate; the expanded plan allowed the participation of 36 to 48 (a increase of between 250 and 300%).

Several problems needed to be addressed before the expanded project could be implemented. The two largest problems concerned lack of resources; more specifically: 1) insufficient funding for a project of this size, and 2) shortage of
teaching personnel. A solution for these problems was found in time to keep
the project on schedule.

Portland Educational Network

The Portland Educational Network (PEN), a federally-funded project under
the Endangered Urban Children and Youth Grant, is located at Portland State
University. Their goals included seeking to develop classes at Portland State,
and other educational institutions, which would bring students into the
community to work on local issues. More specifically, PEN was interested in
programs to improve student retention rates at group of targeted area high
schools, including Roosevelt. They saw the expanded Recycling Intern
Project as a potential vehicle to accomplish this goal. PEN's support was the
impetus for a further expansion of the original design; this became the
Recycling Awareness Project. PEN agreed to sponsor a two-term sequence of
courses at Portland State University developed and taught by the principal
investigator of the Recycling Intern Project, Peter Collier. The course was
titled “Impacting People Impacting the Environment: The Social Psychology
of Recycling I & II”.

The development of this series of courses addressed both of the earlier
problems simultaneously. First, additional funding from PEN alleviated the
problem of "insufficient resources." PEN’s support included a graduate
assistant who served as assistant project director for the project, classroom
supplies (which were utilized for both the Portland State University courses
and the high school classes), video documentation support, and
transportation for taking the high school classes on field trips.
Second, adding the Portland State University class affected the second problem -- "a shortage of teaching personnel" -- in two ways. First, the Portland State University courses provided six students a term to assist in teaching the classes on recycling at Roosevelt High School. Also, the additional funding from PEN, freed up previously dedicated funds, under the original Recycling Intern Project, which then allowed for the hiring of a second high school intern for the project.

The addition of the two Portland State University courses led to a division of the original Recycling Intern project into two distinct elements:

- the Recycling Awareness Program: the two six week classes taught at Roosevelt High Schools by the team of Portland State University students and recycling interns, and
- the Recycling Intern Project: that part of the Roosevelt class that involved the two high school interns, plus additional recycling promotional activities they conducted outside of the classroom.

With this division, all the elements of the Recycling Awareness Project were finally in place.

II. SOCIAL PSYCHOLOGY OF RECYCLING CLASS

The Social Psychology of Recycling classes were taught as a two-course sequence at Portland State University during Fall term 1993 and winter term 1994. These classes examined how techniques of social influence could be used to positively impact an individual's relationship with the environment, with an emphasis on the area of recycling. In addition, Portland State University students were provided with the opportunity to actively participate in field research out in the larger community.
Course Elements
Each term of the Social Psychology of Recycling course was structured in the same manner: Five weeks of preparation and classroom work at Portland State University, followed by a six week Recycling Awareness Program, conducted at Roosevelt High School for the sophomores in one of the Natural Resource Pathway science classes.

Preparation
Students did not have to already be knowledgeable about waste reduction to participate in this class; over 1/2 of the students had no background in recycling. Each Social Psychology of Recycling class included a set of exercises and activities designed to prepare the Portland State University students for their up-coming roles as teachers of the Recycling Awareness Program at Roosevelt. The purpose of these activities and exercises was to allow the students to practice the different tasks that they would be teaching the Roosevelt students in the Recycling Awareness Program.

Administration of a Field Research Instrument
During the first week of the class, each Portland State University student took the Role Measurement Device used in this project (see Appendix i). After a classroom discussion about the differences between “paper and pencil” and “computer” testing, and a review of specific instructions related to this measurement tool, students practiced administering the Role Measurement Device to each other. Over the next three weeks, students reviewed their roles as test givers, in anticipation of their administering the Role Measurement Device to the Roosevelt students.
Conducting Field Observations

During both the fourth and fifth weeks of the preparation period, the Portland State University students, along with the recycling interns, conducted two weeks of field observations of the recycling collection systems at the Columbia Villa Housing Development. This was the same setting that would later be utilized with the Roosevelt class. Monitoring forms and a recycling participation rating system developed by the Recycling Education Projects, Center for Urban Studies, at Portland State University were utilized in these observations. The purpose of this exercise was to instruct the class as to the correct techniques for monitoring the quality and amount of recycling set-outs found at a collection system, as well as how to correctly record the field data that they had collected.

Information Presentations

During the first week of the Social Psychology of Recycling class, students were presented with a list of recycling related topics, each of which was briefly described by the project director and assistant project director. Students then selected the topics which were to serve as the basis for their "information presentations" to the Natural Resources Science class students at Roosevelt.

The selected presentation topics included:
- Types of materials which can be recycled, and how to prepare them for recycling;
- History of recycling, with a local emphasis;
- The 3 R's: Reduce, Reuse, Recycle;
- Composting;
- Packaging/Wise Consumerism;
- Waste characterization: what is thrown away; how individuals can reduce the amount of garbage that they generate;
- Language materials (i.e. recycling information for non-English speakers)

Each Portland State University student researched one presentation topic. The assistant project director was particularly helpful in this process, due to her familiarity with the Recycling Education Projects' library at Portland State. The students practiced presenting their recycling information for the Roosevelt class several times during the five week preparation period. The practice process served to increase the different presenters' self-confidence and delivery, as well as improving the class's overall level of recycling knowledge.

**Video Production**

This is one area of preparation that differed from Fall term to Winter term. During the Fall term class, the Portland State University students developed their own three-minute video on recycling, geared to the high school audience. They brainstormed ideas, developed a visual sequence of shots, wrote a script, prepared cue cards and props, rehearsed, and acted as talent in the video. This was important experience because the members of the Portland State University class subsequently led groups of high school students as they produced their own recycling videos. Due to time constraints, this video production process was not duplicated during the Winter term class.

However both Social Psychology of Recycling classes received instruction on the "behind the scenes" work necessary to produce a successful video project. By referring to the recent class video experience, the project director demonstrated to the class how their perceived "free choice" of video topic, visual sequence, and script had been influenced, facilitated, and redirected (when necessary) by the class instructors. Students were then shown
techniques for how to achieve these same results in order to keep their high
school student groups realistic and "on track." In addition, the Winter term
class discussed the lessons learned from the production of recycling videos
during the Fall term Recycling Awareness Program at Roosevelt.

Small Group Processes
A key design feature of the Recycling Awareness Program, was an emphasis
on working in small groups with the students in the Natural Resources
Pathway science classes. The plan called for a pair of Portland State
University students to lead each group of six to eight Roosevelt High School
students. It was proposed that this structure would facilitate mentoring
opportunities, as well as higher levels of one-on-one student interactions.
Several class sessions during the preparation period were devoted to
leadership and teamwork techniques, including discussions of how to deal
with potential problem situations. In addition, the Portland State University
students were instructed in some basic self-presentation techniques in order
to make the best possible impression when the class visited Roosevelt.

Classroom Work
The classroom emphasis of the Fall term 1993, Social Psychology of Recycling
I class was on understanding the various aspects of "waste" and on techniques
of "social influence". Two texts were utilized:

1. Wasting Away, Lynch, Kevin (1990): a philosophical overview of
issues relating to waste and waste-stream reduction, including
recycling; and

The material in the Lynch text gave students, regardless of their recycling-related background, some new perspectives on the issues of waste. The Cialdini text discussed techniques that were used in the Recycling Awareness Project -- commitment, consistency, modeling, self-perception, and the "foot-in-the-door" technique. One part of the final exam asked students to apply one or more of these social influence techniques in to the promotion of recycling.

The original plan for the Social Psychology of Recycling course was to have the same students participating in both the Fall and Winter term classes. Four of the original five Fall term students continued onto the second class. One student was forced to drop out due to scheduling conflicts, and two new students were added at the beginning of Winter term. The new students were required to complete the reading assignment from Fall term as a condition for admission in the Winter term class. This was necessary as the Social Psychology of Recycling II class built upon the material taught in the Fall term class.

The classroom emphasis of the Winter term 1994, Social Psychology of Recycling II class was on how to apply the information about waste-stream reduction and social influence techniques to the promotion of recycling. Instead of textbooks, students read and discussed a series of articles/research
studies which utilized specific social influence techniques in recycling promotion under various circumstances. Sample titles included:

• "Encouraging Environmentally Appropriate Behavior: The Role of Intrinsic Motivation." (DeYoung ),

• "The Effect of Strength of Commitment on Newspaper Recycling." (Pardini & Katzev), and

• "Increasing Community Recycling with Persuasive Communication and Public Commitment." (Burn & Oskamp)

For a final class project in this course, the students developed their own research design and intervention program for improving recycling participation and quality at the Columbia Villa Housing Development

Discussion

Several innovative techniques were utilized in the Social Psychology of Recycling class that warranted further discussion.

"Stair step of Credibility"

Part of the goal of the Social Psychology of Recycling course was to facilitate the Portland State University students and interns being seen as credible spokespersons for recycling by the time they started teaching at Roosevelt. A "credible message source" is important to persuasive communication. Credibility has 2 parts - "trustworthiness" and "expertise" (Hovland, Janis, & Kelley, 1953). The teaching team of students were seen as more trustworthy by the Roosevelt High School students because they were younger and "cooler" than the teachers.

The multi-faceted Portland State University class was structured to "make" each student an expert about some area of recycling. The combination of
trustworthiness and expertise worked together, it then became "natural" for the high school students to see the Portland State University class as credible role models.

The Recycling Awareness Program continued the development of this sequence of credible message sources through a pattern of structured activities, and the presentation of information from one level to another. The high school students who were taught by the Portland State students at one level became the teachers of elementary school students on the next level.

**Modeling**

As noted above, the Social Psychology of Recycling class was structured so as to make the Portland State University students appear to credible role models. Modeling, or observational learning -- when individuals note what particular models do and what consequences follow their actions, and then imitate the behavior of those models -- has been shown to be a powerful social influence technique (Zimbardo & Leippe, 1991). Modeling has been shown to be effective in promoting pro-social behavior in both children (Rushton, 1975) and adults (Bryan & Test, 1965). Portland State University students modeled pro-recycling behavior as part of the Recycling Awareness Program at Roosevelt High School.

The design of the Recycling Awareness Program included elements intended to enhance the effectiveness Portland State University recycling models. First, models have been shown to be more effective when they were perceived as warm and supportive (Grusec, 1970). Many of the activities of the
Recycling Awareness Program -- field observations, development of recycling videos -- were conducted in small groups. Each small group was facilitated by a different pair of Portland State University students. The emphasis on small group activities promoted closeness between the Portland State University mentors and the Roosevelt High School students. Roosevelt High School students came to see the college students as friends, advocates, and, more importantly, credible message sources. Second, the combination of Portland State University students and faculty resulted in several models simultaneously enacting pro-recycling behavior in the Roosevelt classroom. It has been shown that imitative behavior (i.e. copying modeled actions) is more likely when there are multiple models doing the same thing (Fehrenbach, Miller & Thelen, 1979).

