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ABSTRACT

An evaluation was conducted of a 3-year demonstration program the purpose of which was to demonstrate the efficacy of projects that included vocational education as a key component in encouraging at-risk youth to remain in or return to school. Six of the 10 project grantees, funded under the Cooperative Demonstration Program of the Carl D. Perkins Vocational Education Act, were evaluated, using process and outcome information from 12 localities. The study found that only one-third of the projects achieved significant reduction in the number of participants who dropped out of school. Projects were generally more successful, however, in improving participants' school performance and affiliation, with 10 of the 12 demonstrating increases in participants' grade point average, 7 showing reduction in number of courses failed, and 7 showing improvements in participants' perceptions of the safety of their school environment. Among the components that appeared to be critical for improving the persistence and educational success of at-risk youth are the following: (1) a smaller, more personal environment, such as that available in the school-within-a-school and alternative school environments; (2) a structured environment that includes clear and equitably enforced behavioral expectations; (3) vocational education that integrates academic education and leads to good entry-level jobs or continued training at the postsecondary level; (4) formal, ongoing coordination of the academic and vocational components of participants' high school programs; (5) a formal counseling component that incorporates attention to personal issues along with career counseling, employability and life skills instruction; and (6) personal, supportive attention from adults through mentoring or similar projects. (The report includes separate evaluations of each site, 13 tables, and 3 appendixes that report on the study methodology.) (KC)

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FINAL REPORT

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STRATEGIES FOR KEEPING KIDS IN SCHOOL:

Evaluation of Dropout Prevention and Reentry Projects in Vocational Education

Final Report

June 1995

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Contents

Executive Summary

Page

Chapter 1: Introduction

Evaluation of the Demonstration Projects 1-2
Organization of This Report 1-5

Chapter 2: Methodology

Process Evaluation 2-1
Outcome Evaluation 2-4

Chapter 3: Implementation

Overview of the Cooperative Demonstration Program 3-1
Overview of Projects in the Evaluation 3-5
Findings on Project Implementation 3-10
Project Participants and Services 3-25
Strategies Geared Toward Student Change 3-31
Structural Changes in the School 3-42

Chapter 4: Results

Introduction 4-1

Woodside Business Technology Academy
Woodside High School, Woodside, California 4-7

Carlmont Business Technology Academy
Carlmont High School, Carlmont, California 4-11

Guidance in Retraining Adolescents (GRADS)
Central Area Vocational-Technical School, Cushing, Oklahoma 4-15

OASIS Alternative School
Oconee County, South Carolina 4-19

Page

Youth Experiencing Success (Y.E.S.)
Center for Applied Technology South, Anne Arundel County, Maryland 4-22

Changing How Our Pupils Succeed (C.H.O.P.S.)
McFatter Vocational-Technical Center, Broward County, Florida 4-25

Vocational Continuum Program
Grant High School, Portland, Oregon 4-27

Preparing At-Risk Youth for Employment Program
Breithaupt Vocational Technical Center, Detroit, Michigan 4-30

Project COFFEE Vocational Training Program
Turtle Mountain, North Dakota 4-33

Project COFFEE Vocational Training Program
Fort Totten, North Dakota 4-36

Project COFFEE Vocational Training Program
Fort Berthold, North Dakota 4-38

Project COFFEE Vocational Training Program
Fort Yates (Standing Rock), North Dakota 4-41

Chapter 5: Summary and Implications

Summary of Participant Outcomes 5-2
Proximity 5-3
Experience With the Model 5-5
Matching of Services to Targeted Youth 5-9
The Role of Academics 5-10
The Importance of Personal Supports 5-11
The Efficacy of Vocational Education as a
Dropout Prevention Strategy 5-12
Structural Changes 5-16
Components of Effective Dropout Prevention Programs in
Vocational Education 5-18

Page

Appendix A Sample Sizes for Dropout Prevention and Reentry Projects
Appendix B Analytic Tables for Dropout Prevention and Reentry Projects
Appendix C Derivation of Analytical Approach

List of Tables

Table 1-1 Types of CDP Grantee Organizations 1-2

Table 2-1 Dropout Prevention and Reentry Projects in Vocational Education Sample Sizes, by Site and Cohort 2-5

Table 2-2 Research Designs Employed by Dropout Prevention and Reentry Projects, by Site 2-6

Table 3-1 Funding Levels of CDP Grants 3-3

Table 3-2 Dropout Rates in Grantees' Localities 3-4

Table 3-3 Characteristics of Projects in the In-depth Evaluation 3-6

Table 3-4 Initiation of Project Services 3-10

Table 3-5 Projects' Objectives for Participants 3-15

Table 3-6 Characteristics of Project Participants 3-27

Table 3-7 School Performance of Project Participants and "Average" Students 3-30

Table 3-8 Vocational Components Planned and Implemented by the Projects 3-33

Table 4-1 Types of Participant Outcomes Included in the Evaluation 4-2

Table 4-2 Summary of Outcomes Achieved by Participants in CDP Dropout Prevention Projects 4-5

EXECUTIVE SUMMARY

In February 1989, the Office of Vocational and Adult Education (OVAE) in the U.S. Department of Education (ED) initiated a three-year demonstration program whose purpose was to demonstrate the efficacy of projects that included vocational education as a key component in encouraging at-risk youth to remain in or return to school. Authorized under the Cooperative Demonstration Program (CDP) of the Carl D. Perkins Vocational Education Act (P.L. 98-524, Section 411), the demonstration targeted grants to communities with high dropout rates. OVAE awarded 10 grants under the demonstration authority to school districts, universities, and other types of organizations that proposed to replicate a tested dropout prevention model, expand services already available in the locality, or develop a new design for improving the school persistence of target youth. As part of its overall effort in this demonstration, ED also awarded a contract for a rigorous evaluation of the grantees. This document summarizes the findings of the evaluation's final report. Included are sections on the evaluation's purposes and methods, findings, and implications.

Purposes and Methods

The evaluation's design included assessment of the dropout prevention projects' impacts on participant outcomes, including attendance, school performance, students' attitudes and aspirations, and persistence to graduation; and examination of project implementation over the three-year period of the grants. Six of the 10 CDP grantees participated in the evaluation; since some were multisite projects, the evaluation collected process and outcome information from a total of 12 localities.

Specific purposes of the evaluation were as follows:

- To determine the effectiveness of the projects in reducing dropping out and other at-risk behaviors and attitudes associated with dropping out;

- To analyze student outcomes as a function of what services the projects actually provided over the period of the grant (as opposed to what they described in their grant proposals);

- To investigate factors that affected project implementation, in order to facilitate decisionmaking regarding adoption or adaptation of particular dropout prevention/reentry project models in other locations for specific types of youth; and

- To examine study design-related decisions and experiences throughout the course of the study to ensure the most rigorous evaluation possible.

To address the evaluation purposes having to do with participant outcomes, the study team implemented one of two designs, based on the nature of the projects selected for participation in the evaluation and other factors: (1) random assignment of members of the projects' applicant pools to treatment or control groups, and (2) a comparison group design that matched participants to nonparticipants on key characteristics. In addition, we implemented a supplementary evaluation that used a gap reduction design. The gap reduction technique involves selection of a nonequivalent group of "typical" students for comparison with study participants to determine the extent to which receipt of services reduces the gap in performance between average students and those with low achievement, attendance, and other behaviors that are characteristic of the at-risk students targeted by the projects.

Of the 12 project sites participating in the evaluation, nine implemented random assignment, while the remaining three implemented a matched comparison group design. Students in 10 of these sites were represented in Cohort 1, which received services starting in the 1989-90 school year; all 12 sites were represented in Cohort 2, which received services starting in the 1990-1991 school year. The two cohorts were also combined into a single cohort for analytic purposes.

There were 1,062 students included in Cohort 1, and 1,430 students in Cohort 2. Approximately 27 percent of the students participating in the evaluation were in treatment groups (i.e., received dropout prevention/reentry services from one of the projects). Thirty-two percent of the participants served as statistical comparison groups to the participants in the treatment groups. The remainder were in the gap reduction groups. Nontreatment condition students were assigned to either a randomly assigned experimental control group or

a quasi-experimental comparison group, with group membership determined by the research design selected by the dropout prevention/reentry site.

To address evaluation purposes having to do with identification of the actual "treatment" received by project participants, we implemented a concurrent longitudinal process evaluation, or implementation study. This component of the evaluation included periodic visits to each participating site that included onsite observations of project activities, collection of information from records, and interviews with administrators, teachers, other staff involved in delivering services, and participants. Depending on each project site's actual implementation schedule (which ranged from fall 1989 to fall 1990), study staff visited projects twice a year for two years and again at the end of the three-year demonstration period.

The evaluation design required collection of substantial amounts of quantitative and qualitative information from a variety of sources, including (1) project applicants, participants, and members of the control and comparison groups; (2) student and school records; (3) administrators of projects' host organizations; (4) persons involved in project administration; (5) instructors and others involved in delivering the projects' services; and (6) members of the private sector. Implementation of the random assignment and comparison group designs required collection of background information, including student characteristics and educational experiences and status. Comparison of educational (e.g., grade point average) and attitudinal (e.g., perceptions of teachers and counselors) outcomes of participants and control/comparison groups required collection of information from records and through student and staff interviews over the life of the evaluation. Development of causal inferences about the influences of the interventions on outcomes required collection of baseline information on each project's intended services and ongoing measurement of the extent to which projects modified their service designs over time. Several of the grantees found it necessary to make fairly extensive modifications to their intended service designs; the implications of these changes for participant experiences and outcomes were an important aspect of the study's ongoing data collection and analysis activities.

Study Findings

The CDP demonstration's primary intended outcome was reduction in dropping out among project participants, or, for reentry projects, return to school. Given the likelihood that projects might achieve other, intermediate, outcomes (e.g., improvement in school affiliation or performance) prior to changes in dropping out, we also examined a number of these outcomes. In sum, the number of the 12 total project sites that achieved each of the outcomes of interest, relative to the outcomes of the comparison or control group, in the evaluation were as follows.

Outcome	Number of Projects With Outcome
• Reduction in dropping out	4
• Increase in grade point average	10
• Reduction in number of courses failed	7
• Increase in number of credits earned	5
• Reduction in number of absences	5
• Improvement in students' perception of teachers and instruction	4
• Improvement in students' perception of counselors and counseling	2
• Increase in students' perception that school is safe	7
• Students' perception of receiving more academic encouragement	4
• Students' perception of receiving better job preparation	3

As this summary notes, only one-third of the projects achieved significant reduction in the number of participants who dropped out of school. Projects were generally more

successful, however, in improving participants' school performance and affiliation, with 10 of the 12 demonstrating increases in participants' grade point average, seven showing reduction in number of courses failed, and seven showing improvements in participants' perceptions of the safety of their school environment. Five projects achieved reduction in the number of absences.

In terms of project implementation, and its relationship to outcomes, we found the following.

- Organizational location, in combination with the location of project sites and services, affected project implementation and participant outcomes in that projects with close proximity to the grantee organization tended to fare better in terms of these outcomes.

- Grantees experienced more success in implementing project models with which they were familiar.

- Project success depended on careful analysis of the types of youth targeted for services, and on provision of services that were appropriate to targeted youth.

- Some level of integration, or at least coordination, of academic and vocational course work appeared important in engaging students and leading to improvement in their overall performance.

- All projects, even those that did not originally intend to do so, implemented some form of counseling or mentoring support; most projects with such services showed improvements in students' affiliation with school.

- While the study suggests that participation in vocational education did have salutary effects on student performance, the variability in what the projects delivered as "vocational education" suggests the need for further study of the efficacy of vocational education in reducing dropping out.

- Projects that changed the structure of the school, particularly those that created a smaller, more nurturing, environment achieved positive effects in school performance and affiliation, though not in retention.

Components of Effective Dropout Prevention Programs in Vocational Education

Review of the experiences of the projects funded under the CDP demonstration from a summative perspective permits reflection on those components of the projects, taken together, that appear to have promise for improving the persistence and educational success of at-risk youth. Among the components that appear critical are the following:

- A smaller, more personal environment, such as that available in the school-within-a-school and alternative school environments;
- A structured environment that includes clear and equitably enforced behavioral expectations;
- Vocational education, preferably that contains integration of academics with the vocational content, and, for most participants, has an occupational concentration leading to good entry-level jobs or continued training at the postsecondary level;
- Formal, ongoing coordination of the academic and vocational components of participants' high school programs;
- A formal counseling component that incorporates attention to personal issues along with career counseling, employability development, and life skills instruction; and
- Personal, supportive attention from adults, through a mentoring or other project component.

CHAPTER 1: INTRODUCTION

In February 1989, the Office of Vocational and Adult Education (OVAE) in the U.S. Department of Education (ED) initiated a three-year demonstration program. Its purpose was to demonstrate the efficacy of various strategies that included vocational education as a key component in encouraging at-risk youth to remain in or return to school. Authorized under the Cooperative Demonstration Program (CDP) of the Carl D. Perkins Vocational Education Act (P.L. 98-524, Section 411), the demonstration provided for awarding of grants to school districts and other eligible entities located in communities with high dropout rates. Grantees were to (1) replicate project models found to be effective in other settings (e.g., the high school academy model; Project COFFEE), (2) expand an existing project that met the objectives of the demonstration, or (3) develop new designs to meet locally identified needs. Because a key intent of the program was that projects be capable of widespread replication in other settings, grantees were to incorporate formal dissemination activities into their operations. Among the strategies suggested for implementation were:

- Coordination of remedial academics or general education development (GED) preparation with vocational training;
- Implementation of cooperative programs with the private sector;
- Conduct of incentive-based programs that would reward schools for reducing their dropout rates;
- Implementation of flexible scheduling that would permit dropouts to combined employment with continuing education.

In July 1989, OVAE awarded 10 grants under the demonstration authority. Table 1-1 shows the types of organizations that received these grants: four of the recipients were local education agencies, two were regional education centers within a state, and one was a state board for vocational education. Other grantees were a community college, a university, and a local branch of a national charitable organization.

Several grantees planned to implement their project in multiple sites; in all, the 10 grantees operated projects in a total of 16 locations. These locations included comprehensive

Table 1-1

Types of CDP Grantee Organizations

Type of Grantee	*Number*
Local education agency	4
Community college	1
University	1
Regional education service center	2
State vocational education board	1
Local charitable organization	1
TOTAL	10

high schools, area vocational-technical centers, K-12 schools, Bureau of Indian Affairs (BIA) schools, and alternative schools, one located in a store front and the other in an old storage building that the school's faculty and students renovated). Because of the late award of the grants, some projects were unable to begin operations as expected in the fall of the 1989-90 school year. Several started in the spring semester of that year, while a few got underway the following fall. The projects continued through the end of the 1991-1992 school year.

Evaluation of the Demonstration Projects

As part of the demonstration program, ED decided to conduct a rigorous evaluation of the demonstration projects' implementation and effects. ED's Planning and Evaluation Service (PES) awarded a contract for this evaluation to RMC Research Corporation (with subcontracts to the American Institutes for Research and Research Triangle Institute) in February 1989. This report contains findings from that evaluation, which was conducted over the life of the demonstration program. The evaluation's overall purpose was to assess,

through implementation of a rigorous experimental design, the extent to which projects with vocational education as a key component improve the educational experiences and outcomes of at-risk youth. Six of the 10 grantees, representing a total of 12 of the 16 project sites, were selected for the evaluation, based on the suitability of their service design to a rigorous longitudinal evaluation.

Included in the study's design were (1) evaluation of projects' impacts on participant outcomes, including attendance, school performance, students' attitudes and aspirations, and persistence to graduation, and (2) an intensive examination of project implementation over the three-year period of the grants. Specific purposes of the evaluation were as follows:

- To determine the effectiveness of the projects in reducing dropping out and other at-risk behaviors and attitudes associated with dropping out;

- To analyze student outcomes as a function of what services the projects actually provided over the period of the grant (as opposed to what they described in their grant proposals);

- To investigate factors that affected project implementation, in order to facilitate decisionmaking regarding adoption or adaptation of particular dropout prevention/reentry project models in other locations for specific types of students; and

- To examine study design-related decisions and experiences throughout the course of the study to ensure the most rigorous evaluation possible.

To address the evaluation purposes having to do with participant outcomes, the study team implemented one of two designs, with selection based on the nature of the projects selected for participation in the evaluation and other factors (e.g., two school districts had policies against random assignment and hence were unable to implement the design of choice). These designs were (1) random assignment of members of the projects' applicant pools to treatment or control groups and (2) a comparison group design that matched participants to nonparticipants on key characteristics. In addition, a supplementary evaluation using the gap reduction design was implemented. The gap reduction technique involves selection of a nonequivalent group of "typical" students for comparison with study participants to determine the extent to which receipt of services reduces the gap in

performance between average students and those with low achievement, attendance, and other behaviors characteristic of the at-risk students targeted by the projects.

To address evaluation purposes having to do with identification of the actual "treatment" received by project participants, we implemented a concurrent longitudinal process evaluation, or implementation study. This component of the evaluation included periodic visits to each participating site that included onsite observations of project activities, collection of information from records, and interviews with administrators, teachers, other staff involved in delivering services, and participants. Depending on each project site's actual implementation schedule (which ranged from fall 1989 to fall 1990), study staff visited projects twice a year for two years and one additional time at the end of the three-year demonstration period.

The evaluation design required collection of substantial amounts of quantitative and qualitative information from a variety of sources, including (1) project applicants, participants, and members of the control and comparison groups; (2) student and school records; (3) administrators of projects' host organizations; (4) persons involved in project administration; (5) instructors and others involved in delivering the projects' services; and (6) members of the private sector. Implementation of the random assignment and comparison group designs required collection of background information, including student characteristics and educational experiences and status. Comparison of educational (e.g., grade point average) and attitudinal (e.g., perceptions of teachers and counselors) outcomes of participants and control/comparison groups required collection of information from records and through student and staff interviews over the life of the evaluation. Development of causal inferences about the influences of the interventions on outcomes required collection of baseline information on each project's intended services and ongoing measurement of the extent to which projects modified their service designs over time. Several of the grantees found it necessary to make fairly extensive modifications to their intended service designs; the implications of these changes for participant experiences and outcomes were an important aspect of the study's ongoing data collection and analysis activities.

Organization of This Report

This report presents the findings from the implementation and outcome components of the evaluation. It is organized into five chapters. Chapter 2 describes the methodology we employed for both the implementation and the outcome analyses. Chapter 3 presents findings on the projects' implementation during the life of the demonstration. Chapter 4 presents the results of the outcome analyses, considered in light of the projects' implementation status over time. Finally, Chapter 5 discusses the implications of the evaluation's findings for policymakers and practitioners concerned with improving educational and supportive services and outcomes for at-risk youth.

CHAPTER 2: METHODOLOGY

The evaluation's longitudinal design included two interrelated components. The first component was a longitudinal implementation, or process, study, involving periodic site visits over a three-year period to each of the 12 project sites in the in-depth evaluation. The other component was analysis of the impacts of these projects on participants through collection of information from individuals in the treatment and control/comparison groups and from student records (e.g., attendance, grades, credits earned). This chapter provides an overview of the methodology associated with each of these components.

Process Evaluation

The process evaluation had two major purposes. The first purpose was to obtain information on services actually provided to participants in order to help explain the types of outcomes experienced by project participants. The second goal was to analyze factors that affect project implementation in order to facilitate decisionmaking on adoption or adaptation of particular models of dropout prevention/reentry projects in other locations, given the needs of the target population, characteristics and environments of localities, and monetary and other resources available to implement strategies for encouraging at-risk youth to remain in or return to school.

The design of the process evaluation was longitudinal, with twice-yearly visits to each of the projects in the in-depth study in the first two years of project operations and a final visit during the spring of the third year. Activities conducted during these visits included the following: collection of records information on school and community context (such as district organization and community demographic characteristics), project staff and monetary resources, and project-related documents developed by the grantees; observation of project operations through classroom visits and visits to other relevant locations (e.g., worksites, where appropriate); and interviews with local administrators and key project staff (director, teachers, counselors).

We developed a set of instruments for conducting these activities, which permitted monitoring of changes over time in project goals, activities, staffing patterns, and the like. These instruments included the following:

- **Implementation Checklist**

  Tailored to the project model undertaken by each of the grantees in the in-depth evaluation, the checklist guided site visitors in rating the level and quality of implementation at the project component level (e.g., attendance monitoring, work experience).

- **Project Resource Record**

  This instrument collected information on financial, staff, and other resources used by the project, including types and amounts of financial contributions (in addition to the federal grant), volunteered time, and nonfinancial contributions (e.g., computers), in support of project activities.

- **Staff Training and Experience Record**

  Administered to all staff, this instrument collected information on the educational background and experience of all staff, including experience in working with at-risk youth, participation in staff development activities related to the project, and extent of contacts with project participants, parents, and others in support of project activities.

- **Classroom Observation Form**

  This form provided a framework for observing classroom activities, including types of instructional methods employed, interactions between instructors and participants, and general environment of the classroom.

- **School/Community Context Record**

  Site visitors used this form to collect basic contextual information relevant to the project, including dropout rates, overall demographic characteristics of the community, and district profile (size, organization) information.

- **District/School Administrator Interview Guide**

  This protocol guided interviews with district or school administrators responsible for activities relevant to the project, such as local initiatives for improving educational services to at-risk students, support for the project,

factors associated with the project's implementation, and plans for continuation of the project following the demonstration period.

- **Project Director Interview Guide**

  This instrument guided detailed interviews with project directors and explored factors that have affected project implementation, changes in project objectives or activities, resource and management issues, perceptions of the effectiveness of the project, and factors relevant to project replication.

- **Project Teacher Interview Guide**

  This protocol was used for collecting information on the project's instructional components, including teacher perceptions concerning the appropriateness of the design, the model's strengths and weaknesses, issues that arose over time in implementing the model, and effects on participants.

- **Ancillary Staff Interview Guide**

  This protocol guided interviews with counselors, social workers, and other support staff concerning their role in the project, the tailoring of services to individual students, and their perceptions of the efficacy of the project in meeting the ancillary needs (e.g., personal support) of participants.

- **Private Sector Interview Guide**

  This protocol permitted exploration of contributions of private sector representatives to the project, including provision of mentors and internships, donation of equipment or supplies, and other activities designed to assist projects in meeting their objectives.

Site visits to the projects for the process evaluation component of the study began during fall 1989, and were scheduled to accommodate the initiation dates of each of the 12 sites in the in-depth study.[1] Chapter 3 presents findings from the process evaluation, and Chapter 4 integrates information from the process and outcome evaluation components to address the relationship between project activities and implementation status and participant outcomes.

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[1]The dropout prevention/reentry projects in Detroit and Broward County were not implemented until the 1990-1991 academic year, and several others began in spring 1990.

Outcome Evaluation

The outcome evaluation was designed to obtain information over the course of the study on participant outcomes and changes in outcomes (comparing treatment to comparison groups) such as attitudes toward self and school, educational and employment aspirations, school performance, attendance, dropout rates, and employability. The design called for analysis of these outcomes for each of the "models" implemented in the demonstration (e.g., Career Academies). As a group the grantees that participated in the evaluation did plan to implement several discrete models (e.g., two Career Academy programs, seven replications of Project COFFEE), the projects that they actually implemented differed substantially from site to site. Consequently, we present the evaluation's process and outcome findings by site, rather than by project model or for the demonstration as a whole.

The outcomes reported in Chapter 4 of this report were based on data collected from the demonstration projects at 12 sites. Students in 10 of these sites were represented in Cohort 1, which received services starting in the 1989-90 school year; all 12 sites were represented in Cohort 2, which received services starting in the 1990-1991 school year. The two cohorts were also combined into a single cohort for analytic purposes.

A total of 1,062 students were included in Cohort 1, and a total of 1,430 students were included in Cohort 2. Approximately 27 percent of the students participating in the evaluation were in treatment groups (i.e., received dropout prevention/reentry services from one of the projects). Thirty-two percent of the participants served as statistical comparison groups to the participants in the treatment groups. Table 2-1 presents the sample sizes for the participating projects by experimental condition (i.e., treatment and control/comparison group). Nontreatment condition students were assigned to either a randomly assigned experimental control group or a quasi-experimental comparison group, with group membership determined by the research design selected by the dropout prevention/reentry site.[2]

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[2]Visits to each dropout prevention/reentry site were completed during fall 1989 to encourage the development of an experimental research design. Nevertheless, several projects implemented other designs with nonequivalent quasi-experimental comparison groups.

Table 2-1

Dropout Prevention and Reentry Projects in Vocational Education Sample Sizes, by Si

Project Site	Cohort 1			Cohort 2			C
	Treatment Group	Comparison/ Control Group	Gap Reduction	Treatment Group	Comparison/ Control Group	Gap Reduction	Treatment Group
Woodside	40	45	42	35	40	39	75
Carlmont	41	48	43	44	47	50	85
Cushing	47	39	41	47	48	47	94
Oconee	25	26	44	10	8	**	35
Ann Arundel	19	23	42	18	18	45	37
Broward	*	*	*	24	29	29	na
Portland	23	25	23	21	29	37	44
Detroit	*	*	*	87	96	94	na
Turtle Mtn	15	19	30	10	13	17	25
Ft Totten	23	22	34	14	43	31	37
Ft Berthold	10	16	51	14	14	29	24
Ft Yates	16	16	**	16	62	51	32

* Projects not implemented until 1990-1991 academic year
** Cohorts without gap reduction groups

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Additionally, we implemented a supplemental research design, called gap reduction,[3] in all project sites to protect against the degradation of the experimental and quasi-experimental designs that might result from differential attrition. Approximately 41 percent of the study participants were in "Typical Student Groups" used for the gap reduction analyses. These students were not directly involved in the study. Rather, they served as a comparison group used to assess the reduction in the size of the gap between treatment students and "typical" students from before to after treatment on key variables of interest. Table 2-2 displays the research design employed by the projects.

Table 2-2

Research Designs Employed by Dropout Prevention and Reentry Projects, by Site

Project Site	Research Design		
	Random Assignment	Matched Comparison	Gap Reduction Design
Woodside		•	•
Carlmont		•	•
Cushing	•		•
Oconee	•		•
Ann Arundel	•		•
Broward	•		•
Portland		•	•
Detroit	•		•
Turtle Mountain	•		•
Fort Totten	•		•
Fort Berthold	•		•
Fort Yates	•		•

[3]Tallmadge, G.K., Lam, T.C.M., & Gamel, N.N. (1987). *Bilingual education evaluation and reporting system: Users' guide.* Washington, DC: U.S. Department of Education.

The findings presented in this report are based on data collected at three or four time points: before project initiation (i.e., the baseline), in the 1989-90 school year, in the 1990-91 school year, and in the 1991-92 school year. In other words, the 1991-92 outcome data reflect the status of students after three years of dropout prevention services for Cohort 1. For Cohort 2, the 1991-92 data represented two full years participation in the project.

Measures

As for the implementation study, we developed a set of instruments for collecting outcome data such as dropout status, school performance, affiliation, and attitudes. The instruments included the following:

- **Initial Student Questionnaire**

  This instrument collected baseline information on student educational, attitudinal, and employment outcomes, including attitude toward school, aspirations, and labor force entry, and collected demographic and other background information not available elsewhere.

- **Follow-Up Student Questionnaire**

  This instrument was used to collect mid-treatment and post-treatment measures of student educational, attitudinal, and employment outcomes, including attitude toward school, aspirations, and labor force entry. It was also used to update information on students' living arrangements and other variables subject to change over the duration of the study.

- **Student Exit Interview Protocol**

  This protocol was administered to students who dropped out of the program or school, transferred to another school, or completed the program or high school. It collected post-treatment measures of student outcomes, obtained students' evaluations and perceptions of the project, and identified the students' reasons for leaving school or the project.

- **Student Semester Record Form**

  This form was employed once each semester to collect information on student outcomes, including attendance, grade point average, standardized test scores, and exit status.

This section describes refinements of the measures and analytical methods for the analyses of data collected in the 1990-91 and 1991-92 school years.

Dropout Status. Some students who drop out of school later return to continue their studies. To provide an objective criterion measure that would not be subject to the bias of censoring in a finite study, dropout status was computed at particular dates: June 30, 1991, for the 1990-91 school year, or June 30, 1992, for the 1991-92 school year. In other words, students who dropped out of school in March 1991 but returned to school at the start of the next school year would be counted as a dropout in analyses of the status at the end of the 1990-91 school year but might be counted as a continuing student in the later analysis.[4]

Because there was variation in the completeness with which schools keep track of nonattending students,[5] dropouts were defined in three separate ways for analysis: (1) individuals formally classified as dropouts, (2) both dropouts and individuals formally expelled, and (3) dropouts, expulsions, and individuals classified as "moved," with no additional information about graduation or transfer into another school. While all conceptualizations of dropout status were considered during data analysis, this report employs the second conception of dropping out, which we believe more completely represents the behavior of student dropouts.

Absences. Students are absent from school for a variety of reasons (e.g., unexcused absences, illness, approved school field trips); however, school records typically do not differentiate among them. A dropout prevention program might be expected to have an effect on unexcused absences, but it would not have an effect on other types of absences, which may vary from one year to the next. We conducted a series of analyses to identify a transformation of absences that would remove chance variation, leaving the reliable variation that is measured by a within-group correlation from one year to the next. As a result, the number of days absent in a semester was adjusted in two ways: (1) all absences in excess of

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[4]Students in the treatment group who exited the dropout prevention/reentry program without dropping out of school were continued as program participants for analytic purposes.

[5]In many cases, the reporting of dropout status was delayed by several months or the project reports were incomplete (e.g., gave only the semester of the drop).

27 days were ignored, to avoid assigning excessive weight to a small number of individuals with very high absence rates; and (2) absences were "clumped" into four or five day categories (e.g., fewer than five days absent was treated as a single outcome value, from five to eight days was treated as another value, and from nine to 13 days as another value).

Demographic groups. Although the comparison groups were designed to be matched to the treatment groups, the match was imperfect, and differences in attrition between treatment and comparison groups increased the discrepancy. To eliminate this variation from the comparisons between groups, all treatment/control comparisons were conducted within demographic categories and the results were pooled across the categories to obtain an overall result for each site.

Three factors were used to match the groups: gender, race/ethnicity (i.e., white/non-white), and relative age (old for grade/age appropriate). The definition of relative age was based on a comparison of the student's birthdate and current grade level with the typical birthdate of students in the same grade in the same school year. A student was categorized as overage when his or her birthday was more than one full year earlier than the typical birthdate.

The analyses were carried out in such a way that over-representation of one group in the treatment, compared to the control group, would not bias the results. However, in carrying out treatment/control comparisons, it became necessary to eliminate a small number of cases with data due to the unavailability of comparable individuals in the other group. In other words, if the control group at one program site included no older, nonwhite females, then the older, nonwhite females in the treatment group could not be included in the comparison. Thirty-five students in Cohort 1 and 37 students in Cohort 2 were deleted for lack of a match, although this procedure changed slightly from variable to variable. Tables A.1 - A.3 in Appendix A present sample sizes for each variable by program site, experimental condition, and cohort.

Factor analysis of the attitudinal data from the Initial Student Questionnaire was conducted to identify item clusters that could form scales and decrease the number of separate variables during analysis. We intercorrelated all of the attitudinal items on the questionnaire and performed a principal components factor analysis on the resulting correlation matrix.

Twelve factors were extracted that had eigenvalues greater than unity. Following a varimax rotation, we found five identifiable factors with at least three items with high factor loadings (above .55). The scales and the items they included follow.

- **Attitude toward teachers/teaching**

  --Students got along well with teachers.
  --The teaching was good.
  --Teachers were interested in students.
  --When I worked hard on my school work, my teachers praised my effort.
  --In class, I often felt "put down" by my teachers.
  --Most of my teachers really listened to what I had to say.
  --Most of the courses I took were interesting and challenging.

- **Expectations for the future**

  --Do you think that graduation from high school helps people get better jobs?
  --Have you decided what you will do after you leave high school?
  --Which best describes your expectations for the future?

- **Attitude toward counselors/counseling**

  --A guidance counselor helped me develop a four-year educational plan for high school.
  --A guidance counselor helped me develop a career plan.
  --I feel that my high school prepared me to look for and obtain appropriate employment.

- **Perception of academic encouragement received**

  --I was encouraged to take more English courses.
  --I was encouraged to take more math and science courses.
  --I was encouraged to enroll in more difficult math and science courses.

- **Sensitivity to classmates' disruptive behavior**

  --Other students often disrupted class.
  --Disruptions by other students got in the way of my learning.
  --Misbehaving students often got away with it.

Seven other constructs were treated as single-item factors. In all, five scales and 10 additional attitudinal items were analyzed separately. There were also four school records

items: grade-point averages, number of days absent, number of courses failed, and number of credits earned.

In some cases, incomplete data were available for some study participants. To facilitate the evaluation of nonresponse bias resulting from the missing data, all analyses were conducted both on the original data and on data with missing information imputed using procedures developed by study researchers. The data imputation procedures used linear relationships between all existing data points to develop linear predictors of each variable.[6] Frequency distributions of the existing data for each variable were then developed separately for each site, and values from the distributions were sampled to fill in missing data points.[7] After careful consideration, all analyses in this report used raw (unimputed) data. Given the relatively large levels of missing data to be imputed in some cases (e.g., > 25 percent of the information, we believe the analyses with unimputed data provide more defensible and generalizable findings.

Analytical Methods

The purpose of the analyses was to identify differences between the treatment and control/comparison groups and between the treatment and gap reduction groups at each site. There was no attempt to match the characteristics of the gap reduction group to the treatment group. Comparisons between the experimental groups were conducted using a variety of data analytic approaches to address different threats to the validity of the resulting inferences.

Analyses of dropouts. The most important outcome for the study was the student's continuation in school. Thus, we examined whether more control group students dropped out of school than treatment group students. To address this question, which involves a

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[6]The linear prediction equations were based on the data combined across project sites. Treatment or control group membership was not considered during the imputation process. Not including group membership in the prediction equations ensured that, other characteristics equal, a response would be selected from the same distribution whether the student was in the treatment or control group. Given the differences in data collection approaches and population characteristics, imputation of missing data with participants in the Gap Reduction Comparison groups was not performed.

[7]For students missing multiple responses, the imputations were sequential, using the relations computed in the first step, with the imputed value for the first variable included in the imputation of later variables.

dichotomous outcome (dropped out or continued in school), we conducted Mantel-Haenszel analyses.[8] The Mantel-Haenszel test is an extension of the χ^2-test, used when data are subclassified by factors controlled in the analyses. Within each demographic category of student, a two-by-two table (treatment-control by dropout-nondropout) was constructed, and these tables were combined across demographic categories at a site (i.e., gender, race/ethnicity, and relative age) to estimate the aggregate difference between the observed and expected number of treatment group students who dropped out.[9] The relative rate of dropping out and the relative odds of dropping out were computed as summary statistics, and the probability of obtaining as large as or larger difference by chance was computed. Both the one-tailed probability, on either tail, and the probability of obtaining an outcome with a smaller probability, were computed using statistical procedures developed by the researchers.

Analyses of other outcomes. Dropout prevention programs may have effects on a variety of other outcomes, ranging from grades and absences to attitudes about school. Each of these outcomes can be considered as an approximation, to be measured on an interval scale. In that case, it is appropriate to model the effects of the demonstration program as a linear model; and the research question (for each measure) becomes: "Does exposure to the treatment contribute significantly to the variance of the outcome measure?"

In setting up a linear model, three background variables (gender, race/ethnicity, and relative age) were dichotomized and treated as "class" variables, so that the effect of the treatment could be construed as the pooled within-class effect of the treatment and therefore be unconfounded by treatment-control differences in these background characteristics.

In order to sharpen the analysis, the potential outcome measures were also measured prior to exposure to the program so that each student's outcomes could be compared to his or her starting point. Although the treatment and control groups were initially matched at each site, this would also help to remove bias that might arise from differential attrition (i.e., if control group members with extremely high absences dropped out and were lost from the

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[8]Mantel, N., & Haenszel, W. (1959). Statistical aspects of the analysis of data from retrospective studies of disease. *Journal of the National Cancer Institute, 22*, 719-748.

[9]The expectation assumes that treatment and control group students drop out of school with equal likelihood.

analysis but treatment group members with high absence rates were retained, then the analysis would be biased against finding an effect). Therefore, all linear model analyses of outcomes took pretreatment measures into account.

The method of preference for these analyses is *gain score analysis*; that is, prediction of the post-measure minus the pre-measure, based on group membership. However, to provide a picture of the extent to which conclusions are robust with respect to method of analysis, three other methods of analysis were also used. First, to account for pre/post variance differences, a *probabilistic gain score analysis* was substituted in some cases for simple gain score analysis. (A detailed discussion of all analytical methods including their derivations is presented in Appendix C of this report.) Second, *analyses of covariance* were carried out, using the pre-measure as a covariate in an analysis of variance in the post-measure. The weakness of this analytical method lies in its reliance on the assumption that the pre-measure is an error-free measure of the true score component of the outcome variable, a highly unlikely assumption.

Strictly speaking, regular analysis of covariance is appropriate only for randomized control group evaluations where the random equivalence of the treatment and control groups has not been destroyed by differential attrition. Where the groups are not randomly equivalent, regular analysis of covariance will usually underadjust for pretest differences between groups. Lord (1960) and Porter (1967) have suggested *reliability-corrected covariance analysis* as an alternative for adjusting for pretreatment differences between groups that are not randomly equivalent. These analyses take into account the error in the covariate; however, they depend on a precise estimate of the reliability of the pre-measure of the outcome. Because an independent estimate of the reliability was not available, the reliability-corrected covariance analyses were somewhat problematic in that we had to estimate the reliabilities of the variables we used. The problem was in obtaining a stable estimate of the pre/post correlation. Since the sample sizes at most individual sites were too small to ensure stable estimates of the correlations (some were even negative), the correlations (within-site) were pooled across sites to obtain a single estimate of the reliability of each pre-measure. Thus, the reliability adjusted analysis of covariance used pooled within-

group pretest-posttest correlations (none of which was smaller than +0.239). Under an assumption of equal variance between pre-measures and post-measures, this is mathematically equivalent to gain score analysis.

Reliability adjusted covariance analyses will, presumably, not underadjust for pretreatment differences in nonequivalent comparison group quasi-experiments, but it will usually overadjust for pretreatment differences in randomized experiments. We made an informed decision to use both forms of covariance analysis for all of our sites, reasoning that two estimates of treatment effect sizes would serve to bracket the correct value.

The regular analysis of covariance results would be underadjusted for all sites since some of them were evaluated using a nonequivalent comparison group design and even the randomized control group evaluations were compromised by nonrandom attrition. The reliability-corrected analysis of covariance results would be overadjusted for all sites for the same reasons. We felt that the two analyses, considered together, would be more informative than either by itself.

Adoption of the *gap reduction design* was originally intended as a backup to the other designs (e.g., to be used when random assignment was corrupted or when quasi-experimental comparison groups experienced high levels of differential attrition). As it turned out, however, the design has some unique advantages for some of the individual-site evaluations. In one site, for example, all members of both the treatment and control groups spend half of each day in a vocational-technical school. The treatment is an add-on to that half day, but the possible impact of the vocational-technical school itself is a matter of some interest. Our gap reduction comparison group was drawn from the population of students who attended the "sending" schools all day. For this reason, the gap reduction design offered us the possibility of assessing the impact of the vocational-technical school in addition to assessing the impact of the dropout prevention project.

Analyzing the differences between treatment and control/comparison groups in multiple ways yields different effect-size estimates for each analytic approach. For example, we first employed regular analysis of covariance (presumably the correct form of analysis for randomized control group designs where the random equivalence of the groups has not been destroyed by differential attrition). Next, we used a reliability-corrected covariance analysis,

appropriate where the treatment and control groups are not randomly equivalent.[10] Finally, we implemented the gap reduction evaluation design, which assessed the reduction in the size of the gap between the treatment groups and a group of "average" students drawn from the same schools as those attended by study participants, from before to after treatment.[11] The results of all of these analyses were expressed as "effect sizes" (mean post-treatment difference between groups divided by the control/comparison group's standard deviation or the standardized amount of gap reduction) with confidence intervals.

The results of the outcome analyses are presented and discussed in Chapter 4.

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[10]See, for example, the following: Lord, F.M. (1960). Large-sample covariance analysis when the control variable is fallible. *Journal of the American Statistical Association, 55,* 307-321. Porter, A.C. (1967). *The effects of using fallible variables in the analysis of covariance.* Unpublished doctoral dissertation, University of Wisconsin, Madison.

[11]Tallmadge, G.K., Lam, T.C.M., & Gamel, N.N. (1987). *Bilingual education evaluation and reporting system: Users' guide.* Washington, DC: U.S. Department of Education.

CHAPTER 3: IMPLEMENTATION

This chapter presents findings from the study's process evaluation, based on periodic site visits to the projects that participated in the evaluation. As noted in the previous chapter, our data sources for the implementation study included documents provided by each site, interviews with project and, as appropriate, district and school officials and teachers, observations, and discussions with students. Included in the chapter are: (1) an overview of the grants funded through the Office of Vocational and Adult Education's (OVAE) Cooperative Demonstration Program (CDP), the program authority for the demonstration; (2) findings on the implementation of projects participating in the in-depth evaluation; and (3) implications of those findings for project effects. The information reported in this chapter then forms the basis for discussion of the relationships between project processes and outcomes contained in Chapter 4 of this report.