Commitment
At the end of the Portland State class’s video project, each student looked into the camera and said “My name is ____ and I recycle”. This was designed to increase student commitment to “acting like” a recycler. This is also one reason why the Portland State University students repeatedly practiced their recycling presentation before their classmates prior to the Recycling Awareness Program at Roosevelt.

This was based on extensive literature on the use of public commitment as a social influence technique. Of particular importance are studies that showed that attitudes which are publicly stated are less likely to change, and that the public expression of attitudes served to increase the performance of behaviors consistent with those attitudes (Kiesler, Mathog, Pool, & Harington, 1971; Pallak, Cook, & Sullivan, 1980; Burn & Oskamp, 1986).
Role-identification

The program component (described under commitment) where, at the end of each video, each student looked into the camera and said “My name is _____ and I recycle”, was also a tool that increased identification with the pro-social role, "recycler".

This concept is grounded in Symbolic Interactionist theory, and is based on the work of Mead (1934) and Cooley (1902). Mead proposed that the “self” has two components: the “I” - the subjective representation of self (the view of self “inside the person’s head”); and the “me” - the reflexive self in society (how other people react to the presented self; do they affirm it or contradict it?) Cooley’s contribution is something he called “The Looking Glass-Self”: the idea that a person’s self concept developed as a result of a social mirror provided by other people with whom she/he interacts.

Individuals possess multiple conceptions of self, and some are more salient than others. For example, a student may have several views of him/herself inside his/her head, among them the concept of self as “a good citizen” or as "a person who cares about the environment --i.e. a recycler.” However this version of self is not salient; it does not “stand out” compared to other versions of self (i.e. athlete, good dancer, good student). This lack of salience could occur for several reasons. One might be a lack of information about “how to be” a good citizen. Another reason may be that situational cues make other “selves” stand out more. For whatever reason, the student is not very motivated to put much effort into enacting this area of self.
Then the student participates in the Social Psychology of Recycling class. The materials covered in the class make the version of self, "recycler", increasingly salient. The structure of the class provides information on the correct way to enact the role "recycler." Not only has the student received information about how a prototypical recycler would act, but the activities of the class "force" the student to enact the identical set of role-prototypical behaviors.

In Cooley's "Looking Glass Self" process, other people serve as the social mirror by which the subject can learn their reaction to the role he/she is enacting. In the Social Psychology of Recycling class, the camera takes the place of the other people. Instead of another person having to "translate" the subject's actions into a version of who that person really is(i.e. a recycler), the subject gets to see him/herself on camera, acting just like a recycler (because of the structured activities of the program). From there it's a small step to the person saying, "I guess I really am a recycler." When the two sides of self ("I" and "Me" in Mead's terms) match, the person is eager to continue in this role because she/he feels good about who she/he is. And going back to the material on commitment, now that the person has told everybody, via the video, that he/she is a recycler, there is a strong tendency for the person to continue to enact role-consistent behaviors in order to maintain cognitive consistency.

Cognitive Dissonance
The concept of individuals desiring to maintain cognitive consistency is central to cognitive dissonance theory (Festinger, 1957). Dissonant cognitions -- ones that are inconsistent with each other -- create a state of arousal which
motivates the individual to seek change. After publicly stating "My name is ____, and I'm a recycler," as well as being videotaped enacting pro-recycling behaviors, it would be cognitively dissonant for the student not to continue to enact the set of role-related behaviors.

Once again the structure of the Social Psychology of Recycling Class serves to enhance this social influence technique. The process of developing the video at Portland State University was designed to allow the students the maximum amount of choice in determining what they are going to use for a topic in the video, which visual images are used, dialogue selection, costume creation, and selection of music. Perceived choice has been identified as a necessary condition in order for cognitive dissonance to induce attitude change (Linder, Cooper, & Jones, 1967).

**Self-Perception and Self-attribution**

Bem's (1972) *self perception theory*, argued that much of people's behavior is not a product of thinking about internal feelings and attitudes prior to acting. Instead, people infer what their internal states and feelings are -- or should be -- by perceiving their behavior and the situational forces that affected them at the time. This is a form of *self attribution*: a way of determining the cause for why the person did one behavior or another.

Heider (1958), identified a concept called "the fundamental attribution error." This is the tendency for an individual to underestimate the causal role of situational factors in determining behavior, and to overestimate the role of dispositional factors. This is especially true in self attribution,
particularly when the behavior in question is self-enhancing, i.e. reflects positively on the individual (Miller & Ross, 1975; Fiske & Taylor, 1991). This tendency to make dispositional attributions for success appears to become more pronounced with time. (Burger, 1986; Fiske & Taylor, 1991)

This is evidenced by the change in Portland State University students’ role identification scores. If they attributed their recycling-related actions to being part of the class, then their scores in terms of level of identification with the role “recycler” should not have increased, but this is not what actually occurred. Even though the program they participated in at Roosevelt High School was part of a class for which they received credit, they attributed more of their recycling-related behaviors to the fact that they had become “more of a recycler” than to being a part of the class. This was demonstrated by an increase in the level of identification with the role “recycler.”

The students who showed the most significant increase in level of information, recycling related behaviors, and level of role identification were the ones with the weakest, less-well defined conception of and identification with the role “recycler” at the beginning of the class. This is consistent with Self Perception theory. According to Bem (1972), the self perception process is most likely to occur when internal cues are weak, ambiguous, or uninterpretable. Chaiken and Baldwin (1981) conducted a study of attitudes and behaviors relating to ecology. Individuals were induced to self-perceive themselves as “pro” or “anti” ecology. Those subjects with weak prior attitudes were affected by the induced behaviors, and their post-study attitudes change in the direction of the induced self-
perception - i.e. if induced to see self as "anti-" ecology, attitudes became more negative; if induced to see self as "pro-" ecology, attitudes became more positive. However those subjects with strong prior pro-ecology attitudes did not change these attitudes, regardless of which types of behaviors ("pro-" or "anti-" ecology) the exercise induced them to recall. They already had strong internal cues and self-perceptions about being environmentalist, therefore they did not need to "infer" their attitudes from their behaviors. A comparison of the Portland State University students' role identification at the beginning of the class with those measured at the end of the class show this same effect.

Role-Playing

There are several other processes which, along with self attribution, work to help outward behaviors turn into changes in internal states. Role-playing requires individuals to actively adopt the role of another person or type of person. The goal is to produce changes in the participant's perceptions and evaluations of the role. Originally, this technique was used to change attitudes in support of an unpopular position (Janis & King, 1954; King and Janis, 1956). It was found to be most effective when the subject had to improvise a speech in the role of the other person. The students in the Portland State University class each researched and prepared a 10 minute presentation on recycling to be presented to the high school class. They practiced their speeches in front of their classmates, then later presented them at the high school. Even though the Portland State University students were not experts in all areas of recycling, developing the speech on a single topic made them appear to be expert in not just that area, but in all areas. This in turn affected their
attitudes regarding the role "recycler," just as in the Janis and King study with negatively-perceived roles. But in this class, the position -- "being a recycler" -- was not negative. It was positive, or at least neutral. This resulted in subjects' making self enhancing attributions, which facilitated the role-playing effect.

**Self-Persuasion**

The power of role-playing is derived from two processes -- self-attribution and self-persuasion. As noted earlier, self-attribution processes can be engaged by acting out a role (Fiske & Taylor, 1991). An individual may have a vague over-all opinion about a topic (recycling), but it is unlikely that all the knowledge, beliefs, and feelings held about the topic are unambiguous. Role playing a committed recycler, talking about the crucial need to engage in this prosocial behavior, would make feelings and beliefs supporting the position salient, and favor recall of recycling related behaviors from the past. By recalling past instances of acting as "recycler" increase likelihood of acting like a recycler in the future ("I must be the kind of person who recycles")

The second factor is self-persuasion. Self persuasion has been shown to have more influence than receiving information from someone else(Greenwald, 1968). This is an example of active thinking. Creating a message actively engages the mind, and the message which is created is more memorable(Fiske & Taylor, 1991).

In summary of the material on identity and self-concept, some behaviors, like role playing or communicating a specific point of view, encourage
individuals to think in ways that lead to a new self image. This sequence typically involves less than perfect reasoning. Individuals tend to recognize situational influences and are overly swayed by whichever thoughts are most salient (Fiske&Taylor, 1991).

These processes could hold key to major on-going problem: how is it possible to build "community" - i.e. the tendency for individuals to prioritize group benefit over self-interest -- in a society that is becoming increasingly individualistic? The "old techniques" -- religion, homogeneous culture, kin networks -- are no longer effective. The area that these new processes may prove useful would be in creating prosocial identities within individuals. When an individual sees him/herself as prosocial, then it follows he/she will engage in identity-consistent behaviors -- i.e. promoting the common good of the group over individual self-interest. With the tendency of individuals to self-attribute pro-social outcomes to dispositional factors --i.e. personality -- a program like this class, which sets up situations that induce the individuals to see themselves engaging in pro-recycling behaviors, may not get "credit" for attitude and behavior change. However credit is not as important as the fact that it can result in the pro-social behavior that is needed if the community is to develop and survive.

And the process just keeps building. Each individual who, after seeing self as a recycler, then engages in role-consistent behaviors, serves as a model to other people. They learn the appropriate behaviors from watching the first individual, and copy these same positive behaviors. Then, because of the fundamental attribution error, they attribute their
newly engaged in behaviors to their own personalities and not to situational factors, like the effects of the role models. This results in another "wave" of identity change.

**Self-Efficacy**

Bandura (1986) argued that whether or not people will undertake particular actions in the environment, attempt to perform certain tasks, or strive to meet certain goals depended on whether or not they believed they would be successful in performing those actions. At the beginning of the Social Psychology of Recycling class, the Portland State University students were not sure if they could become "expert" enough to teach the Roosevelt high school classes. The activities of the Social Psychology of Recycling class -- creating a recycling video, conducting two weeks of field observations, researching and practicing their individual presentations -- were designed to increase students' level of confidence. By the time the five weeks of preparation at Portland State University were completed, the Portland State University students were ready, though a little nervous, to teach the Roosevelt students. In time, the Portland State University students realized that their efforts were successful, and that the students in the first Recycling Awareness Program class had been positively impacted by their actions.

This led to increased motivation to stay active in the community for the Portland State University students. Five of the seven students who participated in the 1993-94 classes have or still work for the Recycling Education Projects, Center for Urban Studies, at Portland State University. One student is currently teaching composting in other Portland public
schools. One student developed a mentoring program at Roosevelt High School. Another student became a counselor in an at-risk youth program.

III. Social Psychology of Recycling Classes Outcomes

Outcomes of these classes need to be considered in two different areas:

- those related to the students participating in the Portland State University classes, and
- those associated with the development of the on-going Recycling Awareness Project.