Overview of the Cooperative Demonstration Program

To be eligible for funding under CDP, grantees were required to make vocational education a key component of their service design, implement that design in a locality with a high dropout rate, and select a design that is capable of widespread replication. Grantees were invited to test a variety of strategies for encouraging at-risk youth to remain in or return to school. Examples of such strategies are:

- Coordination of remedial academic or GED instruction with vocational training;
- Implementation of cooperative projects with the private sector;
- Conduct of incentive-based projects that would reward schools that reduced their dropout rates;
- Use of flexible scheduling that would permit dropouts to combine employment with continuing education.

Projects were authorized to replicate a dropout prevention model that had been found effective in other settings, adapt a locally developed model, or expand a project currently in operation in their locality.

In all, OVAE awarded 10 grants to school districts, state agencies, and other organizations that proposed to test a variety of strategies to meet the purposes of CDP. These organizations received funds to implement projects over an 18-month period beginning in school year 1989-90, with continuation of the grants for an additional 18-month period contingent on acceptable progress during the initial funding period. While all projects were continued for the full three years, some were funded at slightly lower levels during the continuation period. Table 3-1 shows the organizations funded under the program, their locations, and the amount of funds awarded for the three years of the demonstration. As shown in the table, grants ranged in size from a low of $60,000 for 18 months to a high of just over $1 million. Total funding for the demonstration was $8.6 million, with two grantees receiving over $1 million and one under $350,000 for the three-year period.

A specific criterion for award of a demonstration grant was that the project be implemented in an area with a high dropout rate. As shown in Table 3-2, nearly all participating sites reported high rates, ranging from a cohort rate of over 50 percent in participating schools located on or near two of the North Dakota reservations to a low of 12 percent for one of the reservations[1]. Nearly all grantees reported rates that amounted to at least 25 percent for a cohort, and several reported twice that rate.

Four of the grantees were local school districts or cooperatives of districts, while two were postsecondary institutions, one a state board of vocational education, two were educational services organizations, and one a private not-for-profit charitable organization. Some were located in metropolitan areas (e.g., Detroit, Baltimore, Fort Lauderdale), while others operated in rural locations (e.g., Cushing, Oklahoma; Seneca, South Carolina; four Indian reservations in North Dakota). One postsecondary institution worked with three school districts to implement projects in local schools.

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[1]One participating school reported a dropout rate of 22.5 percent; one, a rate of 0 percent; the third did not report a rate.

Table 3-1

Funding Levels of CDP Grants

Grantee	*Location*	*Amount of Award*		
		Initial	*Continuation*	
Sequoia Union HS District*	Redwood City, CA	$ 410,313	$ 439,506	$
Rancho Santiago College	Santa Ana, CA	$ 387,528	$ 289,715	$
Baltimore Co. Public Schools	Baltimore, MD	$ 359,245	$ 359,660	$
Detroit Public Schools*	Detroit, MI	$1,001,996	$ 503,893	$1.
Southern Westchester BOCES	Valhalla, NY	$ 373,847	$ 410,988	$
North Dakota Voc. Ed. Board*	Bismarck, ND	$ 459,408	$ 690,573	$1
Central Area Voc Tech School*	Cushing, OK	$ 342,536	$ 414,616	$
Multnomah Co. District No. 1*	Portland, OR	$ 448,935	$ 416,309	$
Clemson University NDPC*	Clemson, SC	$ 395,961	$ 528,563	$
Anne Arundel Co. Schools	Annapolis, MD	[60,000]	[60,000]	[
Broward Co. Schools	Ft Lauderdale, FL	[60,000]	[60,000]	[
Oconee Co. Schools	Seneca, SC	[60,000]	[60,000]	[
Catholic Charities of Richmond	Richmond, VA	$ 143,017	$ 194,177	$
TOTAL		$4,322,786	$4,248,000	$8

*Grantees participating in the evaluation

Table 3-2

Dropout Rates in Grantees' Localities

Grantee	Dropout rate
Sequoia Union High School District Redwood City, California	60% minorities[a] 40% statewide minorities[a] 30% statewide all[a]
Rancho Santiago College Santa Ana, California	50%[a]
Baltimore County Public Schools Baltimore, Maryland	6% overall[b] 14% target schools[b]
School District of the City of Detroit Detroit, Michigan	42%[a]
Southern Westchester BOCES Valhalla, New York	9.6% overall[a] 23% target area[a]
North Dakota State Board for Vocational Education Bismarck, North Dakota	For participating schools
Fort Yates	58%[a]
Fort Totten	51%[a]
Turtle Mountain	17%[a]
Fort Berthold	12%[a]
Central Area Vocational Technical School Cushing, Oklahoma	25%[a]
Multnomah County District No. 1 Portland, Oregon	8.2%[b]
Clemson University National Dropout Prevention Center Clemson, South Carolina	
Anne Arundel County Schools, Maryland	25%[a]
Broward County Schools, Florida	41%[a]
Oconee County Schools, South Carolina	35%[a]
Catholic Charities of Richmond Richmond, Virginia	4.3% overall[b] 28% target youth[b]

[a]Cohort rate
[b]Annual rate

Several of the grantees implemented projects in more than one school or location. As noted previously, the Clemson University project adapted a validated dropout prevention model in three local districts. Additionally, the North Dakota State Board for Vocational Education planned to implement the same model at schools located on or near four Indian reservations in the state. Finally, the Sequoia Union High School District replicated a model in two high schools located within that district. In all, then, the 10 grantees operated projects in 16 separate sites.

Overview of Projects in the Evaluation

As noted in Table 3-1, six of the 10 grantees were selected for the in-depth evaluation. Criteria upon which their selection was based included (1) the project's plans to provide services to a sufficiently large number of participants, (2) the likelihood that the project's service design would be of sufficient length and intensity to afford the potential for measurable outcomes,[2] (3) suitability for one of the designs planned for the evaluation, and (4) agreement to participate in the study. These six grantees yielded a total of 12 project sites, 10 of which were sufficiently far along during school year 1989-90 to participate in the first-year's data collection activities. The other two initiated evaluation activities in fall 1990.

Table 3-3 provides an overview of the characteristics of the project sites along several dimensions. As shown, nearly all of the projects served students who had not yet dropped out, while one served mainly dropouts working toward a GED. Nine were replicating an existing model. One was adapting a locally developed project initially designed for students with limited English proficiency. Another project was adapting, for at-risk youth, a locally developed model initially targeted to students with learning disabilities. The other was expanding an existing project by using the grant to add new components. Seven of the projects intended to operate as alternative schools. Services planned by the 12 project sites

[2]Two of the projects implemented an open entry/open exit or crisis intervention design, which meant that many participants might receive specific services for very short periods. Thus measurement of outcomes of interest to the study (e.g., changes in attendance or grades) would not be possible.

Table 3-3

Characteristics of Projects in the In-depth Evaluation

Project Characteristic	*Number (n=12)*
Grade levels served	
9 - 12	11
Reentry	1
Purpose of the grant	
Replicate a validated model	9
Project COFFEE	(7 sites)
High school Academy	(2 sites)
Adapt a locally developed project	2
Expand an existing project	1
Organizational structure	
Alternative school	7
School-within-a-school	2
Supplemental services	3
Key services	
Formal vocational education	6
Career awareness/employability devt.	6
Paid work experience	5
Academic remediation	7
Academic enrichment	3
Counseling	4
Incentives	9

included formal vocational education, with several projects planning to support students in their regular vocational programs; career awareness, work experience, academic components, and counseling.

The Project Models

Recipients of grants under CDP had the option to replicate a validated dropout prevention/reentry model, replicate or adapt a locally developed model, or expand a project already underway. Two of the grantees--Clemson University and the North Dakota State Board for Vocational Education--received awards to replicate Project COFFEE (Cooperative Federation for Educational Experiences), a nationally validated and often replicated model. This model thus accounted for seven of the 12 project sites included in the in-depth evaluation. In brief, COFFEE is an abbreviated-day alternative school that integrates academic and vocational instruction to increase the likelihood that participants will complete school and be ready to enter the labor force in good entry-level jobs. Targeted toward highly at-risk youth, the model's key features include small class sizes, a highly structured and nurturing environment, a strong personal counseling component, career awareness counseling, student participation in entrepreneurial businesses that generate income, a physical education program that stresses recreational and leisure activities rather than competitive sports, and intense monitoring and evaluation of student progress. Teachers typically receive release time to work individually with students and to plan an integrated educational program for participants.

Another grantee, the Sequoia Union High School District in California, replicated the Peninsula Academy model in two of the eight high schools in the district. This district is the site of the original two Peninsula Academies, which have been operating for about 10 years. The Academy concept was recently adopted by the California State Department of Education, with the legislature making funds available for widespread replication of the model in high schools throughout California.

The Academy model is a school-within-a-school. Beginning in tenth grade, participants are block scheduled into most of their classes, including core academic subjects and a vocational program (e.g., computer science, health occupations). The model emphasizes close partnerships with the private sector, which identifies individuals to serve as mentors to students, provides assistance in program design, often donates funds or equipment, and makes internships (or work experience positions) available to students. Students who make acceptable progress in terms of grades and attendance are rewarded with jobs in the summer

following their junior year and in the second semester of senior year. The model features reduced class size, incentives to students, and reduction in teachers' classroom assignments to facilitate planning and preparation.

The Cushing, Oklahoma, project adapted a model developed by the grantee (the Oklahoma Child Service Demonstration Center) for adolescents with learning disabilities. The Oklahoma Developer Demonstrator model, which is validated by the Joint Dissemination Review Panel of the National Diffusion Network (NDN), trains prescriptive teachers and other school staff to adapt instructional methods and materials for students with special learning needs; provides a resource center including a professional staff and computer-managed assessment, instruction, and feedback in basic academic (and vocational) skills; and includes affective interventions designed to improve students' self-concept and school affiliation. The model includes comprehensive inservice training for instructional staff.

The Portland, Oregon, grant intended to expand the school district's vocational continuum through implementation of a Vocational Mentoring program in one of the city's high schools. Based on the Experience-Based Career Education (EBCE) model, which also is validated by the Joint Dissemination Review Panel of NDN, Vocational Mentoring includes the following components: (1) a split-day schedule under which participants attended regular high school for one-half day and the vocational program the other half, for mentor-based work experience and applied academics; (2) occupational exploration and mentoring opportunities in allied health professions, implemented in coordination with a local hospital; (3) integration of academic and vocational skills through an adjusted curriculum; (4) life and employability skills development activities; and (5) participant incentives. The project targeted highly at-risk youth who were experiencing difficulty in the regular high school environment and whose academic achievement levels precluded enrollment in regular vocational programs available in the district.

The grantee's schedule for incorporating the Vocational Mentoring component of the district's Vocational Continuum precluded initiation of evaluation activities with Vocational Mentoring students during the project's first year. Consequently, the evaluation drew a 1989-1990 cohort from the existing BRIDGE program, an intervention whose purposes are to help middle school students make a successful transition to high school and introduce them to

vocational education and employment training options that are available to them in high school. The project provides a BRIDGE class each day with a reduced class size. The curriculum includes employability development, strategies for improving study and coping skills, peer relationships, and other topics such as self-esteem development.

The Detroit, Michigan, project adapted an existing district-sponsored project (Preparing Bilingual Youth for Employment Program) to serve a broader target group of at-risk youth (including students with learning disabilities, low achievers, and youth who would otherwise be ineligible for enrollment in vocational education because of low grade point averages or credit deficiencies). Named STARS (Support Team for At Risk Students), the model is designed to permit these at-risk youth to benefit from programs available in the district's five Vocational-Technical Centers through providing specialized supportive services, including remediation, advocates for limited English proficient youth, special instructors to assist students in achieving competency in their vocational courses, and special counselors. Coincident with the award of the grant in late summer 1989, the district experienced major changes in the composition of the school board as well as a change in district leadership. A resulting district reorganization and hiring freeze meant that the project was unable to initiate services during fall or winter of the 1989-90 school year. For this reason, the evaluation was unable to begin data collection during the first year of the study, and the site was not included in the evaluation's data collection until the second year.

In the next section of this chapter, we discuss in some detail the projects' goals, services, participants, and other characteristics based on our site observations and interviews. Of specific interest were challenges faced by the projects in getting underway during school year 1989-90, and strategies adopted to meet those challenges. Additionally, the section addresses ongoing challenges many projects faced over their three-year life. Later sections of the chapter explore the implications of the projects' designs and operations for improving the educational experiences and outcomes of their participants.

Findings on Project Implementation

Project Initiation

As noted previously, projects received their grant awards in summer 1989, after the close of school and generally too late for many of them to make the necessary staffing and other arrangements necessary to initiate services to participants at the beginning of the 1989-90 school year. Consequently, many of the projects needed part or all of that year to complete planning, staffing, and other "start-up" work prior to beginning to serve participants (Table 3-4). Four of the projects were able to begin serving students in September 1989, although none was fully operational. Carlmont and Woodside began serving students but did

Table 3-4

Initiation of Project Services

Project	Initiation Date
Anne Arundel County, Maryland	January 1990
Broward County, Florida	September 1990
Carlmont, CA	September 1989
Cushing, OK	September 1989
Detroit, Michigan	September 1990
Fort Berthold, ND	March 1990
Fort Totten, ND	March 1990
Fort Yates, ND	March 1990
Oconee County, SC	March 1990
Portland, OR	September 1989
Turtle Mountain, ND	March 1990
Woodside, CA	September 1989

not have the business technology labs set up until late in the first semester. Cushing completed most start-up activities in time for the fall semester but did not obtain the software and other equipment for the resource room until the middle of that semester. Although most of the Portland vocational continuum was already in place, the component funded under the grant and selected for the evaluation was not scheduled to begin until fall 1990. Thus, while participants and comparison group members were selected and followed during 1989-90, they did not enter the "treatment" under evaluation during the project's first year of operations.

The Clemson project scheduled the fall semester of the first project year for development activities, with services to students intended to begin in January 1990. Two of the three project sites implemented by Clemson were able to begin serving students during the first year: Annapolis in January as planned and Oconee County in mid-March. The third site, Broward County, Florida, did not initiate services during the first year, but started in September 1990. Finally, the four project sites established by the North Dakota grant began serving students in March 1990.

A number of factors accounted for these variations in the times that the projects began serving participants. First, because grantees received their awards in the summer, some of the grantees needed to identify and assign (or hire) staff. School districts routinely make the next year's staff assignments in spring, and making reassignments can be complicated and time consuming. North Dakota and Oconee hired project directors in December and February, respectively, and each site spent most of first semester and the early weeks of the second semester identifying and hiring instructional and other staff members.

A second issue faced by several projects over the first six months or so was arrangement of facilities and equipment. Understandably, this activity was relatively more challenging for multiple-site projects like North Dakota and Clemson than for single-site locations like Cushing. The COFFEE model calls for implementation of the alternative school in a separate facility. Thus, North Dakota had to arrange for facilities and equipment in four localities that were widely dispersed around the state. In this project, arrangement of space was further complicated because each of the four projects drew participants from several schools. Distances were great--at Fort Berthold, for example, the eventual arrangement to locate the project in a trailer in New Town meant that students from White

Shield had to be bused 60 miles each way. Some of the projects (Anne Arundel, Fort Yates, and one of the schools participating in the Fort Totten site) eventually located the project in one of the local schools. This and other factors meant that the intent to replicate the COFFEE model broke down, and a "revised" version was developed.

The three projects (Cushing, Carlmont, and Woodside) that were able to start in September 1989 had made arrangements for facilities prior to the grant award. Cushing, for example, had obtained written commitment from the Central Area Vocational-Technical School (CAVT) in Drumright to locate the project at the area school, including office space for instructors and a counselor and use of the resource room as a learning center housing a computer lab. Sequoia had reached agreements with two of the district's eight high schools to implement a Business Technology Academy should the district win a CDP grant. Even with these projects, however, space issues affected some project activities. At Carlmont and Woodside, arrangements had to be completed for converting classrooms to secure locations for extensive computer equipment; these arrangements, in addition to delivery of the equipment, hindered implementation of that project component. Similarly, in Cushing, some of the computer hardware and software did not arrive until mid-semester; consequently that project service was late in beginning. Further, Cushing had to overcome participants' aversion to the computer lab; it was located in what was formerly a special education resource room, which the school's student population viewed as the "dummy's room." It took project staff some time to overcome this stigma and make students understand the usefulness of the services offered through the lab's instructional and equipment resources (and thus be willing to go there).

The greater ease that these three projects experienced in getting underway, even given the award of the grants during the summer, probably resulted from the grantees' experience with the particular models they were implementing. The project director of the Sequoia grant was principally responsible for implementing two Academies in high schools in the district a number of years before, and had continued to be extensively involved with that model at district and state levels (and also nationally) for a long time. The Cushing project director was involved in developing the model from which the CDP project was adapted and had also spent considerable time in recent years assisting other districts around the nation to replicate

the project model. These two individuals, along with other staff in their localities, were thus highly knowledgeable about the logistical details of initial implementation and were able to "hit the ground running" once the grants were awarded.

The other project that began serving students in September 1989 was Portland's vocational continuum. The Portland project used the grant to incorporate new components into their systemwide set of projects and services for at-risk students. As noted earlier, the component under study in our evaluation (a Vocational Mentoring project located in an area hospital) was not scheduled to begin until fall 1990. The BRIDGE component that we investigated during 1989-90 (based on the understanding that many BRIDGE students would enroll in Vocational Mentoring in fall 1990) had already been operating in the district for about three years; thus the grantee did not need to undertake any project initiation activities other than addition of staff to accommodate expansion of services associated with the grant. The project then had a full year to finalize arrangements for space, facilities, equipment, and staff for the Vocational Mentoring project.

Conversely, the North Dakota project director was not involved in writing the grant proposal. The COFFEE model was selected by state-level decisionmakers who believed that it would work well in the intended settings. However, lack of familiarity with the model may well have affected the efficiency of early developmental activities. Similarly, the local sites that participated in the Clemson replication of COFFEE lacked experience with the model. However, in this instance, the grantee incorporated a semester's planning and development period, which included extensive training on COFFEE and other activities intended to facilitate implementation.

Project Goals

Expectably, the overriding goal of all 12 projects was to reduce dropping out among at-risk youth. More explicitly, each of the projects had the goal to demonstrate the effectiveness of its project model in reducing the dropout rate. Cushing, for example, intended to demonstrate the replicability of the GRADS project in other rural localities, while the Clemson project had the goal to identify the issues that local districts must address in replicating or adapting COFFEE in both rural and urban districts. Similarly, North Dakota

planned to demonstrate the effectiveness and replicability of COFFEE in preparing highly at-risk youth, living in areas of high unemployment, to achieve productive adult lives. Portland planned to demonstrate the effectiveness of implementing linked services that would constitute a comprehensive continuum of vocational programs and services that would result in a significant increase in the numbers of at-risk middle and high school students who would both persist in their education to a diploma or GED and be prepared for employment or postsecondary enrollment. The Academies projects intended to demonstrate the effectiveness and replicability of that model in preparing youth for entry-level skilled and semiskilled employment or postsecondary education.

In response to the needs of their target populations, all of the projects articulated intermediate objectives to support their main project and student-focused goals. Recognizing that academic deficiencies often discourage youth and lead to dropping out, 10 of the 12 projects focused specifically on improvement in academic achievement (see Table 3-5). Three (Carlmont, Woodside, and Portland) placed particular emphasis on improved self-esteem among participants, while four (the North Dakota reservations) focused on improvements in life adjustment skills. Three (Anne Arundel, Oconee, and Portland) articulated improved attendance and reduced tardiness as an important objective, and Anne Arundel and Oconee emphasized reduction in suspensions or other disciplinary actions as intermediate objectives.

Given the emphasis on vocational education as a dropout prevention strategy, of particular interest are project objectives that focus on vocational education. Five projects specified acquisition of occupational skills as an important intermediate objective. These were projects that included formal vocational education programs as a project component. Eleven articulated improved employability, or employability skills, as objectives, and one listed improved student knowledge about opportunities in nontraditional occupations. Two included employer satisfaction with the work and behaviors of project students and completers as an objective.

As this review suggests, overall the projects articulated goals and intermediate objectives that attempted to address the multiple needs and interests of youth targeted for services. Emphasis on preparation for employment, including acquisition of both occupational

Table 3-5

Projects' Objectives for Participants

Grantee / *Student-focused objectives*	*Clemson (3 sites)*	*Cushing*	*North Dakota (4 sites)*	*Portland*	*Detroit*
Improved graduation/GED rate			X	X	X
More credits toward graduation/higher GPA	X			X	
Improved retention rate for at-risk learners	X	X	X	X	X
Improved academic skills	X	X	X		
Improved attendance	X			X	
Improved self-esteem				X	
Improved life adjustment skills			X		
Reduced suspensions/disciplinary actions	X				
Improved employability	X		X	X	X
Improved vocational skills		X		X	X
Knowledge of nontraditional occupations				X	
Assured postschool employment					X
Improved employer satisfaction					

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and employability skills (capability to identify jobs, prepare resumes, conduct job interviews, and exhibit acceptable work behaviors such as timeliness and ability to get along with coworkers and supervisors) reflects the recognition that many youth must earn money to stay in school. Additionally, the self-esteem associated with succeeding in a job (in the case of Carlmont and Woodside, in earning the privilege of having a job through appropriate performance in school) is an ancillary benefit that may improve students' affiliation with school. Similarly, improvement in self-esteem, behavior, and life adjustment are thought to increase the likelihood that participants would be able to handle the school environment and persist to completion. Finally, the focus of most of the projects on redressing participants' academic deficiencies reflects an understanding that a key factor in dropping out is a student's perception that he is so far behind--in credits, particularly--that continuing in school may be futile.

Organizational Location and Administration

As noted earlier, 11 of the 12 project sites used CDP funds to implement new projects, while one added new components to an existing service system. The latter project, Portland, expanded the size of the BRIDGE program for at-risk ninth and tenth graders and implemented a new Vocational Mentoring component. All of the projects faced different implementation-related challenges, which tended to vary according to the organizational location of the grant, requirements for establishing viable linkages with schools or districts, and the availability of qualified and experienced staff.

North Dakota faced perhaps the most complex organizational and governance challenges. State Board for Vocational Education officials, having selected COFFEE as the project model most appropriate for meeting the needs of at-risk youth attending schools on or near the state's reservations, applied to the State Department of Public Instruction to obtain "pilot status" for the project. This status would have allowed them to obtain a waiver such that instructors not certified in English or math (but certified as high school teachers in other subjects) would be able to teach courses in these subjects that would afford academic credit to

participants.[3] However, following award, the Board was unable to obtain pilot status from the Department of Public Instruction. The result was that the COFFEE model of integrated academic and vocational instruction, with students receiving credit toward graduation in this restructured curriculum, could not be implemented. As a "fall-back" arrangement, the academic instructor hired at each of the four sites provided tutoring in academic subjects along with preemployment instruction, while the vocational instructor provided career education and other vocationally oriented services (e.g., development of work experience opportunities).

A second challenge faced by this grantee was that some of the project sites did not have vocational programs available to students. (The original intention to "mobilize" vocational education through a system of vans that would travel from site to site did not eventuate, although in the third year of the grant the project did purchase Apticon vocational evaluation systems for each site.) For example, only one of the three participating schools at Fort Yates had any vocational programs at all. While the BIA school there had industrial arts labs, these were not available to students attending the two public schools (Fort Yates and Solen) participating in the project at that location.[4] (The BIA school subsequently dropped participation in the project altogether, an indication of the difficulties the project director experienced with administrators at that school from the demonstration's outset.) At Fort Totten, where the high schools were served by an area vocational-technical center, the district superintendent of one school was hesitant to bus students to the center. He believed that his students would experience discrimination from other students; further, many parents were hesitant for their children to leave the reservation. This school subsequently ceased sending project participants to the vocational-technical center, which meant that those youth had very limited access to vocational education programs.

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[3]The project needed pilot status because of the scarcity of certified English and math teachers in the localities in which the project was to be implemented.

[4]Because students can choose any one of the three schools in the area, public school officials were hesitant to bus students to the BIA school for vocational education. The fear was that students might decide to transfer to the BIA school; for one of the public schools, such transfers would have had serious implications for funding. If the school's five COFFEE students had transferred, the school would have lost approximately $15,000 in state FTE funds.

Finally, the project director, located in the state capital, faced the major challenge of developing active cooperation with 10 different schools (and districts). Two were BIA schools (a third BIA school, at Turtle Mountain, declined to participate). The four project sites were, at least conceptually, located at four corners of the state, and the director spent most of her time on the road, or on the phone, trying to answer questions, resolve problems, hire and monitor staff who were both qualified in relevant subjects, including vocational education, and able to respond sensitively to community mores and the needs and attitudes of the students they were serving, as well as the attitudes and priorities of school principals, district superintendents, and others whose cooperation was necessary for the project to achieve its overall objectives.

The challenge of implementing the demonstration on the four reservations was intensified by the environmental problems of most of the sites: unemployment was very high, ranging from a low of 47 percent at Fort Berthold to a high of 79 percent at Standing Rock (Fort Yates). Thus it was difficult for project staff to develop work experience opportunities for participants. Further, COFFEE's entrepreneurial component was not entirely feasible. Establishment of student-operated businesses was thought to pose a threat to the few existing businesses. Additionally, attendance--or continuity in an educational experience--was a problem. The population targeted by the projects was highly mobile--families tended to move to Minneapolis and other places to avoid the winter conditions, returning in spring. Community attitudes did not always stress the importance of regular school attendance.

Successful project implementation in this environment depended primarily on individuals' ability to forge effective informal relationships with officials, staff, and others whose cooperation was critical to project implementation. Overall, project location at the state level, while it brought the advantage of well-established networks throughout the state, also posed problems in terms of dealing with the inevitable day-to-day issues that needed to be addressed as working relationships with 10 local schools/districts were developing. While the director was generally effective in developing and maintaining viable relationships, she resigned from the project at the end of the second year, transferring to another position in the State Board for Vocational Education, primarily because the job as director of the dropout

demonstration was a temporary one, ending with the completion of the grant period in summer 1992.)

Most of the other projects faced lesser, but nonetheless important, challenges associated with the project's location and administrative arrangements. The GRADS project implemented under a joint arrangement between the Oklahoma Child Service Demonstration Center (OCSDC) in Cushing and the Central Area Vocational-Technical School (CAVT) in Drumright, is a good example. OCSDC is an organization comprising a group of highly trained and experienced educational service providers, most of whom had extensive experience in special education, though less experience in working with instructors and administrators in an area vocational-technical center. The staff included individuals who spent considerable time assisting schools and school districts across the country in implementing innovative educational services for adolescents with disabilities, as well as evaluation methodologists with expertise in implementing and evaluating educational interventions. The participating area vocational school served 11 local school districts, the largest of which was located in a community of about 6,000 persons. CAVT provided adult vocational programs in addition to secondary curricula in most occupational areas. Thus, the project's administration was in Cushing, at OCSDC, while instructional and counseling staff were located at CAVT in Drumright, about 10 miles away.

The administrative structure of CAVT was complex, including an overall superintendent responsible for both campuses (Drumright and Sapulpa) of the center, an assistant superintendent in charge of the Drumright school, an official in charge of adult programs, and a principal for secondary programs. OCSDC staff negotiated CAVT's participation with the Drumright campus's assistant superintendent, whose support for the project was strong. For a variety of logistical and scheduling reasons, however, the secondary principal was not involved in these negotiations and did not originally feel much ownership of the project. Because the secondary instructors naturally looked to the principal for guidance, this lack of ownership was, at least in the first year, a problem. In the early months, many instructors were unwilling to send students to the learning center for assistance in basic skills, and some were not willing to accept the project's assistance in making instructional materials

more user friendly.[5] Further, a number of instructors would not release students to attend the bimonthly group counseling sessions, a key component of the project. The location of some of the staff in Cushing and some at CAVT (Learning Center teachers, the counselors) exacerbated the problem in that some of the CAVT staff viewed project staff as "outsiders." To reduce these barriers, the GRADS project director and other staff undertook specific efforts to incorporate the secondary principal into the project's decisionmaking process and to win over reluctant instructors.

While these efforts were largely successful, ongoing difficulties occurred that centered around the center's discomfort with the project's group counseling component. The project's counselor--trained and credentialed in clinical psychology--was particularly sensitive to students' personal issues and tended to take a student-focused approach, while center administrators were more traditional in their perceptions of problems that arose. That is, given that students must qualify to attend the area center, administrators were able to maintain strict disciplinary requirements and tended to view problems as disciplinary rather than as personal issues that might require relaxing of the rules in some instances. Again, these issues point to the delicacy of implementing interventions in well-established organizational structures whose "culture" may be somewhat averse to change.

It is perhaps instructive that several other project sites that either operated in area vocational-technical centers or attempted to develop special arrangements for their participants to attend such centers also experienced difficulties resulting in part from the projects' administrative structures. Clemson's Anne Arundel (Maryland) and Broward (Florida) sites operated in area vocational-technical centers, and both experienced some difficulty integrating project activities into that environment. At the McFatter Center in Broward County, for example, the school's Executive Director assumed administrative responsibility for the project, including decisionmaking regarding selection of instructional materials, which limited the ability of project staff to implement the planned design. The school's director selected a computer-assisted instructional program for the applied academics component of the project

[5]As is typical in area vocational centers, vocational staff were highly experienced in their occupational fields (the requirements for instructor positions included extensive experience in industry or business) but in some instances were less experienced in instructional methods and technology.

that became the exclusive instructional vehicle for this component; the system was insufficiently flexible to permit integration of academic and vocational programs. As with other locations, a lack of consensus about handling of discipline problems and student counseling needs limited the project's ability to individualize students' educational experiences. Finally, some of the center's instructional staff were not entirely sensitive to the special needs and problems of at-risk youth, and project staff struggled to develop strategies for orienting staff to these needs in order to improve project participants' success in the center.

Similarly, the Oconee project was not entirely successful in obtaining vocational education services for participants. As an alternative school, the project operated in a separate location, and students were somewhat isolated from the district's regular high schools and the area vocational-technical center. This circumstance resulted in some level of stigmatization among the "regular" high school students; additionally, instructional staff at the area center were reluctant to make special accommodations for the highly at-risk population that the project served. In effect, enrollment at the area center turned out not to be an option for project participants. Their vocational component was limited to a school-based business and to some community service activities. As noted earlier, one of the North Dakota projects experienced a similar problem, although in that instance the issue was not the area center's unwillingness to receive project participants but rather the school official's unwillingness to send them.

Many of these project "integration" difficulties were predictable and in fact most were eventually worked out over the course of the demonstration. Some, however, were continuing challenges that required persistence on the part of project staff. For example, while Sequoia Union had a long history of effective implementation of the Academy school-within-a-school model, project staff found that each school was unique and that problems attributable to a school's administrative structure could arise even after the early stages of implementation. While both Woodside and Carlmont enjoyed the full support of the principal (owing in part to the very high credibility of the grant's project director throughout the district), other administrators were not always supportive. In the Woodside project's third year, an assistant principal responsible for the school's schedule resisted arranging the class schedule to enable

the senior Academy students to take their senior-level Academy courses. At Carlmont, a new assistant principal joined the staff in the project's third year. His views on student discipline differed substantially from those of the Academy's lead teacher and staff. Thus, Academy students who had experienced a certain set of expectations for their first two years faced new requirements, with which many had difficulty. Some felt "betrayed" by the school and by the project as well. Thus, while in general the school-within-a-school organization of the Academy model works well, probably because of the amount of effort typically directed toward developing positive working relationships with administrators and staff of the larger school, this model as well as others can face administrative and organizational resistance that can affect the experiences and progress of participants.

Staffing

As these examples suggest, most of the projects faced challenges in "selling" their projects to instructional and other staff who were not employed by the project but whose cooperation was critical to project success. Two other types of issues regarding staff were important during the projects' early phases, and one continued to be a challenge for most projects over their three-year period of funding. These problems included identification and hiring of appropriate staff and staff turnover.

The Oconee County project director, who had long years of experience working with highly at-risk adolescents, placed special emphasis on identifying and hiring individuals who understood and sympathized with the personal and educational problems of the students his project intended to serve. Because the project was located in a rural area, this process was time consuming. It was difficult to find the right people--those with appropriate credentials who would also be enthusiastic about working in an alternative school with youth whose problems were severe. (Many youth were "remanded" to the school and required to remain there for at least one semester.) For example, one instructor he hired was a former dropout who had a good understanding of the problems that can motivate youth to leave school. Another, a new teacher, entered teaching after rearing a large family and understood the problems that adolescents face in balancing personal and educational issues. The delayed

initiation of this project resulted in part from the time required to locate these individuals, provide orientation to the project's objectives, select participants, and begin serving students.

A similar problem faced the North Dakota sites. Because of the extreme dispersion of the sites across the state, in combination with very low population density, the director had difficulty identifying individuals with the experience and credentials called for by the COFFEE model. Although she was able to recruit persons with many of the needed skills, in particular with sympathy and understanding regarding the particular problems of the target youth, formal credentials as required by the state were often lacking. As a consequence, she had to make adjustments in the project model, including abandoning the standard COFFEE curriculum and instructional schedule and replacing them with a pull-out model that involved remedial tutoring in academics rather than courses for credit.

The two Sequoia Academies in California encountered a different problem. While the lead and other teachers for each Academy were identified and assigned prior to the start of the school year, over the course of the first year's operations it became apparent that excellence in teaching was not always enough. That is, each Academy had one or two teachers who experienced difficulty in working with at-risk students within the Academy structure. This issue was particularly difficult at Woodside, whose initial student cohort contained a large number of students with low motivation and difficulty in meeting teachers' standards. One teacher intern had problems in managing these students, and one of the experienced teachers did not acclimate well to the Academy's philosophy. At Carlmont, a highly experienced teacher turned out to be unsympathetic to the special problems of at-risk youth, setting unrealistically high behavioral expectations and generally refusing to negotiate conflicts. At year's end, the project director replaced these teachers with others thought to have more potential to work effectively within the Academy model.

In general, however, the projects were able to identify and employ staff whose sensitivity to their participants' needs and ability to devise creative approaches for turning disaffected students around were quite remarkable. The North Dakota project director routinely traveled several thousand miles a month to develop the rapport with local administrators and teachers that she knew were key to the overall success of the project, arranging equipment and facilities for project staff, and generally keeping track of the

project's widely dispersed sites. The Academies' project director, a long-time district official, knew everyone in the district, and used her networks, both in the district and in the private sector, to get what the project sites needed in order to get off the ground. Perhaps most important, Sequoia was able to find several teachers for each of the sites who clearly loved their jobs and were making a difference with their students. Similarly, the staff and particularly the counselors at Cushing were able to translate their considerable experience in working with special needs students into a set of activities that reflected thoughtful understanding of what works with at-risk adolescents. Finally, the Oconee project director's sensitivity and understanding of what highly at-risk youth need contributed substantially to creation of an environment that he believed would work for students for whom the alternative school was a last resort.

Predictably, over the three years of the demonstration, turnover became an issue in a number of sites. Most sites lost one or more teachers, counselors, or support staff, generally owing to changes in individuals' personal circumstances (e.g., family relocation). Although such losses often caused logistical problems, most projects were able to replace these staff without inordinate difficulty. More complicated, however, was turnover among project directors. As noted earlier, the North Dakota project director resigned to assume a permanent position (the state's gender equity coordinator) at the end of the second year. While the replacement was highly qualified and experienced, by then, given the three-year duration of the CDP grant, the position was essentially temporary. An official in the state office for vocational education was temporarily assigned to complete the grant, and faced the difficult task of learning a very complicated and widely dispersed network of people, activities, and challenges in a very short period.

Similarly, the director of the Oconee alternative school resigned toward the end of the project's second year; the district made the decision not to replace him but rather to assign administrative responsibilities to the district official in charge of dropout prevention. This official, having been closely involved in the original grant development, was knowledgeable about the project but was unable to assume the level of day-to-day commitment that had characterized the prior director. One of the teachers at the school assumed responsibility for daily administrative activities. This change in leadership resulted in a redirection in the

school's emphasis to some extent. As a special educator with extensive experience working with emotionally disturbed adolescents, the initial director had implemented a highly individualized, counseling-oriented approach to working with youth, their families, and others involved in their problems. While individualization continued to characterize the school's philosophy, staff availability to work closely with a large number of students was somewhat reduced.

One of the recommendations from the Clemson project's self-evaluation, which is generalizable to all of the projects funded under the CDP demonstration, was the importance of recruiting and retaining staff who possessed the skills and motivation to work with at-risk adolescents. As noted in its final report, the project recommended that schools considering implementing a dropout prevention project should:

> Choose staff from trained, committed, caring volunteers; provide them material, professional, and psychological support; and give them the flexibility to make important decisions at the local level (Smink, 1992).

One of the greatest challenges faced by all of the projects was recruitment of individuals with the optimal mix of skills, experience, and understanding to address the special needs of the at-risk youth who constituted the target population for the demonstration projects. An associated challenge was for project staff to respond productively to the views--and sometimes prejudices--of their colleagues in the broader environment, including teachers, staff, and administrators, as they attempted to implement the project. These findings point up the fact that careful project planning, including identification of appropriate staff, is one of the key determinants of successful dropout prevention projects.

Project Participants and Services

Project Participants

All of the projects participating in the in-depth evaluation targeted services to high school-aged youth, with most organized as prevention projects. One project--the Turtle Mountain site--originally targeted in-school students but subsequently responded to local

needs in extending services to dropouts interested either in preparing for the GED or working on credits they needed for graduation in the project's alternative school environment. All 10 projects used some combination of the "standard" factors associated with risk in identifying potential participants: low achievement (grades and credits toward graduation), poor attendance, disciplinary or legal problems, behind in school relative to same-age peers, high mobility, and poverty.

Table 3-6 contains the distribution of project participants by several characteristics, including gender, race/ethnicity, and age appropriateness for grade. In terms of gender, projects located in area vocational-technical centers (Cushing, Detroit, Broward, Anne Arundel) enrolled a substantial majority of males (between 70 and 85 percent, on average). Overall, only one of the projects (Woodside) enrolled more females than males, a phenomenon that reflects the greater likelihood of males than females to be at risk for dropping out of school. Ethnic distribution reflected that of the projects' school districts, with Detroit enrolling 87 percent black students and Cushing and Oconee 80 and 89 percent white youth, respectively. Portland's participants reflected the population of the school in which it was located, in that about two-thirds of participants were black. The North Dakota projects, located on or near Indian reservations, enrolled nearly all native Americans. The Academy projects reflected the changing characteristics of their localities, with enrollment in each fairly evenly divided across black, white, and Hispanic persons.

In terms of age appropriateness, projects that implemented academic requirements as a condition of eligibility (or were located in schools with such requirements) more frequently enrolled youth whose age was generally consistent with their grade. These included Woodside and Carlmont, which imposed academic and behavioral requirements. Additionally, the area vocational-technical school in which GRADS operated required entrance requirements. Sixty percent or more of participants in these projects were age appropriate for grade. Conversely, a substantial number of participants in most other projects were older. At least 70 percent of the North Dakota projects' participants were older, as were nearly 80 percent of Detroit students and nearly 90 percent of Broward's project participants. While both of these districts had grade point requirements for admission to the area centers, the district agreed to relax those requirements for the dropout prevention project participants.

Table 3-6

Characteristics of Project Participants

Characteristic	Woodside	Carlmont	Cushing	Detroit	Broward	Oconee	Anne Arundel	Portland	Turtle Mtn.
	%	%	%	%	%	%	%	%	%
Gender									
Female	51%	45%	29%	30%	15%	34%	23%	39%	44%
Male	49%	55%	71%	70%	85%	66%	77%	61%	56%
TOTAL	100%	100%	100%	100%	100%	100%	100%	100%	100%
Race/Ethnicity									
Native American	3%	2%	17%	0%	25%	3%	15%	2%	100%
Black	30%	29%	1%	87%	21%	8%	28%	65%	0%
White	29%	38%	80%	5%	46%	89%	56%	31%	0%
Hispanic	35%	25%	1%	7%	8%	0%	0%	2%	0%
Asian/Pacific Islander	3%	6%	1%	1%	0%	0%	0%	0%	0%
TOTAL	100%	100%	100%	100%	100%	100%	99%	100%	100%
Age									
Grade appropriate	64%	61%	60%	21%	12%	32%	33%	55%	15%
Over age	36%	39%	40%	79%	88%	68%	67%	45%	85%
TOTAL	100%	100%	100%	100%	100%	100%	100%	100%	100%

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Generally, projects identified eligible youth through referrals from school counselors, teachers, or administrators. Additionally, all projects engaged in some form of recruitment. Portland's BRIDGE project, for example, served students in ninth and tenth grades, with a primary emphasis on ensuring a successful transition from middle to high school for students identified as at risk. To be eligible, students had to be between one and four grade levels behind in reading or math, but no lower than fourth grade in reading. There were no minimum GPA or attendance requirements for entry. Parents were required to attend pre-enrollment meetings and to sign a participation agreement.

In addition to the standard criteria, several of the projects, based on the nature of the service design they selected, implemented additional or other criteria for selecting students. The two Business Technology Academies developed a screening and application process. Although the timing of the grant did not permit full implementation of this process for the first-year cohorts, the second-year groups, selected for the 1990-91 school year, were screened. To be considered for selection, students had to make an application (complete an application form and obtain parent agreement), obtain recommendations from their ninth-grade teachers, and participate in an interview with Academy teachers. Because of the relative rigor of the Academy curriculum, students were required to have at least a sixth grade reading achievement level. They had to display motivation to be in the Academy, and to be without serious behavior problems.