Outcomes related to Portland State University students

The five students in the Fall term, Portland State University class, "Social Psychology of Recycling I," were tested (t-1) during the second week of class (10-1-93), and re-tested (t-2) at the end of Fall term (12-6-94). Four of the five students continued with the project, and were part of the Winter term, Portland State University class, "Social Psychology of Recycling II." Two new students joined the Winter term class, and were tested at the beginning of the class. Even though this was their initial test period, these results are included with the other t-2 data. All students in the Winter term class were re-tested (t-3) at the end of the course (3-8-94)

NOTE: For the sake of clarity in interpreting this data, the phrase, "pre-class," refers to the initial testing for any subject. "Post-class" refers to the testing which occurs at the end of the subject's first term of participation in the class. Any use of t-3 data as indicators of "strength of observed relationship over time" will be clearly labeled as such.
The "Role Measurement Device" (Appendix i), utilized in this study, was designed to determine the effects of class participation on students, through the use of a series of measures addressing level of recycling information, recycling related behaviors, and role identification.

**Measures of Level of Recycling Information**

The number of correct potentially recyclable items a student could recall was used as a measure of level of recycling information in this study. The Portland State University students showed significant increases in the mean number of items recalled post-class, as compared to pre-class.

**Table 1**: Portland State University Students' Recall of Recyclable items

"How many different recyclable items can you think of?"

<table>
<thead>
<tr>
<th></th>
<th>pre-class mean # items</th>
<th>post-class mean # items</th>
<th>% increase</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7.67</td>
<td>10.33</td>
<td>34.7%</td>
</tr>
</tbody>
</table>

n=7

For those students who began the class during Fall term and continued through the end of Winter term, the second re-test (t-3), 3 months after the post-program measure, should indicate if the post-program effects endured or became extinct with the passing of time. For these students, not only did the effect endure, it actually slightly increased over time.

**Table 2**: Portland State University Students' Recall of Recyclable items over time

"How many different recyclable items can you think of?"

<table>
<thead>
<tr>
<th></th>
<th>post-class (t-2) mean # items</th>
<th>re-test (t-3) mean # items</th>
<th>% increase or decrease</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10.33</td>
<td>10.55</td>
<td>+2%</td>
</tr>
</tbody>
</table>

n=4
It is interesting to note that even those students who began the class with a strong, positive identification with the role, "recycler" (discussed in the third section of measures), still were able to identify more recyclable items after participating in this program. It appears that "level of recycling-related information" is one area where even "dedicated" recyclers can benefit from by participating in this class.

Measures of Recycling-related Behaviors

Students were presented with a list of 12 recycling-related behaviors -- some positive and some negative. They were asked to indicate the frequency ("regularly," "occasionally," or "never") with which they engaged in each behavior over the previous 6 week period. 

When analyzing this data, there are at least two areas of interest:

1) those students whose behaviors change post-class, and

2) those students whose behavior did not change because they were already optimally engaging in the action in question (e.g. "regularly" engaging in positive behaviors; "never" engaging in negative ones.)

The second area is particularly relevant when discussing the Portland State University students' scores on this section of the "Role Measurement Device." Several students' scores did not change on any of these behavior-related items because they were, as noted above, already optimally engaging in the behavior in question.

Even with the above "disclaimer," the class of Portland State University students showed significant changes post-class in terms of specific positive recycling behaviors.
Table 3: Portland State University Students' Positive Recycling-Related Behavioral Improvement

"In the last six weeks, how frequently have you:"

<table>
<thead>
<tr>
<th>behavior</th>
<th>% post-class improvement</th>
<th>% &quot;no change&quot; but operating at optimal level</th>
</tr>
</thead>
<tbody>
<tr>
<td>cut the ends off &amp; crushed tin cans</td>
<td>42.9%</td>
<td>42.9%</td>
</tr>
<tr>
<td>put newspapers in a recycling collection container</td>
<td>42.9%</td>
<td>57.1%</td>
</tr>
<tr>
<td>bundled up cardboard to be recycled</td>
<td>42.9%</td>
<td>28.6%</td>
</tr>
<tr>
<td>saved a jar in order to reuse it</td>
<td>14.3%</td>
<td>71.4%</td>
</tr>
</tbody>
</table>

n=7

For the Portland State University students, significant change also occurred with regard to "negative" recycling related behaviors. While many of the students reported "never" engaging in these behaviors, several students dramatically decreased the frequency of which they enacted negative behaviors.

Table 4: Portland State University Students' Negative Recycling-Related Behavioral Improvement

"In the last six weeks, how frequently have you"

<table>
<thead>
<tr>
<th>behavior</th>
<th>% showing post-class decrease in enacting behavior</th>
<th>% showing &quot;no change&quot; but &quot;never&quot; enacting behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>thrown out plastic milk jugs with the trash</td>
<td>42.9%</td>
<td>42.9%</td>
</tr>
<tr>
<td>smashed a glass bottle in the street</td>
<td>14.3%</td>
<td>71.4%</td>
</tr>
<tr>
<td>thrown empty paper cups or food wrappers on the ground</td>
<td>14.3%</td>
<td>71.4%</td>
</tr>
</tbody>
</table>

n=7
The high percentage of Portland State University students who either enacted the recycling related behaviors at an optimal level, or whose behaviors either improved, substantiated the class goal that Portland State University students would serve as positive role models for the high school students participating in the "Recycling Awareness Program."

This is even more significant when the literature on the effects of modeling on pro-social behavior is considered. In a study of charitable giving among 6th graders, conducted by Midlarsky, Bryan, & Brickman (1973), researchers compared the effects of an "inconsistent" model (i.e. model encouraged students to "give to the poor kids" but didn't contribute herself) with a "consistent" positive model (i.e. model encouraged students to "give to the poor kids" and then contributed herself). The model who "practiced what she preached" elicited pro-social behavior at a rate 90% greater than the inconsistent model.

The data on recycling-related behaviors, indicates the Portland State University students not only talked about the importance of recycling, but actually "lived" their beliefs. This is one reason why they were such effective role models for the Roosevelt students.

**Measures of level of Role Identification**

Students were presented with 5 questions concerning the personal importance of recycling, which were scored on a 9-point Likert scale (from "strongly disagree" to "strongly agree"). These items were taken directly from Callero's (1985, 1992) measure of the importance of the role "blood donor".
Here, again, it is important to note that two of the seven Portland State University students had strong, positive identification with the role, "recycler," prior to participating in the "Social Psychology of Recycling" class (i.e. both received a maximum score of "45" on the "importance of role" scale at t-1, t-2, and t-3). However, each of the other students showed an increase in level of identification with the role, "recycler," after participating in class and accompanying program at Roosevelt High School.

Table 5: Portland State University Students' "Importance of Role" Scale Scores (Maximum score = 45)

<table>
<thead>
<tr>
<th>Student</th>
<th>Pre-class Score</th>
<th>Post-class Score</th>
<th>% Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>34</td>
<td>41</td>
<td>20.1%</td>
</tr>
<tr>
<td>03</td>
<td>19</td>
<td>36</td>
<td>89.1%</td>
</tr>
<tr>
<td>06</td>
<td>37</td>
<td>41</td>
<td>10.8%</td>
</tr>
<tr>
<td>08</td>
<td>31</td>
<td>37</td>
<td>19.4%</td>
</tr>
<tr>
<td>09</td>
<td>20</td>
<td>29</td>
<td>45%</td>
</tr>
</tbody>
</table>

While the increase in overall scale scores is impressive, several interesting tendencies can be noted in the class's responses to specific questions. NOTE: All of the subsequent percentages exclude the two students who showed maximum scores both pre- and post-class.

For example, 80% of the students indicated they were thinking more about recycling at the end of the class than before they participated. The same percentage (80%) indicated that participating in the class clarified their feelings about recycling. And, finally, 100% of the students expressed a higher level of agreement with the statement, "Recycling is an important part of who I am," post-class compared to pre-class.
Conclusions

In this section, the effects of participation in the "Social Psychology of Recycling I & II" classes on Portland State University students were examined. Three groups of measures were utilized -- a set addressing level of recycling information, a set concerning recycling related behaviors, and a series of questions relating to degree of role identification. Each group substantiated the claim that being part of the Social Psychology of Recycling classes had a positive effect on likelihood of the participating students taking on the pro-social role, "recycler."

Measure of Level of Recycling Information:

- The Portland State University students showed significant increases in the mean number of items recalled post-class, as compared to pre-class.

- For those students who began the class during Fall term and continued through the end of Winter term, the post-class effects endured and actually increased over time.

- Even those students who began the course with a strong, positive identification with the role, "recycler," were able to identify more recyclable items after participating in this class compared to pre-class levels.

Measures of Recycling-related Behaviors:

- The Portland State University students showed significant changes post-class in terms of the frequency of enacting specific positive recycling behaviors.

- While many of the students reported "never" engaging in these behaviors, several students dramatically decreased the frequency of which they enacted negative behaviors.
• One reason why the Portland State University students were such effective role models for the Roosevelt students was the consistency they demonstrated between talking about the importance of recycling, and actually enacting recycling-related behaviors.

Measures of level of Role Identification:

(NOTE: this concluding statement excludes the two students who showed maximum scores both pre- and post-class.)

• In terms of the "Importance of Role" Scale, each of the students showed an increase in level of identification with the role, "recycler," after participating in class.

Outcomes associated with Recycling Awareness Project development

In addition to being a major element in the 1993-94 Recycling Awareness Project, the Social Psychology of Recycling classes contributed to the on-going development of the Recycling Awareness Project in several ways.

Creation of Long-term Mentoring Opportunities

The over-all design of the Social Psychology of Recycling class -- five weeks of preparation at Portland State, followed by a six week Recycling Awareness Program at Roosevelt High School -- not only provided college students with mentoring opportunities but actually set them up to succeed. The classroom exercises and preparation activities facilitated the Portland State University students being seen as credible spokesperson by the students in the Natural Resources Pathway science classes. The high school students felt comfortable talking with the college students about issues and concerns that, in some circumstances, they wouldn't share with their teachers. Excerpts from letters written by the Roosevelt High School students to the college students at the
end of the Recycling Awareness Program provide insight into the positive influence of the college mentors.

• "I would like to take this time to thank you for your help. I think I am a better person because of it."

• "Congratulations all of them (the Portland State students) for doing what’s best for them and helping me do what’s best for me."

• "You have opened my eyes to a new world."

• " -- was our team leader and he was always there to help out."

• "I hope one of these days you can come back and maybe we can all do another project; or just come and visit us."

• " -- was a good team leader. He got us moving and talked to us as equals. He helped us make a good movie. He respected us for who we were."

• "There were three people I liked and were really helpful to me ... the reason why I picked them was because I felt I could talk to them and I just felt comfortable being with them."

• "I had a great time working with you two; it was fun working with college students."

• "I really appreciated the fact that you guys always asked us how we were when we came in. I wasn’t always in a good mood but you put up with me."

• " -- and --, you taught me about recycling, and I consider you both good friends. I would like to have a friend like you but like my age, but there is nothing wrong with an older friend."

Due to this year’s initial success, the Recycling Awareness Project will be continued during the 1994-95 school year.
Recycling Curriculum Development

One of the goals of the Recycling Awareness Project was the development of a recycling curriculum so that high school teachers could continue to teach a version of the Recycling Awareness Program at a later date. The materials that the students in the Social Psychology of Recycling classes used to develop their information presentations were collected and combined with additional recycling and waste-stream reduction information. From these materials a series of lesson plans were developed. In addition, a list of community contacts and program related resources was compiled. All these course materials were then given to the Natural Resource Pathway science teacher at Roosevelt High School for comment and possible revision.