Other projects implemented designs that required accommodation of existing enrollment requirements. For example, because it was located in the area vocational-technical center that served 11 school districts, Cushing's GRADS participants had to meet the entry requirements for CAVT. These included being on track to graduate in terms of total and distributional credits in order to pursue a vocational program (vocational courses are always electives), which required spending one-half of each school day at the Center.[6] They were also required to have the basic academic skills required for completion of the vocational

[6]Graduation requirements varied from district to district, which meant that determination of CAVT eligibility among students recruited for participation in GRADS was a complex and time-consuming process.

program they chose.[7] Consequently, in effect GRADS' baseline entry criteria included those established for admission to the Center. The project's staff attempted to negotiate some adjustment to these criteria but were unsuccessful. Their rationale was that the project, whose purpose was to encourage improvement and retention among at-risk learners through vocational education, could work for students whose level of risk was greater than it was among students who normally qualified for CAVT. As was the case in other localities (e.g., Oconee), however, officials of some area vocational-technical centers resisted enrollment of youth whom they believed would be unlikely to succeed in their programs, might be "trouble makers," or were otherwise unacceptable.

In addition to location in areas with high dropout rates, most grantees intended to serve youth generally considered to be seriously at risk, by virtue of minority status, overage for grade, deficiency in credits toward graduation, disaffiliation with school, and other problems typically associated with dropping out of high school. Table 3-7 provides an overview of the status of each project's study participants on key measures of school performance, in comparison with the performance of "typical" not-at-risk students attending the same schools. As shown, in the year prior to enrollment in the CDP demonstrations, project participants consistently had substantially lower grade point averages than did their classmates, with these differences ranging from .8 to as much as 1.3 points. Similarly, they had earned substantially fewer credits than the school's "average" students, had failed more courses, and typically were absent more frequently. For example, participants in the Oconee alternative school had averaged nearly four times as many absences, those attending Portland's Vocational Mentoring project had failed nearly four courses (versus less than one for classmates), and nonat-risk students in Detroit had earned more than twice as many credits as project participants. Thus, while the severity of youth's academic problems varied across sites (e.g., Woodside's students had a 1.32 GPA, versus .84 at Broward and .81 at Fort Totten), all were substantially behind in their progress toward graduation.

[7]For example, cosmetology was very popular, but required relatively high levels of mathematics and reading achievement; consequently, many GRADS applicants did not qualify for this curriculum.

Table 3-7

School Performance of Project Participants and "Average" Students

Project site	Grade point average		Credits		Courses failed		Absences
	Treat.	Avg.	Treat.	Avg.	Treat.	Avg.	Treat.
Woodside Academy	1.32	2.92	22.3	31.2	1.83	0.12	6.00
Carlmont Academy	1.46	2.94	22.1	31.5	1.56	0.05	4.51
Cushing Area Vo-Tech	1.77	2.59	5.6	6.3	0.96	0.14	7.13
Oconee Alternative School	1.96	3.41	4.1	6.5	1.31	0.26	8.32
Ann Arundel Area Vo-Tech	1.04	2.27	7.5	12.5	10.49	1.41	6.61
Broward Area Vo-Tech	0.84	na	1.3	na	2.58	na	15.07
Grant High School (Portland)	1.44	2.85	6.5	7.5	3.64	0.43	7.39
Breithaupt Area Vo-Tech (Detroit)	1.49	2.69	28.6	54.3	1.91	0.61	6.92
Turtle Mountain	1.14	3.03	6.7	na	3.27	na	15.55
Fort Totten	0.81	2.53	1.4	6.8	3.51	0.16	20.59
Fort Berthold	1.40	2.76	1.9	9.9	0.90	0.39	9.00
Fort Yates	1.62	na	5.6	na	2.79	na	12.94

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Strategies Geared Toward Student Change

The 12 project sites participating in the in-depth evaluation varied considerably in the service configurations they implemented. These variations reflected a number of differing perceptions concerning "what works" with at-risk high school-aged youth, what services were required to address the specific needs of each project's target population, and the availability of instructional facilities and resources in the projects' localities. Because a key component of the CDP demonstration was inclusion of a "vocational component," project activities in this area were of particular interest. In this section we discuss projects' services.

Vocational Education and Services

At the secondary level, "traditional" vocational education tends to take one of two forms--and more often than not to be located in one of two types of settings. Other than introductory exploratory courses, consumer and homemaking education, and some "shop" classes, most comprehensive high schools offer limited vocational programs within the high school. These tend to include business and office occupations, marketing and distribution, and, more recently, some computer occupations curricula (e.g., CAD/CAM). (Some comprehensive high schools do offer the full range of occupationally specific vocational programs as well, but many do not, owing in part to resource constraints that limit purchase and maintenance of up-to-date equipment and facilities.)

In the many localities around the nation that do not provide extensive vocational programs within the comprehensive high schools, the full range of occupationally specific vocational education programs, which prepare students for entry-level jobs or additional training at the postsecondary level, is typically available through area vocational-technical centers. Students can elect to pursue a vocational program at an area center, spending either one-half of each day or, depending on the center's scheduling configuration, every other week or two days each week, at the area center. In some states, students attend the area vocational-technical center full time for their last two years. In this latter configuration, centers offer the academic courses required for graduation at these levels. Students typically attend area centers during grades 10 - 12, or grades 11 - 12, depending on the requirements of the

program in which they enroll. Offerings typically include training in trades and industry, health occupations, food service, hotel/motel management, computer technology, and most other occupations relevant to the labor market needs of local areas. A third configuration is the vocational high school, such as the Saul School of Agricultural Sciences in Philadelphia or New York's Aviation High School. Such schools provide all academic and vocational courses needed for high school graduation and achievement of competencies in the vocational program within one setting. Finally, many localities are beginning to implement "tech-prep" programs, in which a high school links with a postsecondary vocational institution to provide a four-year (two in high school and two at the postsecondary level) sequenced occupational program leading to an associate degree.

Other activities--either in addition to or in place of occupationally specific vocational-technical education--also fall under the rubric of vocational education. In general, these activities are geared toward development of career awareness and employability skills but not toward development of entry-level competency in a specific occupation. They include career awareness counseling or courses, employability skills development curricula, vocational mentoring or advocacy, and nonoccupationally specific, either paid or unpaid, work experience or internships. The overall purpose of career awareness activities is to acquaint students with the range of occupational opportunities available to them and to help them understand the educational requirements of these opportunities. The key intent of employability development activities is to "socialize" youth to the world of work, ranging from how to look for a job, interview, and, importantly, how to leave a job, to how to behave in the work setting (how to dress, the importance of being on time, how to interact effectively with coworkers and supervisors, and other facets of working that many take for granted but that are critical to successful participation in the labor force).

While each of the demonstration projects, as required by the CDP program, implemented some form of vocational education, these activities differed substantially in content, approach, and intensity. Further, some of the projects for various reasons were unable to implement the vocational components as intended and had to make adjustments in their service designs based on problems encountered during the initial phases of project implementation. Table 3-8 provides an overview of the types of vocational education the

Table 3-8

Vocational Components Planned and Implemented by the Projects

Project site	Vocational components
Woodside High School, Woodside	▪ Business technology ▪ Internships, work experience
Carlmont High School, Carlmont	▪ Business technology ▪ Internships, work experience
Central Area Vo-Tech, Cushing	▪ Supplementary vocational instructional materials ▪ Computer lab with vocational software
Breithaupt Vo-Tech, Detroit	▪ Instructional support in vocational classes ▪ Tutoring support for ESL students
McFatter Vo-Tech, Broward	▪ Vocational tutoring ▪ Academic/vocational curriculum
Vo-Tech South, Anne Arundel	▪ Vocational English ▪ Instructional support in vocational classes ▪ Community placements
OASIS Alternative, Oconee	▪ Entrepreneurial business ▪ Occupational programs
Grant High School, Portland	▪ Employability ▪ Career counseling ▪ Vocational mentors in health careers
Turtle Mountain	▪ Occupational programs ▪ Work experience ▪ Career development/employability
Fort Totten	▪ Occupational programs ▪ Career development/employability
Fort Berthold	▪ Career development/employability
Fort Yates	▪ Career development/employability ▪ Work experience

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projects intended to implement, along with an indication of the extent to which they were actually able to implement these components fully.

Four of the projects (Cushing, Detroit, Broward, and Anne Arundel) were located in area centers, but their vocational components differed substantially. Cushing's GRADS participants enrolled in the full range of occupational programs available at CAVT. GRADS services intended to facilitate students' success in their vocational curricula. Project staff worked closely with the vocational instructors to make instructional materials more student friendly. This project component included such activities as making tests more appropriate for students' reading achievement levels, developing computerized, interactive study guides for each of the occupational programs at the Center, providing resource teachers in the learning center who worked with students on the academic skills they needed to learn their vocational material, and implementing an automated, graduated-level computerized system for teaching academic and critical thinking skills in the context of vocational content. While convincing the vocational instructors to make use of these materials took time, by the middle of the second year most instructors had become convinced of the usefulness of the project's contributions, and student mastery of such essential concepts as Ohm's Law improved substantially as materials became more widely used and instructors referred students to the learning center. It is interesting in this connection that the two GRADS learning center instructors, one of whom was a math teacher and the other a science teacher, divided up CAVT's vocational programs and undertook to master the vocational content so that they could respond effectively to students' needs for assistance.

Because both treatment and control group members were enrolled in the vocational programs at CAVT, many of these project services (e.g., revised materials, learning center instruction) were available to control group members as well. The chief exception was the computerized system, which was to be reserved for GRADS participants. In fact, one of the learning center instructors, who was particularly enthusiastic about this software, was reluctant to deny its use to members of the control group.

Called Y.E.S. (Youth Experiencing Success), the project at Anne Arundel was initially to be a COFFEE replication. However, funding constraints meant that the site was unable to replicate this model, and the site had to make modifications in order to provide services to

their participants within the constraints they faced.[8] The key service offered to participants in the first year of the project was career-related English, which was computer based. The curriculum used employability-related topics (e.g., development of resumes and business letters) to teach communication skills. Participants received English credit toward graduation. A second activity was placement of vocational specialists in the school's shops and labs. These instructors worked individually with project participants during the regular class period on components of their lessons with which they had difficulty. By the second year, the project also implemented a community-based work experience program, under which students received credit toward graduation and were paid for jobs in the community. Although the intent was that these jobs would be in their occupational field of study, most students participating in this component were unable to locate such jobs. The full COFFEE model, comprising integrated academic and vocational instruction and entrepreneurial businesses along with extensive employability development, counseling, and other services, did not become available to project participants.

Similarly, the Broward site did not replicate the COFFEE model, though that site did establish a school-within-a-school model at the area vocational-technical center that housed the project. Unlike COFFEE, the project did not attempt a student-operated business. Further, primarily because of the academic package selected by the school's director, project staff were unable to achieve an integrated academic-vocational curriculum for students. They were, however, able to implement smaller classes and counseling and other supports for participants.

STARS, the Detroit project, operated in four of the city's area vocational-technical centers, with students attending one-half of each day, remaining in their home high schools for their academic classes. After extensive negotiation, the project was able to arrange a waiver such that home high schools would not lose FTE credit for participants, an arrangement that appeared critical to the project's ability to recruit students for enrollment.

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[8]As one of the Clemson sites, the project received $60,000 in CDP funding for each 18-month period of grant funding. The expectation was that participating school districts would contribute additional resources to support a relatively faithful replication of COFFEE. Such resources were not available at this site, which was able to contribute space and equipment but was unable to add other resources. Consequently, the site implemented a substantially different project from the one that was originally intended.

Following a traditional model of supplementary services for vocational students, STARS instituted instructional support staff for students having difficulty with their vocational coursework. Additionally, the project employed persons to assist limited English-proficient students with their lessons. Project staff also coordinated students' activities with their home high schools.

In effect, then, the projects operating in the area vocational-technical centers generally implemented supplementary services for participants, the purpose of which was to assist them in mastering their vocational programs. GRADS differed from the others in having implemented a formal group counseling component and in having transformed materials rather than limiting services to instructional support and tutoring. Broward varied from the others in that the project took the participants' academics to the vocational-technical center rather than having participants continue their academics in a regular high school setting. Anne Arundel provided vocationally focused English in the area school and credit-bearing work experience. Overall, though, the projects did not change the structure of the educational experience in the way that some of the others attempted to do.

As noted earlier, the North Dakota projects involved services to students attending two or three of the regular (i.e., not vocational) schools located on or near the state's four reservations. Because only a few of the 10 participating schools had access to formal occupational training either in the school or in a nearby vocational-technical center, the project intended to bring vocational education to the schools through mobile van services. As it turned out, this strategy was infeasible, although the project did invest in Apticom, a vocational assessment system that helps individuals to identify potential occupational areas of interest and aptitude.

At Standing Rock (Fort Yates) there was no vocational education available to students at two of the schools and a limited amount at the third. Thus, the main vocational component of the project at this site was adjusted to emphasize career awareness and employability skills development, with project instructors working to identify work experience positions for project participants. The high unemployment rate and absence of jobs at Standing Rock limited project staff's ability to locate work experience positions for project participants. Interestingly, the BIA school at Standing Rock contained a number of industrial arts labs, but

these were not made available to project participants. In fact, cooperation from the BIA administrators was low from the start, and before the end of the three-year period, the school withdrew from the project altogether.

Vocational programs offered by an area center were initially available to project participants at Fort Totten, although by the middle of the second year, the superintendent of one of the two participating schools withdrew students from the center. Subsequently, these students had access to some vocational programs at a nearby postsecondary institution. At the Turtle Mountain site, the project's vocational instructor provided vocational instruction in Trades and Industry to participants during the first few months of the project. Subsequently, he was called to serve in the Gulf War; the project was unable to find a replacement. Consequently vocational components were limited to employability-oriented materials and instruction made available by the project's academic instructor. At Fort Berthold, vocational programs were available to students attending one of the three participating schools.

As this review suggests, the projects experienced substantial difficulty in their attempts to make formal vocational education available to participants. Each site did provide career awareness and employability development instruction to participants. However, it became apparent that the COFFEE model of student-operated businesses was not feasible at any of the project's locations, owing to prevailing labor market conditions. In addition, state-level credentialing requirements precluded implementation of the COFFEE model of integrated academic and vocational education.

During the first year, Portland enrolled project students in the BRIDGE program, a daily one-hour class in prevocational skills. Students participated in BRIDGE during their freshman and sophomore years. In addition to following the standard BRIDGE curriculum (study skills, personal and social development, communications, etc.), students learned keyboarding. They spent one period a week working on homework from their other classes, and received tutorial assistance as needed.

The main vocational component funded by CDP that we included in the evaluation was Vocational Mentoring, one of several vocational options available to students at Grant High School that were oriented to students' particular needs and capabilities. The options in the continuum included (1) "mainstream" vocational-technical education for students with the

academic and other skills required to succeed in formal vocational programs; (2) "partnership," for students with at least a 2.0 grade point average and a good attendance record, which included partnership English and math classes, mainstream vocational programs as appropriate, a daily advisory group, and part-time work during the year and a full-time job in the summer, as well as other services; and (3) "Vocational Mentoring," for students experiencing difficulty in the regular school environment who would benefit from highly individualized services and adult mentors. This program operated in cooperation with and was located at an area hospital, where students took some academics, were provided support services, and worked in a mentoring situation with a hospital allied-health employee. Following the EBCE model described earlier, this component exposed participants to a variety of careers as well as assisting them develop life and employability skills. While students received credit for successful participation, they were not, strictly speaking, learning an occupation.

Oconee, the third Clemson site, was able to obtain substantial resources in addition to the CDP funding through a grant from the South Carolina state department of education. Consequently, the site succeeded in implementing a relatively faithful replication of Project COFFEE, operating as an alternative school with an abbreviated school day and other features of the model. The school's principal started a business that involved construction, marketing, and sale of picnic furniture. This endeavor provided an opportunity for participants to learn some vocational skills and to develop employability skills. The project intended to enroll students in the area vocational-technical center for more formal vocational training, but met resistance on the part of the center's administrators, who were concerned that the alternative school's highly at-risk students would not be able to succeed in the center's environment.

As noted earlier, the Academies model includes integrated academic and vocational training. The Academies implemented at Carlmont and Woodside high schools developed a business technology curriculum, which included a sequenced program of business courses that emphasized computer applications. While the computer component of the curriculum was initially somewhat delayed owing to equipment delivery and set-up logistics, this component of the projects was in place by second semester of the first year. In addition, the focus of field trips and other activities for students was career awareness and employability

development, although neither Academy was able to implement a full schedule of such activities. Other aspects of vocational services included mentoring and summer jobs for participants. These components, as well as other activities in support of the Academy projects, were developed in close coordination with the Academies' business partners.

The latter aspects of the projects' vocational component were not entirely successful. Particularly at Carlmont, Academy teachers believed that the "vocational part" did not work well. Interestingly, they referred to the mentoring and internship activities rather than the business technology curriculum, which they did not exactly view as "vocational education," a notion that reflects ongoing stereotypes among academic teachers regarding vocational education. In any case, the person responsible for developing internship/work experience slots for students had difficulty identifying positions related to students' business technology program (primarily because of prevailing economic problems). Further, most students already had part-time jobs, often at hourly wages higher than those available through the internship positions, and were unwilling to change jobs.

At both schools, the business technology program was well integrated with students' academic work. Students' enthusiasm for the computer lab was reflected in their behavior--many spent their lunch periods in the labs working on business technology assignments, or their English papers, or other work related to their educational programs. This enthusiasm helps to account for the improvements many students made in their school performance over the course of the project.

Academic Services

All of the projects placed some emphasis on academic preparation, and for most sites (though not for the Academies), this emphasis included remediation in basic academic skills (reading, math, communications). The vocational and academic instructors assigned to the projects in North Dakota provided tutoring to support participants' regular classes, in most instances working with the regular academic teachers to identify areas in which participants needed assistance. These services were provided on a pull-out basis, with each student scheduled to spend at least one hour a week with the academic instructor for tutoring assistance. In some sites (e.g., Fort Yates), the tutors traveled to the students' school or were

actually located at the school (Fort Totten). During the first year, the Fort Berthold site tried to bus students to a central location. Because of distances (one school was 60 miles away), this strategy did not work, and in the second year the project switched to an arrangement whereby the two project instructors spent at least one day a week at each of the three participating schools. As noted previously, this component differed from the COFFEE model the North Dakota project intended to implement, owing to problems with obtaining official pilot status for the project.

The Turtle Mountain project arranged facilities in a "store front" location, with students spending their project time at that facility, working individually with the academic instructor. Because many of these students were dropouts working toward a GED, this site did not face the same difficulties regarding graduation credit, and the project was more nearly like the COFFEE model than were the other three sites. One of the most interesting features of this site was the instructor's development of a culturally sensitive, integrated academic and employability-related curriculum for her students. She tried, eventually unsuccessfully, to arrange related work experience opportunities.

As noted earlier, part of the program for Portland's BRIDGE students involved tutorial assistance in academic subjects, and Vocational Mentoring included an applied academics component that students took on site at the participating hospital. This curriculum integrated life and employability skills with the academic coursework. Anne Arundel implemented a credit-bearing career-related English course for participants.

The two Academies, Broward, and the Oconee County alternative school provided the full academic program that students needed to graduate, although in their later high school years, Academy students took some of their academics in regular classes. Broward used almost entirely a computer-assisted program for academics, though the project did employ academic teachers to work with students on an as-needed basis. All four projects implemented reduced class size. Additionally, the Academies developed enriched curricula that integrated occupational and academic components, with students working on social studies and English papers in both the academic and business technology classes. Oconee also provided all academic courses needed by participants but encountered some difficulty meeting the state's physical education requirements because of lack of facilities.

Counseling and Other Support Services

Based on the perception that by high school many at-risk students have become seriously disaffected with, or even alienated from, education owing to a long experience of failure, some of the projects implemented a counseling component. These services ranged from career awareness counseling to provision of formal personal counseling in individual or group settings. For example, one of the key services at Cushing was formal bimonthly group counseling for all participants, supplemented by individual counseling and referral to community services as needed. Topics covered ranged from personal and school adjustment issues to career plans. While this component was key to the GRADS service design, project staff experienced some difficulty in getting it fully implemented. A number of the vocational instructors were reluctant to release their students from class to attend the groups, and project staff worked to change these attitudes in order to ensure the effectiveness of this component.

The Oconee County alternative school, which enrolled highly at-risk students, employed a counselor who worked primarily in the area of career guidance. However, this person did provide some personal counseling, and the project's director also spent a considerable amount of his time providing individual counseling to project participants on such topics as school behavior, legal issues, or personal problems students were dealing with at home and with their peers. The intent of these services was to create an environment in which students could begin to identify and affiliate with the school and thus improve their attendance and achievement levels. Departure of the principal toward the end of the second year meant that this level of personal assistance was no longer possible at the site, a change that probably constrained some students' further progress.

While the Sequoia Academies did not include a formal counseling component, the Academy at Woodside employed an individual who in reality served this function on an informal basis. She monitored students' progress through attending classes and bringing students in for extra assistance as required. A resident of the community in which most of the project's participants lived, this person also implemented a proactive attendance monitoring program, checking daily on students' presence at school and presence in classes. She called students in, talked with parents both on the phone and in person, visited homes, and generally kept up with each student's progress in the project. In the process, she

counseled students on behavior, personal problems, and other issues with which they needed assistance.

All projects provided at least some informal counseling-oriented support to participants, typically in the context of tutoring assistance as with Anne Arundel and the North Dakota projects. Inevitably, the project staff, in working closely with small numbers of students, became involved in their personal as well as academic problems. This aspect may have been one of the most useful components of the projects, providing youth the opportunity to receive attention and concern from adults. The Portland project, in fact, formalized this strategy in the vocational mentoring activities, with mentors assisting students with various aspects of their problems.

In addition to counseling, several of the projects made other supportive services available to students. These included child care for teen parents (Cushing), case management and referral (Oconee, Cushing, and Portland), transportation (Turtle Mountain, where the instructor often drove to participants' homes to take them to school). Further, most of the projects provided some form of student incentives. The four North Dakota sites, for example, paid students for attending school; at the rate of one dollar per day, participants could earn up to about $25 per month for attendance. Other sites provided parties or field trips. Finally, the work experience jobs for Academy students were intended as incentives. Only students whose school progress was acceptable were permitted to participate in this project component.

Structural Changes in the School

As noted earlier, many of the projects undertook some form of alternative environment, based in part on the understanding that the youth they targeted for services had not fared well in the regular school environment. The Oconee and Turtle Mountain projects were housed in separate facilities. The two Academies and Broward were structured as a school-within-a-school, and both Fort Berthold and Fort Totten located some staff in alternative facilities (a trailer in New Town and a house behind the Four Winds community school).

Oconee, Turtle Mountain, and the Academies (and to some extent Broward, though in that case students took their vocational courses in the "regular" vocational-technical environment) represented major restructuring of participants' educational environments, while the other projects could be classified as supplemental to participants' regular school programs. Implementation of alternative structures and environments has both advantages and disadvantages for at-risk students. On the one hand, alternative schools offer the advantage of providing an environment in which different approaches can be tried in attempting to reach youth; classes are generally smaller, and the formal structure of regular school can be relaxed in order to provide an experience that may be more productive for students. (Oconee, for example, obtained some latitude from the district in dealing with attendance and disciplinary problems, which probably could not occur if the school were located at one of the district's "regular" high schools.) This advantage applies to the school-within-a-school model as well, in that students have a relatively smaller context with which to identify.

On the other hand, this type of structure, particularly the alternative school, does segregate students, and stigma can be a problem. Students at Oconee, for example, rode buses to the regular schools, and then were bused to OASIS, which meant that their former classmates were aware that they were going somewhere else, and students reported that they experienced discrimination as a result. According to the project's director, however, students were so "desperate" that they were willing to endure discrimination and stigma in order to attend the school.

According to several of the projects' directors, the advantages of alternative schools or settings outweighed the drawbacks. These youth needed a new educational environment, including more attention, positive reinforcement, and nurturing, in combination with clearly articulated and enforced behavioral expectations, if they were to make it to graduation. Further, in this environment, teachers and other staff could work more closely together to monitor students' progress, achieve earlier identification of problems, and address issues before they became so serious as to result in participants' dropping out, or being expelled, from school. In short, the alternative model changes the entire environment, while projects that provide supplementary services may affect only parts of participants' school experiences. The effects, and effectiveness, of the projects' service configurations in the broad sense,

including what they did for and with students and in what environments, are the subject of Chapter 4. Chapter 5 synthesizes the study's findings and discusses their implications.

CHAPTER 4: RESULTS

Introduction

Examination of the effects of the demonstration projects on participants' academic performance, school affiliation, and perceptions in selected areas relevant to school must occur in the context of the projects' objectives, activities, and environments. Some of the service designs selected for implementation by the grantees were more comprehensive and coherent than others, and thus potentially more likely to change the overall quality of students' educational experiences and outcomes. This variability in design must be considered in the context of two important factors: (1) the nature and extensiveness of the problems of projects' target populations, and (2) the likelihood that even intensive and far-reaching interventions, such as alternative schools that address youth's personal as well as educational difficulties, may have some limitations (e.g., isolation from nonat-risk peers, stigma). Even within these constraints, the organization and coherence of projects' service designs, along with the extent to which they attempted to meet multiple needs of students, appeared to affect the types and extent of outcomes that resulted from participation.

All of the models selected for demonstration appeared to have good potential to improve educational experiences and outcomes of participants. However, problems that several projects experienced in getting underway, delays in setting up computer labs or obtaining equipment, and changes over the course of the demonstrations in staffing, administrative support, and other factors affected the types of achievements some of the projects were able to demonstrate. Additionally, in some instances local factors meant that substantial changes in intended models were necessary, and the longer term implications of these changes for student outcomes must be considered as the overall success or failure of the demonstration is considered.

In this chapter, we provide a summary of the projects' outcomes and offer some suggested explanations, based on our observations of the projects' activities over their

existence (some for three, others for only two, years), as to why these outcomes may look as they do. As shown in Table 4-1, outcomes are classified into three categories. *"School*

Table 4-1

Types of Participant Outcomes Included in the Evaluation

School performance	School affiliation	Student perceptions
▪ Higher grade point average ▪ More credits earned ▪ Fewer courses failed ▪ Fewer absences ▪ Fewer dropouts	▪ School thought safer ▪ Teaching/teachers better ▪ Better job preparation ▪ Counseling/counselors better ▪ More academic encouragement	▪ Classmates should not misbehave ▪ Better future expectations ▪ Classmates are college bound

performance" outcomes include measures of student academic and behavioral status, including grade point average, number of credits earned, number of courses failed, number of absences, and dropout status. Improvement in these outcomes suggests that the project's intervention had effects on students' ability to perform acceptably--and stay--in school. The second category, *"school affiliation,"* includes measures of students' perceptions that their school experiences were positive--they made positive judgments about school staff (teachers and counselors) and their interactions with these staff; they believed that the school environment and discipline were productive for them; they believed that what they were getting from the school (preparation for jobs, assistance in planning and participating in their educational courses, and encouragement in their class work) had improved since the inception of their participation in the project. Finally, *"student perceptions"* include several measures of the implications of the educational experience for students' perceptions regarding their environment.

The results of all of the analyses discussed in this chapter are presented in Appendix B as a series of tables containing findings for each of the 12 sites that participated in the evaluation. These summary tables include the following:

- Selected demographic characteristics of study participants

- Analysis of school performance outcomes, for all cohorts and all years
- Gap reduction analysis of school performance outcomes, by cohort by year
- Analysis of project dropout rates, by cohort by year
- Analysis of school affiliation and student perception outcomes, by cohort by year
- Gap reduction analysis of school affiliation and student perception outcomes, by cohort by year.

The tables present results for the groups of treatment and comparison/control students referred to as Cohort 1, Cohort 2, and a "combined" cohort. Cohort 1 is the group of students selected for participation in the study beginning in school year 1989-90 in the projects that were able to get underway that fall after receiving the CDP grant in July 1989. The study followed Cohort 1 students across three school years: 1989-90, 1990-91, and 1991-92. Cohort 2 comprises either a second group of students selected from the sites that were able to begin in fall 1989 (and followed for the 1990-91 and 1991-92 school years) or the only group of study participants for projects that began serving students in spring or fall 1990. Finally, to increase the overall sizes available for analysis, we constructed two "combination Cohorts" These are the Cohort 1 and Cohort 2 year one group (i.e., the first year of each group's participation in the "treatment" or comparison condition) and the Cohort 1 and Cohort 2 year two group (their second year of participation).

All results were adjusted to remove any effects resulting from differences between treatment and comparison/control groups in gender, race, or age. Results are based on raw scores rather than containing imputed data. The findings presented in the chapter represent statistically significant differences at the .05 level. Any results not mentioned can be assumed not to have been significant and reliable. Finally, results obtained in 1991-1992 are not independent from results obtained in 1990-1991 for the same cohort, because dropouts and gains were measured against the same baseline (school year 1988-1989 for Cohort 1 and 1989-1990 for Cohort 2) in both cases. Further, the results for the two time periods may differ because some students available for comparisons during earlier years were not included in later analyses, having transferred, graduated, or dropped out.

Table 4-2 contains a summary of the evaluation's findings regarding participant outcomes (as noted previously, details of these findings appear in Appendix B). This summary lists significant positive outcomes for each site, by cohort and by year. The body of the chapter contains details of our findings for each of the 12 sites participating in the evaluation.

We have elected to organize the discussions by site to assist the reader in comparing the outcome data presented here with the process data presented in Chapter 3. In considering the discussion of these outcomes, the reader is cautioned that changes in student performance, affiliation, and perceptions may require a considerable period to occur. Particularly for older students, interventions must affect what may be years of unproductive and sometimes painful educational experiences, and a predictable progression is often that changes in student attitudes about and affiliation with school may substantially precede measurable changes in school performance.

Our discussion of results for each project includes a brief summary of the project's service design. Additionally, based on our analysis of the nature, intensity, and implementation levels of the service designs of the projects, we articulate what appear to us to be "plausible" outcomes--that is, the types of effects that the projects might be expected to have on the majority of students receiving the interventions. Specification of these outcomes for each of the projects participating in the evaluation was based on the totality of that project, including consideration of the configuration of services, experience and stability of staff, types of students targeted for participation, coherence and intensity of services, and judgments, based on interviews with staff and students as well as observation of project activities, concerning the types of outcomes that a project could reasonably be expected to achieve within the framework of the interventions provided.

Table 4-2
Summary of Outcomes Achieved by Participants in CDP Dropout Prevention Projects[1]

Woodside Academy	*Carlmont Academy*	*Oconee OASIS*
1989-90 Cohort First-year results ▪ Higher GPA ▪ More credits ▪ School thought safer ▪ Teaching/teachers better Third-year results ▪ Counseling/counselors better **1990-91 Cohort** First-year results ▪ Higher GPA ▪ More credits ▪ Fewer courses failed **Combined Cohort** First-year results ▪ Higher GPA ▪ More credits ▪ Fewer courses failed ▪ School thought safer	**1989-90 Cohort** First-year results ▪ Fewer courses failed ▪ School thought safer ▪ Teaching/teachers better ▪ More academic encouragement Second-year results ▪ Higher GPA ▪ Fewer courses failed Third-year results ▪ Higher GPA **1990-91 Cohort** First-year results ▪ Higher GPA ▪ Teaching/teachers better **Combined Cohort** First-year results ▪ Higher GPA ▪ More credits ▪ Fewer courses failed ▪ School thought safer Second-year results ▪ Higher GPA ▪ Fewer courses failed	**1989-90 Cohort** First-year results ▪ Teaching/teachers bet Second-year results ▪ Higher GPA ▪ Better job preparation Third-year results ▪ Fewer courses failed ▪ More academic encou **1990-1991 Cohort** ▪ School thought safer **Combined Cohort** Second-year results ▪ Higher GPA ▪ More credits
Cushing GRADS	***Anne Arundel Y.E.S.***	***Broward C.H.O.***
1990-91 Cohort Second-year results ▪ Fewer dropouts **Combined Cohort** First-year results ▪ Fewer courses failed ▪ More academic encouragement Second-year results ▪ Fewer dropouts	**1989-90 Cohort** First-year results ▪ Fewer absences Second-year results ▪ Better job preparation **1990-91 Cohort** Second-year results ▪ Higher GPA ▪ School thought safer **Combined Cohort** Second-year results ▪ Higher GPA	(Affiliation outcome data available)

[1]Based on gain score, ANCOVA, and reliability-adjusted ANCOVA ($p<.05$)

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Table 4-2 (continued)
Summary of Outcomes Achieved by Participants in CDP Dropout Prevention Projects[1]

Portland Vocational Continuum	*Turtle Mountain COFFEE*	*Fort Totten COFFEE*
1989-90 Cohort First-year results ▪ Counseling/counselors better Second-year results ▪ Fewer courses friled ▪ School thought safer Third-year results ▪ More credits ▪ More academic encouragement **1990-91 Cohort** First-year results ▪ Teaching/teachers better Second-year results ▪ More credits ▪ Fewer absences **Combined Cohort** First-year results ▪ Better job preparation Second-year results ▪ Higher GPA ▪ More credits ▪ Fewer absences ▪ Fewer courses failed	**1989-90 Cohort** First-year results ▪ Fewer dropouts ▪ Fewer absences Second-year results ▪ Fewer dropouts **Combined Cohort** First-year results ▪ Fewer dropouts ▪ Higher GPA ▪ School thought safer	**1989-90 Cohort** First-year results ▪ Higher GPA ▪ Fewer courses failed **1990-91 Cohort** First-year results ▪ Higher GPA Second-year results ▪ Fewer dropouts **Combined Cohort** First-year results ▪ Higher GPA
Detroit Preparing At-Risk Youth **1990-91 Cohort** First-year results ▪ Fewer dropouts ▪ Higher GPA ▪ More credits Second-year results ▪ Fewer dropouts ▪ Higher GPA (Affiliation outcome data not available)	***Fort Berthold COFFEE*** **1990-91 Cohort** First-year results ▪ School thought safer Second-year results ▪ Higher GPA ▪ Fewer courses failed **Combined Cohort** Second-year results ▪ Fewer absences ▪ Fewer courses failed	***Fort Yates COF*** **1989-90 Cohort** Second-year results ▪ School thought saf 1990-91 Cohort First-year results ▪ Higher GPA ▪ Fewer absences **Combined cohort** First-year results ▪ Higher GPA

[1]Based on gain score, ANCOVA, and reliability-adjusted ANCOVA ($p<.05$)

Woodside Business Technology Academy

Woodside High School, Woodside, California

Overview

Following the Academy model, the Business Technology Academy at Woodside High School was organized as a "school-within-a-school." Students entered the program at the beginning of tenth grade; capacity was about 50 students per grade. Participants stayed together for most of the school day, taking core classes (English, mathematics, social studies, and business technology) together, and with the same set of Academy teachers, over the three-year period. Classes were small, and teachers received an extra preparation period to coordinate curriculum across academic and vocational subjects, plan extracurricular activities (e.g., the mentoring program, field trips), and consult about students' progress and needs. The program targeted students who were moderately at risk, with eligibility based on a specified reading achievement level, motivation to participate, and absence of serious behavioral or emotional problems. In addition to this "standard" Academy model, Woodside employed an instructional support specialist who monitored participants' attendance, completion of homework, and classroom behavior.

Across the two study cohorts, Academy students differed somewhat in terms of selected demographic characteristics (gender, race/ethnicity, age). A majority of Cohort 1 study participants were male (56 versus 44 percent), while for the second cohort, substantially more were female (60 versus 40 percent). For both cohorts, more students were Hispanic (37 and 34 percent, respectively) than other ethnicities, with 32 and 29 percent black, and 29 percent white in both cohorts. Finally, nearly two-thirds of Academy students in both study cohorts were age appropriate (i.e., were the same age as most students in their grade). Table B-1.1 in Appendix B provides comparable information for the site's comparison group members.

Plausible Outcomes

Participation in (and completion of) the business technology program as implemented at Woodside could be expected to eventuate in the following outcomes:

- Improvement in school performance, including attendance, grades, and credits
- Reduction in dropping out among participants
- Improvement in postschool outcomes, including employment in entry-level jobs with career potential and enrollment in postsecondary school.

Results

The Woodside Academy began operations in fall 1989, with assignment of students selected for the Academy as tenth graders to the "treatment" group and selection of a matched comparison group of students who did not enter the program. The study collected information about these students over a three-year period, ending when they would have been expected to graduate from high school in spring 1992. A second cohort, who entered as tenth graders in fall 1990, was followed for a two-year period, along with a similarly selected comparison group. Analyses reported here are for each of the three years of Cohort 1, the two years of Cohort 2, and the first and second years' experiences for the "combined Cohort," which reflects the first and second years' participation of both cohorts.

Baseline to 1989-1990.[1] Business Technology Academy Cohort 1 students at Woodside High School achieved improvement in school performance during 1989-90, measured against their performance in the prior year (school year 1988-89). These improvements included higher grade point averages (GPA) and an increased number of credits earned. The GPA improvement was almost two-thirds of a grade point. The treatment group moved up from a pretreatment grade point average of 1.29 (slightly below a D+) to an unadjusted posttreatment grade point average of 1.94 (slightly below a C)--a nontrivial gain.

Additionally, participants' perceptions of their school experiences resulted in some changes in school affiliation: they perceived the school environment as safer, that their teachers and instruction were better, and that their classmates had more diverse friendships. Specifically, both covariance analyses--but not the gap-reduction analysis--found a significant

[1]Analyses of 1989-1990 data included analysis of covariance (ANCOVA), reliability-adjusted analysis of covariance, and gap reduction analysis. Analysis of subsequent years' data included gain score analyses in addition to those techniques used in analyses of the first year's data.

improvement in feelings of school safety and attitudes toward teachers and teaching. The same pattern of results was observed with respect to perceptions that students made friends with students of other racial and ethnic groups.

The Academy's school-within-a-school model, which emphasized smaller classes, more coordination among teachers in working with individual students, increased attention to students' day-to-day progress among teachers and particularly from the project's instructional support specialist, and provision of tutorial assistance, may help to account for these findings. Additionally, block scheduling of classes, in which students remain with their classmates and a core set of teachers for most of their school day, along with incentives and other activities intended to foster a more efficacious environment, may have contributed to students' improving affiliation with school.

Baseline to 1990-1991. Cohort 1, which achieved positive academic and other outcomes in their first year, did not demonstrate significant outcomes from baseline to the end of year 2. However, Cohort 2, which entered the Academy in fall 1990, demonstrated significant effects in grade point average (which increased from 2.0 to 2.4, versus the comparison group's decline from 1.8 to 1.7) and total credits earned (from 24.3 to 28.2, versus the comparison group's decline from 24.3 to 22.7) during their first year of enrollment in the program. Additionally, comparison group students failed more courses (up from 1.0 to 2.0), while Academy students remained constant at 1.0. Finally, gap reduction analyses, which compared treatment students' performance with a sample of "average, not-at-risk" students, showed significant positive outcomes for Academy students on grade point average and number of courses failed (which declined), for both cohorts.

Expectably, the Year 1 experience of the two cohorts combined showed positive outcomes for grade point average, number of credits earned, and reduction in number of courses failed. On other measures, analyses of the combined cohort showed a significant increase in participants' feeling that school was safe. Cohort 2 students increasingly believed that their classmates were college bound (one of the measures of students' changing perceptions). However, gap reduction analyses suggested that Cohort 1 students experienced reduced expectations for the future in their second year in the program.

Baseline to 1991-1992. Positive outcomes continued to erode for Cohort 1 students during their third year in the Academy, particularly in the area of academic performance. For example, their grade point averages did not increase, as opposed to the averages of comparison students. Further, comparison group members improved from failing an average of 2.1 courses to an average of 0.3, while Cohort 1 Academy students remained stable at 1.8 course failures, on average.

Similarly, for Cohort 2, treatment students were absent somewhat more frequently (2.0 to 4.5 days, versus 2.3 to 4.3 among comparison students). On the other hand, treatment students were more likely to perceive that they were in classes with students preparing for college (from 2.2 to 2.7 on a four-point scale) versus other students (2.7 to 2.6). Additionally, gap reduction analyses were positive for the combined cohort in their second program year for increased grade point average and reduced number of courses failed.

Dropping out. Analysis of data from this site revealed no significant differences in dropping out across years or across single or combined cohorts (Table B-1.2). As shown in Table B-1.4 (Appendix B), very few students in either cohort's treatment or comparison groups dropped out of school. Rates were highest in Cohort 1's third year, with four treatment students dropping out by their senior year (school year 1991-91), for 10 percent overall, and five comparison group students (11 percent) having dropped out by that year.

Summary

These results suggest that the Woodside Business Technology Academy experienced some success in terms of improving participants' academic performance, although these positive outcomes tended to decline over time (three years of data collection for Cohort 1 and two years for Cohort 2). The project experienced more success with first-year than with second-year students, although in comparison with the gap reduction group, positive outcomes for grade point averages and reduced number of courses failed continued across all years. This relative decline in significantly positive outcomes may reflect students' having become "accustomed" to the special features of the project, thus reducing what was likely a Hawthorne effect during their first year. Additionally, school affiliation outcomes tended to be stronger during students' earlier years of participation than later. The project did not

appear to exert a significant influence on students' likelihood to drop out of school, although for both treatment and comparison groups, the numbers of students who left school before the end of the study were quite small. This finding is explained in part by the fact that students entered the Academy in the tenth grade, a year later than the critical "dropping out" year that typically occurs before, during, or just after the ninth grade when many students become old enough to drop out legally.