High School Dropout Rates

As of the time when this report was written, it was not possible to compare dropout rates of the classes which participated in the Recycling Awareness Program with the overall dropout rate at Roosevelt High School. However, examination of the results of a survey administered to students in the Natural Resource Pathway science classes, at the beginning and end of the 1993-94 school year, raise some important questions associated with the dropout problem.

Crystal Ball Survey

The "Crystal Ball #1" survey was given to the students in the two Natural Resource Pathway science classes during the second week of the 1993-94 school year. Students responded anonymously to a series of questions about their educational plans and expectations for upcoming school year. The "Crystal Ball #2" survey was administered to the same two classes during the
last week of the 1993-94 school year. A comparison of the results of the two surveys gives some insight into how students' perceptions and evaluation of both school, in general, and the Natural Resource Pathway science class, in particular, changed over the course of the year.

**Expectations and evaluation of the natural resources science class**

Significant findings associated with the Natural Resource Pathway science class included:

- **Students underestimated how much they would like this class.** From the Crystal Ball #1 survey, 36% of the students included the Natural Resource Pathway science class as potentially one of their "...two favorite classes this year." By the end of the year, based on the Crystal Ball #2 survey, 50% of the students identified the Natural Resource Pathway science class as one of their two favorite classes.

- **Students underestimated how much they would learn in this class.** From the Crystal Ball #1 survey, 46% of the students included the Natural Resource Pathway science class as potentially one of their "...two classes they'd learn the most in this year." By the end of the year, based on the Crystal Ball #2 survey, 54.5% of the students identified the Natural Resource Pathway science class as one of the two classes they learned the most in.

- **Students' expectations about the types of things they would learn in this class changed over the course of the year.** At the beginning of the year, from the Crystal Ball #1 survey, students held very general expectations about what they would be learning in the Natural Resource Pathway science class (Ex. Environment, Natural Resources, Plants, Animals). By the end of the year, based on the Crystal Ball #2
survey, when asked “What did you learn that was important or useful in this class?” students were much more specific:

- Recycling -- 63.6%
- Cooperating/Working in groups -- 27.3%
- Smith and Bybee Lakes project -- 18.2%
- Specific Animals/Plants -- 22.7%
- Volunteering/Getting Involved -- 9.1%

expectations and evaluation of school in general

Significant findings concerning students’ attitudes toward school in general included:

- **Students expect to graduate from High School.** 100% of the respondents on both the Crystal Ball #1 and #2 surveys stated they “...planned on completing high school.”

- **The majority of students expect to attend college.** 75% of the respondents on the Crystal Ball #1 survey and 77% of the respondents on the Crystal Ball #2 survey stated they “...planned on attending college.”

- **More than a quarter of the respondents considered dropping out of school before their sophomore year.** Based on the Crystal Ball #1 survey, 26% of the Natural Resources Pathway science class students stated they “...considered not returning to school this year (e.g. sophomore year for most)”

- **Many students considered dropping out of school during the 1993-94 school year.** Based on the Crystal Ball #2 survey, 41% of the students responding indicating they “...considered not completing school this year.” Students’ reasons included:
  - too much pressure/stress (most common)
  - school is boring
  - it didn’t seem worth it
  - too much work to make up
  - teachers I didn’t like
• because I felt real bad about myself

conclusions
Examination of the results of the two Crystal Ball surveys raise several issues which need to be addressed in order to better meet the needs of the Roosevelt High School students. In regard to the Natural Resources Pathway science class, it seems clear that freshmen at Roosevelt are not adequately informed as to what to expect in the sophomore Natural Resources science class. For whatever reasons, they underestimate both how much they will learn and how much they will enjoy the class. One possible intervention is suggested in the comparison of what types of things students expect to learn in the class at the beginning of the year compared to their assessment of the most useful things they learned in the class at the end of the year. The specific activities that the sophomore science class will undertake should be discussed with Roosevelt freshmen in order to increase their awareness of the nature of the class. NOTE: A program along these lines has already been instituted by the Natural Resources science teacher at Roosevelt. Several of this year’s sophomores made presentations to freshman classes about the Pathway program.

A much larger and more complex issue concerning school, in general, also needs to be addressed. There is a major contradiction in the findings that 100% of students expect to graduate, with 75+% expecting to attend college; while at the same time so many students considered dropping out, either before or during their sophomore year. On one hand, the high percentage expecting to graduate and even continue on to college reflects the common knowledge that an education is necessary to find satisfactory employment in
today's economy. Yet the high percentage of students considering dropping out after the freshman year (26%), and the even higher percentage (41%) considering dropping out during the sophomore year, suggest a lack of hope and perhaps fear that these goals are beyond students' reach. This is why an intervention such as the Recycling Awareness Program is so important. By coming in contact with college students of varied backgrounds, some of the "doubting" high school students realize that others have been in similar circumstances and succeeded. They begin to see that college is not beyond their reach. As one Natural Resource Pathway science class student noted, "After a while I noticed the college students were just like me, only older."
IV. RECYCLING AWARENESS PROGRAM

The "Social Psychology of Recycling" courses at Portland State University, conducted during Fall term, 1993, and Winter term, 1994, prepared the team of college students for teaching the Recycling Awareness Program at Roosevelt.

Program Components

The Recycling Awareness Program, at Roosevelt High School, had four main parts:

- Information presentations;
- Field research;
- Production of recycling videos; and
- Kids teaching kids.

Information Presentations;

As noted earlier, Portland State University students made informational presentations to the Natural Resource Pathway science classes on a variety of recycling and waste stream reduction-related topics. Topics included:

- Types of materials which can be recycled, and how to prepare them for recycling;
- History of recycling, with a local emphasis;
- The 3 R's: Reduce, Reuse, Recycle;
- Composting;
- Packaging/Wise Consumerism;
- Waste characterization: what is thrown away; how individuals can reduce the amount of garbage that they generate;
- Language materials (i.e. recycling information for non-English speakers)
Field research

The teaching team of interns and college students initially modeled the data collection procedures for the class of high school students in the classroom. They demonstrated the correct techniques for monitoring the quality and amount of recycling set-outs found at a collection system, as well as how to correctly record the field data that they have collected.

Next, the high school class was broken into smaller "monitoring groups," each accompanied by several members of the teaching team. The class was then transported to the Columbia Villa Housing development, which is located approximately five minutes from Roosevelt High School. Once at the complex, each monitoring group collected data on designated recycling collection systems at different locations throughout the complex. Using portable scales, the students weighed recycling containers for different types of recyclables and assessed the sites for proper usage and participation.

The field research component allowed for several learning opportunities. First, the high school students were trained in methods of data gathering and analysis in a real life setting. Second, they experienced the group process while working in the field. Finally, the students learned, first-hand, about some of the issues that a community must address in order to conduct successful multi-family recycling.

Production of recycling videos

As mentioned earlier, the college students produced a 3-minute pro-recycling video which was geared to the high school audience. It served as an introduction for the high school students to the topic of recycling, and also
started them thinking about what they would do if given the chance to make their own recycling video. Eventually, each of the three smaller, “monitoring groups” developed a short video promoting recycling.

The process of making videos in small groups ensured participation of all students and enhanced the opportunities for individual mentoring. In the small group sessions, students worked in a format which gave each of them an individual responsibility to help in a team effort. The interns and college students assisted the small groups of high schoolers in producing their own recycling videos.

The Roosevelt students participated in brainstorming to create a concept for their videos; then they developed a rough script. All ideas and suggestions were validated as students took turns writing down what was said. The high school students used information they received from the teaching team’s presentations to develop their ideas into video form. They gave each other feedback as the script was developed.

The groups then worked together in creating costumes and gathering props. Each group rehearsed their final script over several class meetings, and then were filmed. Each students’ part in the final video production underscored their individual importance to the group. Everyone had a role in developing the video, and everyone had a spoken part in it as well. During this entire process, the identity of each high school student as a recycler was being reinforced, culminating in their individual statements to the camera at the end of the video: “My name is _____ and I recycle!”
A video producer filmed the videos and edited them into the finished products, using background music chosen by the students. The groups of high school students used these videos in their subsequent presentations to the grade school students. At the end of the class celebration, each student was given a copy of their group's video.

"Kids teaching kids"

"Kids teaching kids" was an approach to learning that is different and exciting. Students of various levels taught each other after receiving training and information on the subject of recycling. The teaching team of college students and high school interns were presented information on recycling by the Portland State University instructors. They then were assigned topics upon which to base their information presentations. Next the students were required to research their particular topics. They presented their topics to each other in preparation for their presentations to the high school students. In this way, they all received extensive information on recycling issues prior to going to the high school.

Then, as part of the Recycling Awareness Program at Roosevelt, each member of the teaching team gave her/his presentation, and provided the class with a handout related to the topic being covered. The Portland State University students went from being "students" to now being "teachers."

As noted above, the field research section of the high school class worked the same way. After learning how to conduct monitoring and observations themselves as a class, the teaching team instructed the high school students about measurement of recyclables collected at the housing development.
The video production process followed the same plan -- first the team of interns and college students learned, then they taught the high school class. However here the process had an additional step.

Upon completion of the videos and preparation for presentations, the entire Natural Resource Pathways science class went to a local grade school, which serviced the children who live in Columbia Villa and the surrounding areas. Here the Roosevelt students became the teachers. Members of the different small groups spoke to third, fourth and fifth graders about recycling, and showed the videos they made. They also provided interactive opportunities to involve the younger students in the presentation, and left them with buttons to reinforce their new identities as recyclers.

Celebration
At the end of the “Recycling Awareness Program,” the contributions of the Roosevelt students in promoting recycling in the community were acknowledged in a “celebration.” All the participants - - high school and college students, interns, and faculty - - joined together for a celebration of the success of the program.

Local merchants donated food and beverages for the post-program party. The celebration stayed consistent with the theme of the program by only using either products packaged in recyclable containers, or those whose wastes could be composted.
The celebration completed the circle. Not only did the students feel that they had impacted the community through their recycling promoting actions; they also realized that the community appreciated and acknowledged their efforts.

Recycling Awareness Program Techniques

Several innovative techniques were utilized in the Recycling Awareness Program that warranted further discussion.

"Stair step of Credibility"

The Recycling Awareness Program continued the multi-level teaching activity originally initiated by the Social Psychology of Recycling class. In the same way that the teaching team of Portland State University students were seen as more effective recycling message sources for the Roosevelt High School students because of their high level of credibility, the Roosevelt students were more effective message sources for the Clarendon Elementary School students. Once the Natural Resources Pathway science class students learned enough about recycling to be seen as "experts" in any one recycling-related area, the fact that they were closer in age to the elementary school students made them more trustworthy, and therefore more credible. From the perspective of an elementary school student, there is little distinction to be made between a college student and a parent -- they're both old.

One of the goals of education is the socialization of students into taking on prosocial, community-involved roles, and other forms of attitude change. An intervention such as the Recycling Awareness Program, which was
designed to facilitate the development of credible message sources based on age and background similarity, compliments other approaches to improving persuasion such as interventions which focus on message channels or media.

**The Use of Video**

The Recycling Awareness Program utilized video in several innovative ways.

*Commitment*

Just as in the Social Psychology of Recycling class, at the end of the different Roosevelt class video projects, each student looked into the camera and said "My name is ____ and I recycle." This was designed to increase student commitment to "acting like" a recycler.

*Role-identification*

The role-identification program component, described in the section on the Social Psychology of Recycling, was also utilized in the Recycling Awareness Program. The Roosevelt students' positive evaluation of the Portland State University student group leaders who were also modeling role-related behavior served to further increase the high school students' identification with the pro-social role, "recycler."

*Empowerment*

The process of developing the videos was designed to allow the Roosevelt students the maximum amount of freedom in determining what they are going to use for a topic in the video, which visual images are used, dialogue selection, costume creation, and choice of music. Even though the group leaders subtly directed the video so that it fell within certain guidelines, the
students made the final decisions. Just as in the other aspect of course design, where students on one level were turned into teachers on the next level, the amount of control that students felt when conducted these successful projects empowered them. The feelings of being in control of what happens to them in what is typically a “no-control” area (i.e. school), motivated the kids to continue with the class.

**motivation**

Just the presence of the camera in the classroom increases the likelihood of students trying their best. One of the problems that teachers have to deal with is the issue of students who feel they have to act “cool” (non-responsive, unenthusiastic) in order to “fit in” with what they think are peer expectations. But these students usually never get a chance to see how childish and “stupid” they appear to others when they act so lifeless and bored. People always wanted to jump around and show-off for the camera. When the camera was on them (even if it is not recording) almost every student chose to act in a positive and animated manner so that they looked “good” on film, and to themselves, rather than “cool” for their friends but stupid on film.

**bonding instrument**

The use of “hip” music in the Portland State University video served to let the Roosevelt High School students know that, as opposed to your parents, the college students were “with it.” Both groups listened to the same music. It served as a common ground. The high school students then brought in their own favorite music to use in the video, and at the same time, tried to impress the college students with how “hip” their musical taste is. Similar
taste in music, as well as an interest in music videos, served as an initial bond between the Portland State University class and the Roosevelt students, which then made conducting the rest of the class easier.

**Self-Efficacy**

As noted earlier, whether or not people chose to undertake particular actions, attempt to perform certain tasks, or strive to meet certain goals depended on whether or not they believed they would be successful in performing those actions (Bandura, 1986). In time, both the Portland State University and the Roosevelt High School students realized that their efforts impacted the local community.

Field work provided Roosevelt students with the opportunity to positively impact recycling participation in a local public housing development -- Columbia Villa. Students collected data that measured the amount of recycling that was occurring at the complex. After collecting data over a period of one month, the recycling interns led a group that passed out flyers to the Columbia Villa residents. These flyers gave feedback on the previous month’s recycling efforts, as well as explained what and how to recycle.

The students knocked on doors and personally went over what was stated on the flyers. This allowed the group of students to have a first hand understanding of how their field research could increase the recycling participation rates over time. This led to increased motivation to stay active in the community for both Portland State University and Roosevelt High School students.
Measurement Device (See Appendix I for a copy of Device)

A questionnaire was administered to the program participants at three separate occasions:

* "t-1" -- (October, 1993) at the beginning of the 7th period "Recycling Awareness Program"
* "t-2" -- (December, 1993) at the end of the 7th period and the beginning of the 6th period Recycling Awareness Program; and
* "t-3" -- (March, 1994) at the end of the 6th period "Recycling Awareness Program"

(See Appendix II for program design)

The device had three main sections:

1) a measure of amount of student knowledge about recycling, indicated by the number of potentially recyclable items the student was able to identify;

2) measures of positive and negative recycling-related behaviors, figured in terms of responses to twelve questions concerning recycling, using a three-position scale, and

3) measures of the importance of the role "recycler," figured in terms of response to 5 questions, using a 9 point Likert scale.

V. RECYCLING AWARENESS PROGRAM OUTCOMES

Outcomes of this program need to be considered in two different areas:

- those relating to the amount of participation and quality of recycling at Columbia Villa, and
- those associated with the youth participants in the Recycling Awareness Program.
Outcomes related to recycling at Columbia Villa

A sub-set of the 35 recycling collection systems at Columbia Villa were targeted for the monitoring and observation program with the Roosevelt students. 9 adjacent collection systems (slightly more than 25% of the total number) were included in the field observations. All these systems had at least three weeks of observations conducted before the first feedback flyer was distributed, and at least two weekly observations conducted after the first feedback flyer but before the second one. The feedback flyers, as noted earlier, provided the residents who lived near each system with specific information regarding the effectiveness of their recycling efforts.

Participation Rating System  (Collier, et. al, 1993)

Recycling participation was defined as:

1) the generation of recyclable items, and
2) the proper preparation and separation of recyclables.

The participation rating system utilized in this study was primarily a measure of recycling quality. There are two key dimensions to the rating system:

1) the amount of time it would take the hauler to rectify the problem, and
2) the volume of recycling materials involved.

The rating system utilizes valued from “no stars” (lowest) to “five stars” (highest):

no stars: site with potential recyclable materials so contaminated that the hauler must return them to the source for further preparation and separation.
**one star**: required more than 10 minutes of hauler time to rectify situation.

**two star**: required 5 to 10 minutes of hauler time to rectify.

**three star**: required less than 5 minutes of hauler time to rectify.

**four stars**: no contamination; low to medium volume.

**five stars**: no contamination; high volume.

**Collection System Ratings**

Of the nine systems which were monitored and analyzed:

- 3 systems increased in the quality of recycling set-outs; one of these also showed a substantial increase in the amount of materials collected.
- 1 system, originally rated highly in terms of quality, fell off dramatically over the first three weekly observation periods. After the first feedback flyer was distributed, there was a increase in the level of quality of recycling set-outs almost back to the original level of the first observation. In addition, there was a substantial increase in the amount of materials collected.
- 4 systems stayed the same in terms of level of quality: one poor, two average, and one good, even after the first feedback flyer was distributed.
- 1 system decreased in the quality of recycling set-outs.

The average participation rating score for all nine system before the Recycling Awareness Program was 2.56 stars; after the program, 2.78 stars. While some systems improved more than others, overall the Recycling Awareness Program seemed to be associated with an improvement in recycling at Columbia Villa.
Youth-Related Outcomes

The two Natural Resource Pathway science classes (6th and 7th period) were each tested immediately before ("pre-program") and immediately after ("post-program") participating in the Recycling Awareness Program. In addition, a control group of natural science students, taught by the same teacher at Roosevelt, was given the identical test at the beginning and end of the Recycling Awareness Program. These tests used a series of measures addressing level of recycling information, recycling related behaviors, and role identification to determine the effects of program participation on students.

Measures of Level of Recycling Information

The number of correct potentially recyclable items a student recalled was used as a measure of level of recycling information. Both the 6th and 7th period classes showed significant increases in the mean number of items recalled post-program, as compared to pre-program.

Table 6: Roosevelt Students’ Recall of Recyclable items

“How many different recyclable items can you think of?”

<table>
<thead>
<tr>
<th>class</th>
<th>pre-program mean # items</th>
<th>post-program mean # items</th>
<th>% increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>6th period</td>
<td>6.18</td>
<td>9.38</td>
<td>52%</td>
</tr>
<tr>
<td>7th period</td>
<td>5.50</td>
<td>9.43</td>
<td>72%</td>
</tr>
<tr>
<td>control</td>
<td>6.82</td>
<td>7.34</td>
<td>8%</td>
</tr>
</tbody>
</table>

6th period: n=13; 7th period: n=14; control: n=17
While both the 6th and 7th period class’s mean number of items increased significantly post-program, certain individual students recorded gains of in excess of 100%.

Table 7: Roosevelt Students with 100% increase in Number of items Recalled

<table>
<thead>
<tr>
<th>class</th>
<th>% students</th>
</tr>
</thead>
<tbody>
<tr>
<td>6th period</td>
<td>27%</td>
</tr>
<tr>
<td>7th period</td>
<td>43%</td>
</tr>
</tbody>
</table>

6th period: n=13; 7th period: n=14.

Included in the research design of this project (See Appendix II), was a re-test (t-3), 3 months after the post-program measure, for the group which participated in the program during Fall semester (the 7th period class). Results of the re-test indicated that the post-program effects endured with the passing of time.

Table 8: Roosevelt Students’ Strength of Effect Over Time

<table>
<thead>
<tr>
<th>class</th>
<th>pre-program (t-1) mean # items</th>
<th>post-program (t-2) mean # items</th>
<th>re-test (t-3) mean # items</th>
<th>% increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>7th period</td>
<td>5.50</td>
<td>9.43</td>
<td></td>
<td>72%</td>
</tr>
<tr>
<td>7th period</td>
<td>5.50</td>
<td></td>
<td>8.40</td>
<td>53%</td>
</tr>
</tbody>
</table>

t-1: n=14; t-2: n=14; t-3: n=10.

Measures of Recycling-related Behaviors

Students were presented with a list of 12 recycling-related behaviors -- some positive and some negative. They were asked to indicate the frequency ("regularly," "occasionally," or "never") with which they engaged in each
behavior over the previous 6 week period. Note: The Recycling Awareness Program lasted 6 weeks, so that the post-program measure reflects the student’s behavior during the period she/he was participating in the program.

When analyzing this data, there are at least two areas of interest:

1) those students whose behaviors change post-program, and
2) those students whose behavior did not change because they were already optimally engaging in the action in question (e.g. “regularly” engaging in positive behaviors; “never” engaging in negative ones.)

Both classes showed significant changes post-program in terms of specific positive recycling behaviors. An example of a type of “positive recycling behavior” addressed the issue of corrugated cardboard recycling.

Table 9: Roosevelt Students’ Positive Recycling Behavioral Improvement

“In the last six weeks, how frequently have you bundled up cardboard to be recycled?”

<table>
<thead>
<tr>
<th>class</th>
<th>% post-program improvement</th>
<th>% “no change” but operating at optimal level</th>
</tr>
</thead>
<tbody>
<tr>
<td>6th period</td>
<td>58%</td>
<td>34%</td>
</tr>
<tr>
<td>7th period</td>
<td>62%</td>
<td>38%</td>
</tr>
</tbody>
</table>

6th period: n=13; 7th period: n=14.

Interestingly, other “areas” of behaviors, where post-program changes were most noticeable, were different for each class. The 6th period class showed improvement in several behaviors relating to the “reuse” of materials.
Table 10: Roosevelt Students' Reuse-Related Behavioral Improvement

"In the last six weeks, how frequently have you: " (6th period only)

<table>
<thead>
<tr>
<th>behavior</th>
<th>% post-program improvement</th>
<th>% &quot;no change&quot; but operating at optimal level</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;reused grocery bags&quot;</td>
<td>58%</td>
<td>25%</td>
</tr>
<tr>
<td>&quot;saved used motor oil in a plastic jug for recycling&quot;</td>
<td>42%</td>
<td>10%</td>
</tr>
</tbody>
</table>

n=13

It should be noted that the change in behavior relating to "oil recycling" was particularly significant, because the disastrous consequences for the environment associated with the irresponsible dumping of used motor oil. In the past, used oil which was poured into sewers or storm drains, was found to flow directly into rivers and streams where it was responsible for the death of many fish.