Observations and discussions with faculty, administrators, and students at the Academy over the three-year period do suggest, at least anecdotally, that participation in the project had a salutary effect on many students as well as most of the staff who served as Academy teachers and support persons. Students appeared generally more engaged in their classes and independent work, and teachers who remained with the project demonstrated a high level of commitment to the model. The implementation problems, along with somewhat less than optimal support from some administrators (see Chapter 3), may have reduced the project's positive effects. Similarly, the evaluation model (a matched comparison group design) implemented was less than optimal and may help to account for the modest effects that we found.

Carlmont Business Technology Academy
Carlmont High School, Carlmont, California

Overview

Like the project at Woodside, the Business Technology Academy at Carlmont featured small classes, block scheduling of students, an admissions procedure intended to maximize students' likelihood of success, and extracurricular activities coordinated with participants' vocational courses. The Academy model emphasized careful selection of teachers, assignment of a lead teacher to manage the project, and coordination of curriculum across academic and vocational components. The two Academies shared a career development specialist, whose responsibilities included recruitment of business partners and mentors (the mentoring program began in eleventh grade), development of work experience and internship slots for students

following eleventh grade and in the second semester of their senior year, and monitoring of student progress on their jobs. The Carlmont Academy did not have a staff person analogous to Woodside's instructional support specialist.

The Carlmont project's two study cohorts differed somewhat in demographic characteristics. A substantial majority of Cohort 1 Academy students were male (63 percent), while the majority of Cohort 2 students were female (52 percent). For both treatment cohorts, more students were white than other race/ethnicities (39 percent for Cohort 1 and 38 percent for Cohort 2), with 29 percent black in each cohort and around one-fourth Hispanic. Finally, nearly three-fourths (71 percent) of Cohort 1 students were age appropriate, compared with only 52 percent of Cohort 2 students. Table B-2.1 in Appendix B provides comparable information for the site's comparison group members.

Plausible Outcomes

Outcomes that could be expected to be associated with the Carlmont project included the following:

- Improvement in grades and credits earned
- Improvement in school affiliation
- Increase in postschool aspirations
- Increase in postsecondary enrollment
- Reduction in dropping out.

Results

Carlmont's Business Technology Academy began operations in fall 1989, with assignment of students selected to participate as tenth graders to the study's "treatment" group and selection of a matched comparison group of Carlmont students who did not enter the project. The study collected information about these students over a three-year period, ending in spring 1992 (when most remaining participants graduated). A second cohort, entering as tenth graders in fall 1990, was followed for a two-year period. Analyses reported here are for

each of the three years of Cohort 1, the two years of Cohort 2, and the first and second years' experiences for the combined cohort.

Baseline to 1989-90. Carlmont's Academy students also improved their performance over the course of the school year (higher GPA and reduction in the number of courses failed). However, a significant improvement in grade point average was found only in the gap-reduction analysis. A significant reduction in the number of courses failed was found in the reliability-adjusted covariance analysis and the gap-reduction analysis, but not in the regular covariance analysis. These differences were caused not by a reduction in the number of courses failed by members of the treatment group, but by an increase in the number of courses failed by members of the comparison and gap reduction groups.

Additionally, participants' school affiliation increased, including their perceptions of their teachers and instruction, their perceptions about the safety of the school, and their perception that they were receiving good job preparation and more encouragement regarding their academic course work. Further, they perceived that many of their classmates were college bound. According to project staff, their increasing awareness of college was explained in part by these students' emerging perception that college might be an option for them, and they became more interested in the postschool plans and aspirations of their classmates.

As with Woodside, Carlmont's intervention stressed a smaller, more cohesive environment for participants, with substantially more attention, and also higher expectations, from adults than many of these students had experienced in the past. Several of the Academy teachers at Carlmont spent a great deal of their own time, in addition to their school time, with these students, taking them to plays and other activities, talking with them about problems and interests, and treating them with considerable respect and understanding. These aspects of the project at Carlmont may help to explain the first-year findings of the evaluation. Additionally, as noted in Chapter 3, students at both Academies experienced a full year of the project; while some of the components were not fully implemented at the beginning of the year, nevertheless, students had a relatively longer period in which to begin to show effects of participation.

Baseline to 1990-1991. Academy students in Cohort 1 continued to experience academic improvement during year two, increasing their grade point averages (from 1.5 to 1.8), while comparison group students declined (from 1.7 to 1.5). Similarly, treatment students failed fewer courses (from 1.6 to 1.3) than did comparison students (who increased from 1.1 to 2.1). Compared to gap reduction students, both cohorts, singly and in combination, improved in grade point average, and Cohort 2 failed fewer courses during the year.

In addition, Carlmont students had positive outcomes on other measures. For example, Cohort 2 students thought their teachers and teaching were better, and Cohort 1 students, compared with the gap reduction group, believed they were receiving better job preparation.

Baseline to 1991-1992. Cohort 1 treatment students experienced increased grade point averages (from 1.5 to 2.2) with the increase exceeding that of comparison students (1.7 to 2.0), and the combined cohort increased GPA as well. The combined cohort reduced course failures (1.4 to 1.3, versus to 1.2 to 1.9 for the comparison group). However, they were absent more often. The combined cohort believed that their classmates should not misbehave.

Dropping out. Analysis of data from this site revealed a significant difference in dropping out for Cohort 1 in their third year and for the combined cohort in year two. The project was particularly effective with overage students in Cohort 1: seven of 19 overage comparison group students dropped out, while none of the 12 overage Academy students dropped out. As shown in Table B-2.4, dropout rates for comparison group students substantially exceeded those for the treatment group. For Cohort 1, cumulative dropout rates (at the end of the third year) were zero for treatment group members and 19 percent for the comparison group. For Cohort 2, comparable rates were nine percent and 15 percent at the end of the second year; for the combined cohort, rates were six and 16 percent, respectively.

Summary

Overall, students enrolled in the Business Technology Academy at Carlmont High School improved their academic performance as a result of their participation, specifically in terms of improved grade point average and reduced number of courses failed. The project was one of the few in the demonstration overall for which dropping out was significantly

lower among participants than among comparison/control group members. The fact that these improvements were relatively stable over time may reflect the high level of staff involvement in and commitment to participants' academic and personal development. As noted in Chapter 3, faculty engagement in the project tended to increase over time, with changes in the composition of the faculty at the end of the first year having a salutary effect on student-teacher relationships, resulting in high levels of faculty commitment among all Academy teachers during the demonstration. Administrative support over the project's first two years was consistently strong. In addition to evidence of the project's success in terms of academic performance, the fact that some students elected to enroll in higher level courses, particularly in mathematics, along with their frequent attendance at the computer lab during lunch and free periods, suggests the efficacy of the project in engaging participants in their education.

Guidance in Retraining Adolescents (GRADS)
Central Area Vocational-Technical School, Cushing, Oklahoma

Overview

Guidance in Retraining Adolescent Dropouts (GRADS) was a cooperative effort involving the Oklahoma Child Service Demonstration Center as the grantee and the Central Area Vocational-Technical School (CAVT) as the project site. Originally developed to assist students with learning disabilities to improve their academic achievement, GRADS used prescriptive teachers to adapt instructional materials for students with special learning needs and to train regular vocational instructors in appropriate instructional methods. The project supported a resource center at CAVT that included a professional staff and computer-managed instructional support, affective interventions whose purpose was to improve students' self-concept and school affiliation, and inservice training for vocational instructors. The project targeted moderately at-risk youth who were still in school. Participants attended high school in one of 11 school districts that were feeders to CAVT. Originally intended to target highly at-risk youth, the project was required to modify this goal because youth had to be academically eligible to attend the area vocational-technical school in order to participate.

Key features of the project included twice-monthly group counseling for all participants and individual counseling as needed, adaptation of instructional materials for all vocational programs in which participants enrolled, computerization of vocational curricula to enable students to work on coursework in the resource center, and inservice training and support for vocational instructors to facilitate their success with at-risk youth.

Across the two study cohorts, GRADS participants were predominantly male (78 and 64 percent, respectively) and white (78 and 83 percent). Eighteen percent of Cohort 1 treatment students and 15 percent of those in Cohort 2 were Native American. These characteristics reflect the enrollment profile of the area vocational-technical center. Two-thirds of Cohort 1 students were age appropriate, while a slight majority (53 percent) of Cohort 2 students were age appropriate. Table B-3.1 in Appendix B provides comparable information for the site's control group members.

Plausible Outcomes

Participation in GRADS could be expected to result in the following outcomes:

- Improvement in vocational course grades and vocational skills
- Reduction in dropping out of school (and consequent increase in graduation rate)
- Development of more realistic postschool expectations
- Improvement in postschool employment prospects.

Results

Cushing, Oklahoma, a random assignment site, began operations in fall 1989, with random assignment of students to treatment or control groups and selection of an additional group of students for the gap reduction group. A second cohort entered the project (and the study) in fall 1990. Cushing was different from some of the other sites in that all students participating in the evaluation, including the treatment, control group, and gap-reduction students, spent half of each day in a vocational-technical school where they pursued a vocational program (e.g., electricity, motorcycle mechanics). The area school by itself may

have an impact on student performance independent of the treatment, which was an add-on to that component.

Baseline to 1989-1990. GRADS participants at CAVT experienced significant improvements in school performance in comparison with gap reduction students, though not in comparison with control group members. The treatment group gained significantly in terms of grade point average and credits earned, and reduced significantly the number of courses they failed. Gap reduction analyses reflected a perceived decrease in the safety of the school, while both analyses of covariance reflected a reduction in the perception of having received a lesser amount of academic encouragement.

While the instructional support services available to participants were also available to gap reduction and control group members, GRADS participants did receive services not available to other students, including particularly a strong group counseling component and a software system that integrated academic and critical thinking instruction with vocational content. However, neither of these components was fully available to participants during school year 1989-90. Many vocational instructors resisted sending their students to the groups, so a substantial number of participants did not really receive this service until toward the end of the school year; and some did not receive it at all. The software system was not available until near the end of the first semester, and some confusion about its availability meant that its use was not entirely restricted to GRADS students.

Baseline to 1990-1991. For both cohorts, gap reduction analyses demonstrated continued improvements in academic performance, including higher GPA, higher numbers of credits earned, and fewer courses failed. The combined cohort also reduced number of courses failed on the gain score and both covariance analyses. In terms of school affiliation, Cohort 1 showed a perceived improvement in future expectations.

Baseline to 1991-1992. Cohort 2 and the combined cohort for year two continued academic improvements in GPA, credits earned, and reduction in courses failed, compared to the gap reduction group. Analyses for Cohort 1, however, failed to show continued academic improvement in the third year. The only school affiliation measure with a positive outcome for this year was students' perception of better job preparation for Cohort 2 as well as for the

combined cohort's second year, compared with the gap reduction group. Cohort 2 exhibited reduced expectations for the future in this year in comparison with the control group.

Dropping out. Cohort 2, and the combined cohort for year 2, experienced significantly lower incidence of dropping out of school, indicating that the GRADS project achieved success on this measure after the project became fully implemented. Dropout rates for these cohorts, as shown in Table B-3.4, were as follows: four percent for the treatment group versus 19 percent for the control group among Cohort 2 students in the second year, and 10 versus 22 percent for the combined cohort's second year.

Summary

GRADS was one of the few demonstration projects that achieved significantly lower dropout rates among project participants. In addition, the project experienced positive outcomes in school performance in comparison with gap reduction students, although less so in comparison with control group students. The structure of the project, along with attitudes of some of the vocational teachers, may have constrained project effects somewhat. While substantial effort went into preparation of more user friendly instructional materials, including special computerized tutorials, to support students in their vocational programs, these materials were made available to all students in all programs open to high school youth at the vocational-technical center. Consequently, to the extent that the materials were helpful, all students (treatment, control, and gap reduction students) could have benefitted, thus potentially masking treatment effects in the area of school performance. The fact that the project achieved significant outcomes in retention of students suggests the efficacy of its support components, in particular the group counseling sessions at which students were encouraged to work on personal and other problems that interfered with their progress in school. Finally, the fact that the project's counselor, in addition to running the sessions, worked with individual students on myriad problems, from housing to disciplinary issues, probably helps to account for the project's success in keeping participants in school.

OASIS Alternative School
Oconee County, South Carolina

Overview

As the grantee, Clemson University planned to adapt Project COFFEE (Cooperative Federation for Educational Experiences) in cooperation with three local school districts. Like the original COFFEE project developed in Massachusetts for youth with severe emotional disturbance, the Oconee County project was an abbreviated-day alternative school that integrated academic and vocational instruction to increase the likelihood that participants would complete school and be ready to enter the labor force in good entry-level jobs. The Oconee project, called OASIS, targeted highly at-risk students (not special education students, though some participants had been enrolled in special education during their educational experiences), many of whom were chronic truants with multiple suspensions, had been adjudicated for drug or alcohol-related offenses, had serious personal or family problems, and were seriously behind in their progress to graduation. Key features of the project included location in a separate facility, low student-teacher ratio, individualized instruction, clear and consistently enforced behavioral expectations, an entrepreneurial business (construction and sale of picnic furniture), and intensive psychosocial support for students. The project supplemented CDP funds with a large grant awarded by the South Carolina Department of Education.

For Cohort 1, over two-thirds of treatment group members were male, compared with 58 percent of Cohort 2 students. Nearly all participants were white (92 percent of Cohort 1 and 83 percent of Cohort 2). Unlike the Academies or GRADS, substantially more OASIS students were overage for grade--58 percent of Cohort 1 and 92 percent of Cohort 2, a phenomenon that reflects their increased school problems relative to students of the other projects. Table B-4.1 in Appendix B provides comparable information for the site's control group.

Plausible Outcomes

Enrollment in OASIS could be expected to be associated with the following outcomes:

- Improvement in school attendance and persistence
- Increase in self-esteem
- Increase in school affiliation
- Possible improvement in school performance.

Results

The Oconee County project, a random assignment site, began serving students in mid-March of school year 1989-90, which meant that students were exposed to the intervention for less than three months. A second randomly assigned cohort entered the alternative school in fall 1990, and the study collected information on both cohorts, as well as on randomly assigned control groups and a gap reduction group, through the 1991-1992 school year.

Baseline to 1989-1990. The fact that most participants were very seriously deficient academically when they entered the project in spring 1990, combined with the typical instructional winding down that occurs at the end of the academic year, helps to explain the lack of school performance outcomes among project participants. Analyses of data from Oconee County failed to show improvement in any of the academic performance areas for any of the analyses.

On the other hand, the project's immediate success at facilitating participants' improved feelings about school and the school environment was reflected in several significant outcomes in the area of school affiliation. Participants viewed their teachers and instruction, and counselors and counseling, as better than they had previously experienced. The gap reduction analyses also showed a significant increase in the perception that high school prepared students to perform entry-level tasks in their chosen occupational field. The reliability-adjusted analysis of covariance showed an improved attitude toward teachers and teaching, while the gap reduction analysis showed an improved attitude toward counselors and counseling.

Baseline to 1990-1991. Cohort 1 demonstrated improved school performance--measured as higher grade point average (from 1.9 to 2.7, versus a constant 2.1 for the control group)--on all analyses, although Cohort 2 did not achieve improvement in school

performance in comparison with the control group. Other findings included perception of better job preparation for Cohort 1 and a belief that school was safer among Cohort 2 participants. Cohort 1 students, in comparison with those in the gap reduction group, perceived school as safer also.

Baseline to 1991-1992. Cohort 1 continued to improve their school performance, with significantly fewer courses failed and, compared with gap reduction students, fewer absences. While Cohort 2 did not show improvement in performance, the combined cohort for this school year showed improvement in GPA and in number of credits earned. The only significant finding on nonperformance measures was a reduced perception that classmates should not misbehave for the combined cohort.

Dropping out. None of the OASIS cohorts for any year achieved significant effects for dropping out. In fact, in the second and third year for Cohort 1 and in both years for Cohort 2, very high numbers of participants and control group members dropped out of school (See Table B-4.4 in Appendix B). For example, by Cohort 1's third year, 44 percent of participants and 58 percent of control group members had dropped out of or been expelled from school. Comparable figures for Cohort 2 were 70 percent for treatment, and 63 percent for control, group members and 46 percent and 44 percent for year two of the combined cohort. These high rates are in part explained by the fact that the project targeted highly at-risk youth, many of whom had previously dropped out or been expelled from school, and some of whom experienced legal and other problems that interfered with school attendance. Virtually all students were far behind their peers, and while participation in the project tended to improve their affiliation with school, for many this change was not sufficient to keep them in school.

Summary

OASIS represented a "last chance" for many of its participants. Early on, the school was characterized by a high level of caring and commitment on the part of staff, many of whom spent long hours working on strategies for improving their students' educational experiences. Additionally, many staff, in particular the school's first director, worked closely with students, parents, and others in attempts to solve students' personal, social, and legal

problems. His level of commitment to the school and the project's activities, the small classes, the student-operated business, the highly committed staff, and the personalization of services initially worked well for many students. However, some factors in the second year tended to cause problems for OASIS students, in particular the district's retraction of waivers regarding physical education and students' smoking on campus. Additionally, the stigma associated with attending the school was difficult for many students, as were the negative attitudes of other students experienced by OASIS students who attended the area vocational school during 1991-1992. Finally, the departure of the director at the end of the project's second year may have been discouraging to some of the students with whom he had worked closely. At the same time, the project did demonstrate some positive outcomes, and many of its participants became substantially more affiliated with educational settings and experiences than had previously been the case.

Youth Experiencing Success (Y.E.S.)
Center for Applied Technology South, Anne Arundel County, Maryland

Overview

Intended by the grantee, Clemson University, to be an adaptation of COFFEE, the Anne Arundel County project was unable to implement the model as intended, primarily because of lack of sufficient funds to support a replication or adaptation. Hence, rather than establishing an alternative school in a separate location, the project operated in one of the school district's area vocational-technical centers. Students took most academic courses at their home high schools and vocational courses at the center, which they attended for half of each day. Services provided to students during the first year (beginning in the second semester) included (1) enrollment in a computer-based, career-related English course whose emphasis was on communication skills, and (2) support from vocational specialists in the school's shops and labs, whose responsibility was to work with individual project participants during the regular class period on components of their lessons with which they were having difficulty. These two activities continued in subsequent years, and students were also offered

the opportunity for credit-bearing community-based education placements. The latter were intended to relate to students' vocational programs, although lack of available jobs meant that some students were unable to work in related areas.

Most project participants were male (81 percent of Cohort 1 and 72 percent of Cohort 2). A majority were white (52 and 61 percent); for the second cohort, 39 percent of participants were black. Eighty-one percent of Cohort 1 students were overage for grade, compared with 50 percent of students in Cohort 2. Table B-5.1 in Appendix B provides comparable information for the site's control group members.

Plausible Outcomes

Among the outcomes that might result from project participation are:

- Improvement in vocational course grades
- Improvement in communication skills and possible improvement in grades and number of credits earned in English.

Results

While Anne Arundel, a random assignment site, began serving students in January 1990, the full complex of services was not available until the 1990-91 school year. A second cohort was selected in fall 1990, and both cohorts were followed through the end of the 1991-1992 school year.

Baseline to 1989-1990. The fact that students participated in the project for one semester only during their first year may account for the fact that outcome data for this project showed only three statistically significant results. The reliability-adjusted covariance analysis showed a significant decrease in the number of days absent relative to the control group, although the average number of days absent actually increased from 9.51 in the spring semester of the year prior to the treatment to 11.87 days in the spring semester of the first year of treatment (the control group's mean number of days absent increased from 7.00 to 13.98). The gap reduction analyses found a significant improvement in grade point average (from .99 to 1.34).

Baseline to 1990-1991. On the basis of the gap reduction analyses, Cohort 1 students continued to show improvement in school performance as measured by grade point average. Additionally, Cohort 1 participants had an increasing perception that students in their classes were preparing for college and that they were receiving better job preparation. There were no significant results for Cohort 2 during this year.

Baseline to 1991-1992. Cohort 1 experienced improvement in grade point outcomes in comparison with the gap reduction group; Cohort 2 experienced the same improvement on gain score analyses (with a change from 1.3 to 2.3, in comparison with 1.2 to 1.8 for the control group), as did the combined cohort for year two. Cohort 2 and the combined cohort perceived school as safer, also.

Dropping out. No significant results occurred in terms of dropping out. Both treatment and control groups experienced about the same rates of dropping out: 47 percent for Cohort 1 treatment group members and 48 percent for control group members in their third year (school year 1991-1992); and 22 percent for both Cohort 2 groups in their second year. For the combined cohort, the year two treatment group lost 13 of 37 participants, while the control group lost 14 of 41 (35 and 34 percent, respectively).