While the 7th period class exhibited some change in the behaviors relating to "reuse," the most significant change occurred with regard to "negative" recycling related behaviors. In this class, students dramatically decreased the frequency of which they enacted several of these behaviors.

Table 11: Roosevelt Students' Decrease in Negative Recycling Behavior

"In the last six weeks, how frequently have you: " (7th period only)

<table>
<thead>
<tr>
<th>behavior</th>
<th>% post-program decrease</th>
<th>% &quot;no change&quot; but &quot;never&quot; enacted behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;smashed a glass bottle in the street&quot;</td>
<td>46%</td>
<td>46%</td>
</tr>
<tr>
<td>&quot;thrown out plastic milk jugs w/ trash&quot;</td>
<td>62%</td>
<td>8%</td>
</tr>
</tbody>
</table>

n=13
When the 7th period class was re-tested (t-3) 3 months after the post-program measurement, all of behavior-related effects were still very strong.

Table 12: Roosevelt Students' Positive Recycling Behavioral Improvement: Effect Over Time. (t-1/t-3 comparison)

"In the last six weeks, how frequently have you bundled up cardboard to be recycled?"

<table>
<thead>
<tr>
<th>class</th>
<th>% post-program improvement</th>
<th>% &quot;no change&quot; but operating at optimal level</th>
</tr>
</thead>
<tbody>
<tr>
<td>7th period</td>
<td>60%</td>
<td>40%</td>
</tr>
</tbody>
</table>

n=13; t-3: n=10

Table 13: Roosevelt Students' Decrease in Negative Recycling Behavior: Effect Over Time. (t-1/t-3 comparison)

"In the last six weeks, how frequently have you: “ (7th Period Only)

<table>
<thead>
<tr>
<th>behavior</th>
<th>% post-program decrease</th>
<th>% &quot;no change&quot; but “never” enacting behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;smashed a glass bottle in the street&quot;</td>
<td>60%</td>
<td>30%</td>
</tr>
<tr>
<td>&quot;thrown out plastic milk jugs w/ trash&quot;</td>
<td>60%</td>
<td>10%</td>
</tr>
</tbody>
</table>

n=13; t-3: n=10

Measures of level of Role Identification

Students were presented with 5 questions concerning the personal importance of recycling, which were scored on a 9-point Likert scale (from "strongly disagree" to "strongly agree"). These items were taken directly from Callero's (1985, 1992) measure of the importance of the role "blood donor."

Several interesting tendencies were noted in the classes responses to these questions. For example, half the 7th period class indicated they thought more about recycling at the end of the Recycling Awareness Program than before
they participated. More than half of the same class stated they would experience a greater sense of loss if they were "forced to give up recycling" after participating in the program than before.

Both 6th and 7th period classes indicated that participating in the program clarified their feelings about recycling.

Table 14: Roosevelt Students’ Change in Feelings about Recycling

(Do you agree or disagree with the statement) "I really don’t have any clear feelings about recycling"?

<table>
<thead>
<tr>
<th>class</th>
<th>% registering greater disagreement w/ statement post-program</th>
</tr>
</thead>
<tbody>
<tr>
<td>6th period</td>
<td>64%</td>
</tr>
<tr>
<td>7th period</td>
<td>75%</td>
</tr>
</tbody>
</table>

6th period: n= 13; 7th period: n=14

The most revealing information about the effects of participating in the Recycling Awareness Program on student identification with the role "recycler" came from comparing the two Natural Resource Pathway classes with the control group.

Table 15: Change in Roosevelt Students’ Level of Identification with role "Recycler"

(Do you agree or disagree with the statement) "Recycling is an important part of who I am"?

<table>
<thead>
<tr>
<th>class</th>
<th>% greater agreement w/ statement post-program</th>
<th>% greater disagreement w/ statement post-program</th>
</tr>
</thead>
<tbody>
<tr>
<td>6th period</td>
<td>55%</td>
<td>18%</td>
</tr>
<tr>
<td>7th period</td>
<td>62%</td>
<td>15%</td>
</tr>
<tr>
<td>control</td>
<td>36%</td>
<td>64%</td>
</tr>
</tbody>
</table>

6th period: n= 13; 7th period: n=14; control: n=11
A comparison of each groups' mean scores over time on this key question, indicated that what is occurring is not merely relative change within the two classes which participated in the Recycling Awareness Program.

Table 16: Change in Roosevelt Students' Group Means in terms of Level of Identification with role "Recycler"

(Do you agree or disagree with the statement) "Recycling is an important part of who I am"?

<table>
<thead>
<tr>
<th>class</th>
<th>mean t-1</th>
<th>mean t-2</th>
<th>mean t-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>6th period</td>
<td>4.82</td>
<td>4.8</td>
<td>5.23</td>
</tr>
<tr>
<td>7th period</td>
<td>3.57</td>
<td>4.43</td>
<td>5.2</td>
</tr>
<tr>
<td>control</td>
<td>4.88</td>
<td>XXX</td>
<td>3.71</td>
</tr>
</tbody>
</table>

6th period: n= 13; 7th period: n=14; control: n=11

The 7th period class's participation in the 6 week Recycling Awareness Program began at the t-1 testing time and finished at the t-2 testing time. The 6th period class's participation in the 6 week Recycling Awareness Program began at the t-2 testing time and finished at the t-3 testing time.

Before either Natural Resource Pathway science class participated in the program (at t-1), the control group had the highest mean role identification score (on this question) of all three classes. At the t-2 testing point, the 7th period class, which had just completed the 6 week Recycling Awareness Program, had made a substantial increase in its mean role identification score. The 6th period class's score remained constant, which was expected as they were just beginning the Recycling Awareness Program. By the t-3 testing point, the mean role identification scores for both the 6th and 7th period classes were virtually the same, and substantially higher than the control group score, which actually decreased over the time of this study.
Summary of Youth-Related Outcomes
In this section, we have examined the effects of participation in the Recycling Awareness Program on the Roosevelt High School students. Three groups of measures were utilized -- a set addressing level of recycling information, a set concerning recycling related behaviors, and a series of questions relating to degree of role identification. Each group of measures substantiated the claim that being part of the Recycling Awareness Program had a positive effect on likelihood of the participating students taking on the pro-social role, "recycler."

Measure of Level of Recycling Information:
- Both the 6th and 7th period classes showed significant increases in the mean number of items recalled post-program vs. pre-program, as compared to the control group.

Measures of Recycling-related Behaviors:
- In general, both classes demonstrated greater frequency of enacting positive recycling-related behavior post-program.
- Specifically, the 6th period class enacted several positive behaviors relating to "reuse" more frequently post-program.
- The 7th period class decreased the enactment of several negative recycling-related behavior post-program.

Measures of level of Role Identification:
- Students in both classes reported clarifying their feelings about recycling after participating in the program.
• Students in both classes reported a substantial increase in identification with the pro-social role, "recycler," post-program, as compared to the control group.

• The increase in role identification was substantial and objective, not merely relative change within the two classes.

Finally, it is important to note that the effects noted above did not become extinguished, but endured over time. In fact, the 7th period class’s identification with the role, "recycler," actually increased in the 3 month period after they completed the Recycling Awareness Program.

Conclusions: Recycling Awareness Program

The Recycling Awareness Program met all the stated goals of the original Recycling Intern Project:

1) to increase the level and quality of recycling participation at the Columbia Villa/Tamarack Housing Development through community education. Using the "Participation Rating System," described earlier, the average participation rating score for all the monitored collection systems before the Recycling Awareness Program was 2.56 stars; after the program, 2.78 stars. While some systems improved more than others, overall the Recycling Awareness Program seems to be associated with an improvement in recycling at Columbia Villa.

2) to offer learning experiences in the areas of recycling and community organization to local youth. The participants in the Recycling Awareness Program learned valuable lessons in both recycling and community organization. The student participants showed significant
improvement in level of recycling information, frequency of enactment of recycling related behaviors, and level of identification with the role "recycler," post-program, compared to pre-program.

3) to incorporate community-based learning experiences into the relevant curriculum at Roosevelt High School. The greatest single benefit of expanding the original Recycling Intern Project was the opportunity to incorporate the project into the natural Resources Pathway science curriculum at Roosevelt High School. The Recycling Awareness Program is scheduled to be conducted again at Roosevelt High School during the 1994-95 school year with a new class of sophomores. The materials used in the 1993-94 class have been collected, and are currently being organized into a packet of lesson plans so that teachers at Roosevelt and other high school can continue the Recycling Awareness Program even after the collaborative effort with Portland State University is finished.

While the goals of the original Recycling Intern Project were all realized in the Recycling Awareness Program, there are additional elements in the expanded Recycling Intern Project which has not been fully described. These elements concerns the activities of student recycling interns. This material will be described in the next section of this report.
VI. RECYCLING INTERN PROJECT

Youth interns have played a integral part of recycling promotion at Columbia Villa since the inception of Multi-Family recycling services at the complex in 1989. High school-age interns helped construct the original recycling collection systems which were used at Columbia Villa from 1989 until 1992.

History of Project

Starting during the Winter, 1992, and continuing through Spring, 1993, members of "Youth on the Move," a Multnomah county Sheriff's Department sponsored youth group at Columbia Villa/Tamarack, participated in activities to improve the quality of recycling at the complex. Together with members of the Recycling Education Projects, from Portland State University, these youths went door-to-door throughout the housing development and informed residents about the problems associated with recycling contamination. Significant improvement in recycling setouts was noted for 3 to 6 months after the completion of the youth intervention.

Based on these experiences, it was clear that the youth of Columbia Villa were a valuable resource which could to be used to promote recycling at that complex. When the original Recycling Intern Project was expanded the public schools as the Recycling Awareness Program, the additional funding freed up by the expansion allowed for the hiring of two youth recycling interns, as opposed to the one intern originally budgeted for. These interns were to be Roosevelt High School students who lived in the Columbia Villa Complex.
Contacts established during the earlier recycling promotion programs were utilized to publicize the project, and subsequent interviews were conducted with interested members of the "Youth on the Move" group who met the intern qualifications. Intern #2., a male senior, and intern #1., a female junior, were selected to participate in the project.

Intern's Role in Project

The job description for the recycling interns had four components:

* Field Research: Interns assisted in all aspects of field research project, including monitoring of recycling systems, community education efforts, and the "Kids-teaching-Kids" activities. They supervised Recycling Awareness Program participants in different situations.

* Data Collection and Entry: Interns participated in data collection connected with the monitoring of the targeted recycling systems. They learned how to enter the collected data into the computer.

* Communication: Interns served to facilitate communication between project staff and youth participants.

* Documentation: Interns assisted staff in the documentation of project accomplishments.

Field Research

The student interns were active members of the teaching team that conducted the Recycling Awareness Program at Roosevelt High School. They worked
with the Portland State students three weeks before the beginning of the Roosevelt High School program.

While the members of the teaching team were learned how to conduct monitoring and observations at the field site, the interns helped the Portland State University students gain some insights into the reality of recycling at Columbia Villa. Only one of the Portland State University students had visited the housing complex previously, so the fact that the interns knew their way around this large complex was very helpful.

When it was time to take the Roosevelt students from the Recycling Awareness Program into Columbia Villa to conduct field observations, the interns served as crew chiefs for different monitoring groups. They explained to the Roosevelt students how to properly conduct field observations, as well as how to evaluate the quality of recycling setouts using the “Participation Rating System.”

Inside the classroom, the interns played the roles of “trouble-shooters,” moving from one small group to another depending upon which group required assistance. Sometimes this assistance took the form of being one of the group leaders (when a Portland State University student was absent); at other times they worked one-on-one with individual students who were having difficulty completing class assignments.

During the process of developing the class recycling videos, the interns helped in a variety of ways: built props, wrote cue cards, read an absent student’s part during rehearsal. One of the interns actually ended up being in
one of the class videos, when a Natural Resource Pathway student was absent on the day the video was being filmed. The intern, learned his part in a just a few minutes, then went on camera and did an excellent job.

**Data Collection and Entry**

The student interns were active participants in the data collection process. First, because they had already taken the "Role Measurement Device" themselves before the commencement of the Recycling Awareness Program at Roosevelt High School, the interns were able to assist in the computer testing of the Natural Resource Pathway students. At times, as many as 10 Roosevelt students were being computer tested simultaneously. It required the coordinated efforts of the project director, assistant project director, and all the members of the teaching team to make sure the role measurement information was being correctly collected. The Role Measurement testing was conducted at three different times in the course of this study.

Second, as members of the teaching team, the student interns participated in two weeks of field observations and monitoring of the recycling collection systems at Columbia Villa before the beginning of each term's Recycling Awareness Program at Roosevelt. Once the program began at the high school, the interns served as leaders for the crews of Roosevelt students as they conducted their field observations of the Columbia Villa collection systems. Because they were already familiar with the specifics of weighing the recycling setouts, as well as the intricacies of the "Participation Rating System," the interns helped insure the accuracy and quality of field data collected.
Finally, the interns entered all of the field observation data collected in the Recycling Awareness Program at Roosevelt into files, using Apple laptop computers. They received instruction in how to arrange the collected data in table forms. These tables were used by the other members of the teaching team to help Roosevelt students to learn about a variety of related topics -- means, net vs. gross weights, and projecting the level of future setouts.

**Communication**

The student recycling interns facilitated communication in two general areas:

- between the Roosevelt students who participated in the Recycling Awareness Program, and the project staff, and
- between the residents of Columbia Villa and the participants in the Recycling Awareness Program.

Because both recycling interns were "upper-class persons" -- intern #2 was a senior; intern #1 was a junior -- and the Roosevelt students in the Recycling Awareness Program were all sophomores, the interns were viewed with respect by the other students. The fact that these two, older students had decided to be part of the Recycling Awareness Program made participating in the program more "desirable" for the younger students. The interns served as positive role models, and demonstrated to the sophomores what they themselves might be capable of if they continued in the Natural Resource Pathway.

Also, the interns spoke the "same language" as the other students. When it was time for the class to complete an in-class assignment, and some students
were having difficulties, the interns worked with each of them one-on-one with a great deal of success.

The two recycling interns served as the primary "communication vehicle" for getting information to the residents of Columbia Villa. At two different occasions during the course of the Recycling Awareness Program, the interns prepared handouts -- based on summarized field observation data -- that informed Columbia Villa residents about the effectiveness of their recycling efforts. They developed a different flyer for each recycling collection system, so that the residents who used a particular system would get feedback on the collection system they utilized themselves. Then the interns went door-to-door, throughout the complex. They passed out the feedback flyers and talked to residents about why it was important for them to participate in the recycling efforts at Columbia Villa. This was a highly successful way of communicating this important information. It also served to break the problem of improving recycling participation and quality down to a level that most residents could grasp, and even more important, be willing to participate at. This element of the Recycling Awareness Program was critical in improving recycling at the targeted collection systems at Columbia Villa.

Documentation
The student recycling interns assisted in the documentation of the Recycling Awareness Program/Recycling Intern Project in three different ways.

- First, each intern kept a journal during the course of the project in which they recorded their thoughts and observations on their experiences.
• Second, both interns were interviewed at the end of the Recycling Intern Project. These interviews were captured on videotape.
• Finally, both interns learned how to use the video camcorder. Each intern took turns videotaping different segments of the project, and some of this footage is included in the video that accompanies this final report.

The two student recycling interns satisfied all of the job-related expectations associated with being part of the Recycling Awareness Program. However there was more to the Recycling Intern Project than just their roles in the larger Recycling Awareness Program.

Recycling Intern Project Activities
Another goal of the project was to expose the interns to recycling related experiences in their local community. With this in mind, project staff took the interns on several field trips.

Field Trips
The first field trip was to the Portland Recycling Company, a neighborhood recycling drop-off center located five minutes from Roosevelt High School. The two interns familiarized themselves with the wide range of materials collected at this location, and videotaped some excellent footage of the drop-off center’s operation. When, at later dates, the two Natural Resource Pathway classes, which were participating in the Recycling Awareness Program made field trips to Portland Recycling, the interns served as "guides," showing the other students the various aspects of the drop-off center operation.
Other field trips were to the METRO South Transfer Station (one of two locations where garbage from the City of Portland was compacted, loaded on trucks, and then shipped to the landfill); K & B Recycling Company (a regional recycling collection company, which handled large volumes of recyclable materials); and McFarlane’s Bark and Compost (a commercial operation where yard debris was turned into bark dust and compost materials).

Recycling Promotion Activities

The student interns made several trips to the Recycling Education Project (REP) offices, on the campus of Portland State University. It was here that, using the project’s Macintosh computers, the interns developed the different feedback flyers used to inform Columbia Villa residents about the effectiveness of their recycling efforts.

One area of concern, for REP’s 1993-94 Targeted Sites Program, was “how understandable” the project’s current flyer promoting general recycling was to the general public. The student interns developed their own general recycling promotion flyer, using simpler language and more eye-catching graphics. They then went door-to-door, distributing the flyer to all the residents of Columbia Villa. Feedback received on the interns’ recycling promotion flyer was utilized by the Targeted Sites Program during the revision of their own flyer. The interns also helped distribute multi-lingual versions of recycling promotion materials to the manager of a larger apartment complex located between Columbia Villa and Roosevelt High School.
VII. RECYCLING INTERN PROJECT OUTCOMES

The new Recycling Intern Project positively impacted recycling behavior at the Columbia Villa Housing Development. In addition, participating in the project positively impacted the two student interns.

Outcomes related to Recycling at Columbia Villa

As noted earlier, the overall level of recycling quality and participation, as measured by changes in scores using the "Participation Rating System," improved at Columbia Villa, post-program compared to pre-program. The Recycling Intern Project was an important element in the larger Recycling Awareness Program.

The student interns provided the community feedback mechanism for the Recycling Awareness Program. They were the ones who organized the field observation data collected by the Natural Resource Pathway science classes into feedback flyers for each area serviced by different specific collection systems. The interns were also the ones who distributed these flyers so that residents could know how effective their personal recycling efforts were.

Youth-related Outcomes

The student interns also were tested pre- and post-project, using the "Role Measurement Device" described earlier. The goal was the same, to determine the effects of project participation on the interns, through the use of a series of measures addressing level of recycling information, recycling related behaviors, and role identification.
Measures of Level of Recycling Information

The number of correct potentially recyclable items a student recalled was used as a measure of level of recycling information. Both the student interns showed significant increases in the number of items recalled post-project, as compared to pre-project.

Table 17: Interns’ Recall of Recyclable items

“How many different recyclable items can you think of?”

<table>
<thead>
<tr>
<th>intern</th>
<th>pre-project # items</th>
<th>post-project # items</th>
<th>% increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>7</td>
<td>10</td>
<td>43%</td>
</tr>
<tr>
<td>#2</td>
<td>7</td>
<td>10</td>
<td>43%</td>
</tr>
</tbody>
</table>

Measures of Recycling-related Behaviors

The student interns were presented with a list of 12 recycling-related behaviors -- some positive and some negative. They were asked to indicate the frequency (“regularly,” “occasionally,” or “never”) with which they engaged in each behavior over the previous 6 week period. While both interns indicated that they had engaged in some recycling-related actions before becoming part of the Recycling Intern Project, each intern’s behaviors were impacted in different areas as a result of participating in project.

Intern #1 reported saving “used motor oil in a plastic jug for recycling” for the first time, after participating in the project. All other behaviors stayed consistent with pre-project levels.

Intern #2 reported making changes in the frequency of both positive and negative recycling related behaviors after participating in the project. Level of “cardboard recycling” and “recycling anything in a recycling collection
system” increased post-project; while the frequency of “throwing empty paper cups or food wrappers on the ground” and “throwing plastic milk jugs out with the rest of the trash” decreased.

**Measures of level of Role Identification**

Student interns were presented with 5 questions concerning the personal importance of recycling. These were scored on a 9-point Likert scale (from “strongly disagree” to “strongly agree”).

As with the Natural Resource Pathway science class students, the intern’s results on the “Role Identification” questions showed several interesting trends. Post-project, both agreed, to a greater degree, that they “…had clear feeling about recycling,” and that, for each of them, being a recycler “…means more than just reducing the amount of trash I throw away.”

On the key question, “Recycling is an important part of who I am,” each intern showed the positive effects of participating in the project. Intern #1’s score (on a nine-point scale) increased from “4” (pre-project) to “7” (post-project). Intern #2’s score increased from “5” (pre-project) to “7” (post-project).

**Summary of Youth-Related Outcomes**

In this section, the effects of participation in the Recycling Intern Project on the student interns was examined. Three groups of measures were utilized -- a set addressing level of recycling information, a set concerning recycling related behaviors, and a series of questions relating to degree of role identification. The results of these measures suggested that being part of the
Recycling Intern Project had a positive effect on likelihood of the participating students taking on the pro-social role, "recycler."

Measure of Level of Recycling Information:

- Both student interns showed significant increases in the number of items recalled post-project vs. pre-project.

Measures of Recycling-related Behaviors:

- In general, both interns' recycling-related behaviors were positively impacted, though in different areas, as a result of participating in the project.

Measures of level of Role Identification:

- Both interns reported clarifying their feelings about recycling after participating in the project.

- Both interns reported that their conception of "what a recycler is" changed and became more elaborate after participating in the program.

- Both interns reported a substantial increase in identification with the pro-social role, "recycler," post-program.

Conclusions: Recycling Intern Project

As noted in section V., the Recycling Awareness Program met all the stated goals of the original Recycling Intern Project:

1) to increase the level and quality of recycling participation at the Columbia Villa/Tamarack Housing Development through community education.

2) to offer learning experiences in the areas of recycling and community organization to local youth.
3) to incorporate community-based learning experiences into the relevant curriculum at Roosevelt High School.

The new Recycling Intern Project was a critical part of this larger program. Without the assistance of the student interns, it would have been very difficult to realize the "Recycling Awareness Program's" goals. They made contributions in several key areas:

- The interns were the liaisons between the classes at Roosevelt and the residents of the Columbia Villa housing development.
- The interns provided the feedback mechanism necessary to involve residents in efforts to improve recycling participation and quality at Columbia Villa.
- The interns were integral parts of the teaching team that conducted the Recycling Awareness Program at Roosevelt.
- The interns served as positive role models for the other Roosevelt students.

In addition, the student interns, themselves, grew and experienced positive change as a result of participating in this project.

- Both student interns showed significant increases in the number of items recalled post-project vs. pre-project.
- In general, both interns' recycling-related behaviors were positively impacted, though in different areas, as a result of participating in the project.
- Both interns reported a substantial increase in identification with the pro-social role, "recycler," post-project.
The 1993-94 Recycling Intern Project was a success on several levels. First, it enhanced the self-esteem of the student interns, two Roosevelt students who also lived at the Columbia Villa Housing Development. For the first time, these students derived a benefit from living at Columbia Villa. Not only were they "experts" on recycling for the students in the Natural Resource Pathway science classes at Roosevelt, they were also the "experts" on living in a large low-income housing complex for all the project participants. Many of the Roosevelt and Portland State University students had never been to Columbia Villa before. Some of them thought Columbia Villa was a "scary" place. The interns were able to put those fears to rest just by the manner in which they carried themselves. Second, both recycling interns increased their knowledge of recycling-related information, increased the frequency of enacting positive recycling-related behaviors, decreased the frequency of enacting negative recycling-related behaviors, and increased their respective levels of identification with the role "recycler" as a result of participation in this project. Third, the presence of the recycling interns demonstrated to the residents of Columbia Villa that this project had a local focus. It was not just a group of outsiders coming in to tell them what they should do to improve their lives. Finally, and perhaps most importantly, this project represented a joint effort among partners from different spheres of influence -- Portland Youth Advocates, Roosevelt High School, and Portland State University. This joint effort hopefully will serve as the basis for future shared community-service projects.

VIII. Recycling Awareness Project Summary
The Recycling Awareness Project positively impacted three targeted groups: Roosevelt High School students, Portland State University students, and the North Portland community.

Roosevelt High School Students
New research in education has found that lower student/teacher ratios enhance esteem and reduce dropout rates (Sizer, 1984; Welage, Smith, & Lipman, 1992). This project developed student mentors: college students were provided information about recycling and did research projects which give them expertise about various aspects of recycling. They took their new information into the high school classroom and worked alongside the students in field work and on video projects related to recycling.

Social Psychological research on motivation suggested that many people engage in behavior to enhance their self-concept (i.e. the way they see themselves) (Goffman, 1959; Tedeshi & Reiss, 1981). Some of this relates to self-esteem -- the way they feel about themselves. It is important to note that individuals experience different degrees of self-esteem depending upon which part of their self (i.e. identity) they are enacting in what situation (i.e. context) (Pelham & Swann, 1989). Example: students who do not do well in school (feel low self-esteem with "school self") will look for other opportunities to feel "good about themselves," such as getting involved in gangs. Students' levels of self-esteem associated with "school" and "pro-social" identities were increased in this project, due to the special design of the project which is set up to insure that participants succeed. In terms of fostering an improved "school" identity, the project, due to the presence of the college students and the constant videotaping, was highly visible to other
students at the school. Participants got positive recognition from other students just because they were part of the program, which further built self-esteem. In terms of developing pro-social identities as "recyclers," the structured activities of the Recycling Awareness Program allowed students to see themselves enacting role-related behaviors. Natural Resource Pathway science classes students who participated in the Recycling Awareness Program, showed increased levels of recycling-related knowledge, increased levels of positive recycling-related behaviors, decreased levels of negative recycling-related behaviors, and increased levels of identification with the role "recycler" post-program compared to pre-program.

Increasing levels of alienation among youth has been associated with increased school dropout rates. A large part of this alienation arises from youths' feelings that "what they do doesn't matter". Not surprisingly, this has been tied to decreased levels of motivation. This project changed that. It served to build students' feelings of self-efficacy by showing them that "what they did made a difference," and they were positive causal agents in the larger community.

While the students learned about recycling and natural resource issues in a hands-on approach, they also contributed to their neighborhood and community by increasing the level and quality of local recycling through program-related actions. The donation of food and supplies for the class celebration at the conclusion of each Recycling Awareness Program, demonstrated to the Roosevelt students that the local community was aware of their program and supported their efforts to improve the neighborhood.  

Portland State University Students
Portland State University students also developed higher levels of identification with the role "recycler." This was demonstrated by increased levels of recycling-related knowledge, increased levels of positive recycling-related behaviors, decreased levels of negative recycling-related behaviors, and increased levels of identification with the role "recycler" post-class compared to pre-class.

The impact of participating in a service learning class on the Portland State University students' overall educational experience was significant. First, the Social Psychology of Recycling classes gave the students an opportunity to get out of the classroom and into the community to conduct field research that actually made a difference. Students got first-hand experience dealing with recycling and waste-stream reduction issues in the actual settings in which they occurred. Furthermore, the results of the field observations, conducted with the Natural Resource Pathway science classes from Roosevelt, were used to document the status of the City of Portland's Multifamily Recycling Program at the Columbia Villa Housing Development, as well as to provide feedback to the Columbia Villa residents about the effectiveness of their recycling efforts. Second, the teaching and mentoring opportunities provided for the Portland State University students, in the course of conducting the Recycling Awareness Program at Roosevelt, led many of them to become more involved in the community as a result of their experiences. More than 70% of the Social Psychology of Recycling students went on to work on other recycling-related projects in the community. More than 40% became active in mentoring and other youth-related programs. Finally, the Portland State University students who participated in the Social Psychology of Recycling classes received recognition from the rest of the university. Class members
were featured in several stories in both Portland "Oregonian" and the campus newspaper. Based on their participation in this service learning project, students were invited to address a representative of the Governor's Higher Education advisory staff concerning their experiences working with the high school students at Roosevelt.

**The North Portland Community**

The Recycling Awareness Project benefited the local community around Roosevelt High School in at least three ways: recycling promotion, recycling education, and building community involvement. In terms of recycling promotion, the field observation data, collected by the Roosevelt students who participated in the Recycling Awareness Program, was used, on several occasions, to provide feedback to Columbia Villa residents about the status of the recycling collection program at that complex. The recycling interns prepared and distributed flyers to the people who lived in the apartments serviced by each of the different recycling collection systems included in the field observation program. A different, specific feedback flyer was developed for each collection system, so that residents could understand the effectiveness of their recycling efforts.

The Recycling Awareness Project contributed to recycling education on several levels. The Recycling Awareness Program targeted the high school sophomores from the Natural Resource Pathway science classes at Roosevelt. In addition, four classes of children from Clarendon Elementary School received instruction in "how to recycle" from the Roosevelt students as part of the "kids teaching kids" program.
Finally, The Recycling Awareness Project improved the connection between Roosevelt High School students and the local community. The St. John's neighborhood, where Roosevelt High school is located, has been impacted by waste-related issues for many years. St. John's was the site of the old City of Portland landfill, which was only recently closed in 1992. Areas of the Columbia Slough and Smith and Bybee lakes are polluted due to run-off from the old landfill. When the students began learning about and working to promote recycling and waste stream reduction, they began to realize how much the history of their local area had been impacted by these issues. Recycling promotion and education became, not just something they had to learn about in the classroom, but ways of improving their community. When local businesses donated food and supplies for celebrations at the end of each of the Recycling Awareness Programs, the Roosevelt students realized that community recognized and appreciated their efforts. This increased the students' sense of being involved in the community.

The Recycling Awareness Project was a successful service learning project. It enriched the educational experiences of the Portland State University, Roosevelt High School, and Clarendon Elementary School students; it promoted the recycling program at the Columbia Villa/Tamarack Housing Development, it facilitated high school student involvement in their local neighborhood, and it strengthened the connection between Portland State University and the North Portland community. This is an example of the kind of community-based learning that is only possible at an urban university such as Portland State.


APPENDICES
Appendix i

RECYCLING AWARENESS PROGRAM QUESTIONNAIRE

SUBJECT #: ___________ DATE: ___________

In this questionnaire, we are asking people a few questions about RECYCLING. All responses will be confidential. There are no "right" or "wrong" answers.

I. ITEMS

1) Think about a person who recycles. A person who is an active recycler could recycle many different items. How Many Different Recyclable Items Can You Think Of? (List Them Below)

A) ______________________________________
B) ______________________________________
C) ______________________________________
D) ______________________________________
E) ______________________________________
F) ______________________________________
G) ______________________________________
H) ______________________________________
I) ______________________________________
J) ______________________________________

1
II. ACTIONS

Below is a list of different "Actions". Place A Mark In the Column that Best Describes YOUR Actions During the Last 6 Weeks.

<table>
<thead>
<tr>
<th>never</th>
<th>occasionally</th>
<th>regularly</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
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</tbody>
</table>

2) cut the ends off and crushed tin cans
3) reused grocery bags
4) smashed a glass bottle in the street
5) put newspapers into a recycling collection container
6) bundled up cardboard to be recycled
7) saved a jar in order to reuse it
8) saved used motor oil in a plastic jug for recycling
9) thrown out plastic milk jugs with the rest of the trash
10) collected returnable cans and bottles for deposit money
11) purchased a product made of 100% recycled materials
12) thrown empty paper cups or food wrappers on the ground
13) recycled anything in a recycling collection system
III. IMPORTANCE

INDICATE HOW MUCH YOU "AGREE" OR DISAGREE" WITH EACH OF THE FOLLOWING STATEMENTS.

14) Recycling is something I rarely even think about.

<table>
<thead>
<tr>
<th>strongly agree</th>
<th>strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>9-8-7-6-5-4-3-2-1</td>
<td></td>
</tr>
</tbody>
</table>

15) I would feel a loss if I were forced to give up recycling.

<table>
<thead>
<tr>
<th>strongly agree</th>
<th>strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>9-8-7-6-5-4-3-2-1</td>
<td></td>
</tr>
</tbody>
</table>

16) I really don't have any clear feelings about recycling.

<table>
<thead>
<tr>
<th>strongly agree</th>
<th>strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>9-8-7-6-5-4-3-2-1</td>
<td></td>
</tr>
</tbody>
</table>

17) For me, being a recycler means more than just reducing the amount of trash I throw away.

<table>
<thead>
<tr>
<th>strongly agree</th>
<th>strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>9-8-7-6-5-4-3-2-1</td>
<td></td>
</tr>
</tbody>
</table>

18) Recycling is an important part of who I am.

<table>
<thead>
<tr>
<th>strongly agree</th>
<th>strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>9-8-7-6-5-4-3-2-1</td>
<td></td>
</tr>
</tbody>
</table>
19) DO YOU HAVE ACCESS TO A RECYCLING SYSTEM - EITHER YELLOW BINS OR AN APARTMENT COLLECTION SYSTEM?
   yes ______  no ______

20) MALE _____  FEMALE _____

21) WHY DID YOU SIGN UP FOR THIS CLASS?

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

THANK YOU FOR YOUR PARTICIPATION.