Summary

Unlike the Oconee County alternative school, Anne Arundel was unable to obtain supplementary funds to support implementation of the COFFEE model that the grantee proposed to implement. Thus, the total resources available to the site were relatively small, a factor that affected the types and intensity of services that the project was able to offer participants. The fact that participants improved in grade point averages is probably directly attributable to two of the project's services: (1) the availability of a credit-bearing English course at the vocational-technical school, which emphasized communication and other skills that were closer to vocational students' interests than more traditionally "academic" English; and (2) students' participation in community-based education, which gave them credit--and pay--for jobs that related to their vocational interests. In addition to limited resources, a relative lack of school and district-level support for the project may have reduced its effectiveness with students. At the same time, students we interviewed expressed consistently

positive attitudes toward some project activities, in particular the assistance they received in completing their vocational coursework and the community-based work experience in which they participated.

Changing How Our Pupils Succeed (C.H.O.P.S.)
McFatter Vocational-Technical Center, Broward County, Florida

Overview

The third of the local project sites implemented under the grant to Clemson University, the C.H.O.P.S. project operated in an area vocational-technical school under the administrative purview of the school's director. Students took their academic courses at the vocational-technical center, entirely through computer-assisted instruction (CAI). (While the project staff intended to implement applied academics that integrated academic with vocational instruction, the school's director selected the CAI model instead.) Project participants enrolled in vocational programs at the center and were eligible to participate in the center's Industrial/Community-based Education (ICE) program, which permitted students to work in the community once they had completed 50 percent of their vocational competencies and, while working, to attend school only one day a week. Project components included counseling and other support activities, competency-based curriculum, student contracts, and a nonpunitive approach to attendance and discipline.

Initiated in fall 1990, the project involved only one study cohort. Most participants (85 percent) were male; 46 percent were white, 25 percent Native American, and 21 percent black. Nearly all (88 percent) were overage for grade, one of the criteria for enrollment in the project. Table B-6.1 in Appendix B provides comparable information on the site's control group members.

Plausible Outcomes

The project's participants, given enrollment in and completion of C.H.O.P.S., could be expected to achieve the following outcomes:

- Improvement in school persistence
- Improvement in postschool employment prospects, based on completion of a vocational program.

Results

The Broward project began operations in fall 1990; individuals were randomly assigned to treatment and control groups for the study's one cohort. Additionally, the site established a gap reduction group. The evaluation experienced a number of administrative delays and difficulties, centering around arrangement for implementing the design. District administrative structures meant that the project was located in an area vocational-technical center in the district's vocational education division, while the project itself was under the purview of a project coordinator who reported to the district official in charge of special needs. Because vocational-technical directors have considerable autonomy, implementation of the project within the center was largely dictated by the director rather than by the project coordinator. In addition, the evaluation staff experienced delays in obtaining local permission for the study, although the grantee had agreed to participate. These issues and delays affected the evaluation's ability to collect information and track students.

Baseline to 1990-1991. Gap reduction analyses showed a negative result among project participants in terms of number of credits earned. No other outcomes were significant in either direction.

Baseline to 1991-1992. Gap reduction analyses showed a negative result among project participants in terms of number of credits earned. No other outcomes were significant in either direction.

Dropping out. In the first year, three participants (16 percent) and four control group students (25 percent) dropped out. By the end of the second year, six (32 percent) participants and seven (44 percent) controls dropped out. None of these results was significant.

Summary

Because of a variety of implementation problems, both with the project itself and with the evaluation, results in this site were disappointing. Coordination among project staff and administrators was limited, and the site's version of applied academics was restricted to CAI. Even so, evaluation staff noted that the project coordinator and teaching staff had been effective in creating a nurturing environment for participants, including availability of personal counseling, a nonpunitive approach to attendance and discipline, and availability of tutoring support for students requesting it.

Vocational Continuum Program
Grant High School, Portland, Oregon

Overview

The Multnomah County School District No. 1, serving Portland, Oregon, obtained CDP funding to expand the district's Vocational Continuum Program, a multicomponent program whose overall purpose was to provide an integrated continuum of vocational support services for the district's at-risk students. Components of the program included the BRIDGE program for ninth and tenth graders, a curriculum intended to facilitate students' transition from middle to high school through provision of prevocational instruction, tutorial assistance, school socialization, study skills and time management, and other supports. Counseling and case management services were also available as appropriate; students participated in BRIDGE class for one hour each day. Following BRIDGE, students were to enter one of three options, including mainstream vocational technical education, applied academics/cooperative work experience, and Vocational Mentoring based on the experience-based career education model. Vocational Advocates would provide ongoing vocational counseling and guidance. Participants, students enrolled at Grant High School, were to spend one-half of each day at a local hospital for exploration of health-related careers and applied academics.

Because the project's timelines began with students recruited into BRIDGE in school year 1989-1990, the evaluation included these students in the first year and then selected a cohort of Grant High School students enrolled in Vocational Mentoring and matched comparison students as a second cohort beginning in school year 1990-1991. While some of the latter cohort had been in BRIDGE, not all had received the earlier component of the continuum.

Across the two study cohorts, Continuum students differed somewhat in terms of demographic characteristics. For example, Cohort 1 was predominantly male (78 percent), while a majority of Cohort 2 students were female (54 percent). Most Cohort 1 students were black (87 percent), compared with 46 percent of those in Cohort 2, which was 50 percent white. Finally, a majority of Cohort 1 students were overage for grade (52 percent), versus 38 percent of students in the second cohort. Table B-7.1 in Appendix B provides demographic information for the site's comparison group members.

Plausible Outcomes

Outcomes that could be expected to result from participation in BRIDGE include the following:

- Increase in school affiliation
- Possible increase in retention
- Eventual improvement in school performance.

Outcomes that could be expected of Grant's Vocational Mentoring students in eleventh and twelfth grades include:

- Improved school retention
- Improved postschool employment options.

Results

Portland was a matched comparison group site. As noted in the overview, the evaluation selected two cohorts, one from BRIDGE and one from Vocational Mentoring, along with matched comparison groups and a gap reduction group.

Baseline to 1989-1990. Enrollment in BRIDGE classes one hour per day had the general purpose of improving students' transition to high school, and the measurable benefit of this experience, with a fairly diverse set of activities for students characterized by a fairly high level of individualization, might require a longer term to demonstrate performance or affiliation effects. That participation had some effect on students' view of their educational experience is suggested by the finding that they perceived their counselors and counseling services as better. More specifically, the reliability-adjusted analysis of covariance showed a significant improvement in student attitudes towards counselors and counseling. In addition, Portland showed a significant reduction in the number of credits earned both in the regular analysis of covariance and the gap reduction analysis among Cohort 1 students.

Baseline to 1990-1991. Cohort 1 students failed fewer courses during their second year, while Cohort 2 students increased their absences, relative to the comparison group. Cohort 1 students perceived school as safer and believed that classmates were college bound, while Cohort 2 students demonstrated improved attitudes toward teachers and teaching and believed that their future expectations were better. The latter, unlike Cohort 1, experienced reduced perceptions that classmates were college bound. The combined cohort believed that school was preparing them for entry-level jobs.

Baseline to 1991-1992. Both cohorts improved in the number of credits earned, and Cohort 2 experienced a reduction in number of absences, relative to the comparison group. Gap reduction analyses indicated an increased number of credits and fewer courses failed for Cohort 1 and higher GPA and credits earned for Cohort 2. Cohort 1 perceived increased academic encouragement but less positive future expectations, and Cohort 2 thought school was safer. The combined cohort was positive on all school performance measures except dropping out, including higher GPA (from 1.9 to 2.0, versus 2.2 to 1.8 for the comparison group), higher number of credits, fewer absences, and fewer courses failed (1.7 to .7 for participants, 1.4 to 1.6 for comparison students).

Dropping out. Analysis of data from this site revealed no significant differences in dropping out across years or across cohorts. As shown in Table B-7.4 (Appendix B), substantial numbers of students dropped out or were expelled. For Cohort 1, by the end of the third year, 30 percent of the treatment group and 17 percent of the comparison group had

dropped out. For Cohort 2, 24 percent of the treatment group and 31 percent of the comparison group were no longer in school. Corresponding figures for the combined cohort were 23 and 26 percent, respectively, at the end of year 2.

Summary

Students recruited for the district's Vocational Continuum were typically highly at risk. Proportionally more students at the targeted high school were minority, eligible for free or reduced-price lunch, and more likely to drop out of school (the district's rate is between 25 to 30 percent, while the high school's was over 30 percent). Key components of the continuum intended to address the specific needs of such students, including individualized treatment, coordinated case management, mentoring experiences that paired students with hospital employees, small classes, and work experience opportunities. That services received by participants followed in the evaluation had a salutary effect is suggested by the generally positive outcomes achieved. While the project did not significantly affect dropping out, it did facilitate improved school performance among participants as well as improved school affiliation and generally more positive identification with school. These findings suggest that the project, particularly the components provided to students in Vocational Mentoring, was effective in reaching participants.

Preparing At-Risk Youth for Employment Program
Breithaupt Vocational Technical Center, Detroit, Michigan

Overview

Called STARS (Support Team for At Risk Students), the Detroit project operated in four of the district's area vocational-technical centers. The project provided support services to at-risk students enrolled in the vocational-technical centers, which operated on a two-shift schedule with vocational students spending one-half of each day pursuing a vocational program and the other half at their home high schools taking academic classes. Project staff served as vocational specialists, assisting students in the center's shops and labs with their

technical courses; staff also provided counseling support and coordination with students' home high schools. Finally, the project employed advocates who assisted limited English proficient participants with their coursework. The evaluation selected students from one of the area centers for tracking across two years of project participation.

Most students in the cohort were male (70 percent) and black (87 percent), with five percent white and seven percent Hispanic. Nearly all (79 percent) were overage for grade. Table B-8.1 provides comparable information for control group members.

Plausible Outcomes

Completion of the project could be expected to result in the following outcomes for participants:

- Improved vocational competencies
- Somewhat increased school retention
- Improved postschool employment options.

Results

Owing to major changes in the district's educational leadership and organization in fall 1989, the project did not get underway until spring 1990. Consequently, the evaluation, using a random assignment design, selected only one cohort, including treatment, control, and gap reduction groups, in fall 1990. While the project operated in several area vocational-technical centers, the evaluation limited data collection to students attending Breithaupt, a comprehensive area vocational-technical school known for vocational programs in meat handling, training of students to be chefs, and food service. The school has a widely regarded restaurant, where students learned the full range of food preparation and service. We followed participating and control students over two school years, through spring of 1992.

Baseline to 1989-1990. The project did not enroll a cohort in fall 1989 owing to delays in implementation.

Baseline to 1990-1991. During the first year, treatment students had higher grade point averages and earned a higher number of credits than did control group members. Both groups experienced a decline in credits, with the control group's decline greater (treatment

group decline of 28.6 to 21.8 versus 28.1 to 17.4 for the control group). In comparison with gap reduction students, participants earned higher GPAs but also had more absences. There were no significant school affiliation or student perception outcomes for this year.

Baseline to 1991-1992. Treatment group students continued to achieve a higher GPA compared with the control and gap reduction groups; they had more absences than the gap reduction group but also failed fewer courses. Their perceptions of positive future expectations declined relative to the control group.

Dropping out. The project achieved a significant reduction in dropping out. For 1990-1991, only three of 87 treatment students dropped out, compared to 13 of 96 control group members. For 1991-1992, six more of the participant group dropped out, versus 12 more of the control group. The effect was greatest among overage students: 24 of 65 overage control group students dropped out, while only seven of 69 overage participants dropped out. Dropout rates by the end of the second year were 11 percent for the treatment group and 26 percent for the control group.

Summary

Following a number of delays owing to changes in the district's administration and restructuring of the subdistricts in Detroit, the project began serving students in late spring 1990. To facilitate recruitment, the project was able to obtain a waiver from the district policy that created disincentives for students to attend the vocational centers (having to do with student-teacher ratios and consequent potential loss of teachers at the comprehensive high schools when students enrolled in the vocational schools). Once underway, the project provided substantial support services for identified students at the center, which is a well-equipped and well-managed vocational training facility.[2] Our findings suggest that the project succeeded in keeping participants in school as well as facilitating improvements in school performance.

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[2]Detroit's five area centers were constructed as part of a desegregation initiative; all are well equipped, though none is apparently operating to full student capacity. As in other large cities, many students (and parents) perceive vocational education to be unappealing, and stereotypically for "dumb" students.

Project COFFEE Vocational Training Program
Turtle Mountain, North Dakota

The grantee, the North Dakota Board of Vocational Education, intended to replicate Project COFFEE, working with high schools in or near the state's four Indian Reservations. The intent was to work with all high schools in each area (typically three, though in one site there were only two and in another site one of the three schools declined to participate). In general, for a variety of logistical, resource, and political reasons, the sites were not able to replicate the model but rather adapted it to local conditions in response to various constraints. Overall, the four North Dakota sites implemented a similar design that included several key components: (1) employment of an academic instructor to provide academic tutoring in subjects with which students were having difficulty, with the instruction provided on a pull-out basis; (2) employment of a vocational instructor to provide career guidance and employability skills instruction and to arrange work experience slots for students to the extent possible; and (3) payment of students for school attendance. The projects began serving students in mid-March 1989, which meant that participation in the first year was limited.

Overview

The Turtle Mountain site drew students from two area high schools. In its first two years, the site was more successful than others in efforts to implement a project comprising some of the key features of Project COFFEE. The project was located in a separate facility and served primarily dropouts who were working toward a GED. The academic instructor was working on integrating elements of the students' native culture into the career development curriculum and hoped to find participants work experience that would involve recording of their tribe's oral history. The vocational instructor, who had enrolled students in courses at an area vocational-technical center, was called into active military duty for the Gulf War, leaving the project with only one instructor for most of school year 1990-1991.

The majority of project participants in both cohorts was male (56 percent and 55 percent). All were Native American, and nearly all (88 percent and 82 percent) were overage

for grade. Table B-9.1 in Appendix B provides comparable information for the site's control group members.

Plausible Outcomes

Among the outcomes that this project might be expected to achieve are:

- Improvement in school attendance
- Improvement in school affiliation
- Increase in number of GEDs awarded.

Results

The Turtle Mountain site implemented random assignment, with selection of treatment and control groups in spring 1990 as the project got underway and again in fall 1990. Both cohorts also had a gap reduction group. Participants were drawn from two area schools; a third school, located on the reservation, declined to participate in the project. As with other study sites with two cohorts, the evaluation followed the first cohort for three years and the second for two years. Results include analyses for both cohorts and for the combined cohort's year 1 and year 2 experiences.

Baseline to 1989-1990. Students enrolled in the COFFEE project at Turtle Mountain improved their school performance in the area of attendance. In fact, Turtle Mountain, a random assignment site, is one of the few sites that showed a significant reduction in the number of days absent in both the reliability-adjusted and the regular analyses of covariance. Factors that may help to explain this finding include their receipt of payment for attendance and, perhaps more important, the commitment of the academic instructor to ensuring students' attendance. This commitment was reflected in her routine practice of picking participants up at their homes and driving them to school. Both covariance analyses indicated reductions in future expectations. As with the other North Dakota sites, it is important to remember that projects began serving students in March, leaving little time in the first year for interventions to demonstrate much in the way of student outcomes.

Baseline to 1990-1991. Other than dropping out, none of the school performance outcomes was significant during the year for Cohort 1. Cohort 2 students, in comparison with the gap reduction group, had higher grade point averages and failed fewer courses. The combined cohort had higher GPA. The combined cohort, versus the control group, felt safer at school.

Baseline to 1991-1992. None of the treatment-control or gap reduction comparisons met the criteria for significance for this year.

Dropping out. Turtle Mountain's Cohort 1 achieved significant, positive effects in dropping out for both 1989-1990 and 1990-1991, and the combined cohort had significant effects for year 1. Fifteen of 19 control group students dropped out by the end of the second year, compared with five of 15 treatment group students. By the end of their third year, however, an additional five treatment group students dropped out, for a 67 percent dropout rate, compared with 84 percent of control group students. Cohort 2's second-year rates were 50 percent for treatment, and 38 percent for control group members, and the combined cohort's second-year rates were 40 and 63 percent, respectively.

Summary

Projects implemented in North Dakota faced a number of environmental and implementation-related challenges that probably constrained their success in implementing the intended model and achieving positive student outcomes. Within these constraints, however, the Turtle Mountain project was able to have a significant effect on participants' retention, at least through their second year of participation. Additionally, the project had a positive effect on attendance in the first year for Cohort 1, possibly related to the policy of paying students for attendance. Given the difficulties faced by the project, these positive findings suggest the effectiveness of the work of the project's academic teacher, whose commitment and creativity were key to the progress the site was able to make.

Project COFFEE Vocational Training Program
Fort Totten, North Dakota

Overview

As with the other sites in North Dakota, resource and environmental constraints required the project to implement a limited version of the intended project model. The project operated at two high schools, one on the reservation and one nearby, with a project staff member (officially instructors but also serving as counselors and student advocates) located in each school. These instructors provided academic remediation on an individualized basis to project participants. Additionally, the instructor located at one of the two participating schools provided considerable individual counseling and psychosocial support to project participants. In the first year, some participants enrolled in vocational classes at an area vocational-technical center and received vocational counseling and employability skills instruction from project staff. Students received payment for school attendance.

A majority of participants in the two treatment cohorts were male (61 percent of Cohort 1 and 87 percent of Cohort 2). All Cohort 1 participants were Native American, while one of the 15 Cohort 2 participants was white and the remainder Native American. Most were overage for grade--78 percent of Cohort 1 and 80 percent of Cohort 2. Table B-10.1 provides demographic information on the control groups.

Plausible Outcomes

Among the outcomes that might result from participation are:

- Improvement in attendance
- Possible improvement in school performance.

Results

The project used random assignment for the two cohorts and control group members and also selected a gap reduction group for each of the two cohorts. As with other North

Dakota sites, services began in March 1990, which meant that the Cohort 1 students had limited access to project services during the first year.

Baseline to 1989-1990. Even within the limited time frame of the intervention during the 1989-90 school year, Fort Totten showed school performance gains: both the reliability-adjusted covariance analyses and the gap reduction analyses showed a reduction in the number of courses failed and an increase in grade point average, although students also earned fewer credits. Conversely, the site showed a significant negative treatment effect on the number of credits earned in both analyses of covariance. The two analyses of covariance were also consistent in finding a worsening attitude toward counselors and counseling.

Baseline to 1990-1991. Cohort 1 showed significant outcomes on gap reduction analyses for higher GPA and fewer courses failed. The cohort also perceived improved job preparation compared with the gap reduction group. Cohort 2 achieved higher GPA in comparison with the control and gap reduction groups, as did the combined cohort for this year.

Baseline to 1991-1992. The combined cohort, for the second year of participation, experienced an increase in the number of courses failed versus the control group and a higher GPA in comparison to the gap reduction group. The combined cohort also believed that classmates should not misbehave, based on control group comparisons.

Dropping out. Dropout performance was worse for the treatment group for Cohort 1's first year (1989-1990) but significantly better for Cohort 2's second year (1991-1992), when one of 14 participating students dropped out (versus 18 of 43 control group members). By the end of the third year, most Cohort 1 students had dropped out (74 percent), versus 41 percent of control group members. As noted earlier, Cohort 2 performed better on this outcome (seven versus 42 percent).

Summary

Given the challenges faced by the project, the presence of positive results on some school performance measures suggests that the additional support provided to participants by the instructors was important. At one school in particular, the instructor provided a great deal of academic and personal support to participants, advising them on their programs, helping

them to work out personal problems, and mentoring them as they began the transition from school. Further, receipt of payment for attendance likely motivated some students to remain in school. Another factor, mentioned by instructors and others we interviewed, was the importance of free meals that students received in school; for some, these were the only meals of their day.

Project COFFEE Vocational Training Program
Fort Berthold, North Dakota

Overview

Like the other North Dakota sites, Fort Berthold employed two instructors, one academic and one vocational, who provided services to participants who attended three widely dispersed schools in the area. During the first year of the project, the instructors were located in a retrofitted trailer on the campus of the area vocational-technical school in one locality, and students from the three participating schools were bused once a week to the trailer for academic remediation and career guidance and employability development. Primarily because of distances (one school was 60 miles away and another 35 miles distant), participation rates were very low, with only students from the nearby high school attending with any regularity. For the second and third years, instructors "rode circuit," visiting each of the schools during the week rather than asking students to travel to them. As with the other sites, students were paid for school attendance.

Most project participants were male (62 percent of Cohort 1 and 67 percent of Cohort 2); nearly all were Native American (with Cohort 2 enrolling one white student). A substantial majority were overage for grade--69 percent of Cohort 1 and 73 percent of Cohort 2. Table B-11.1 provides information on characteristics of the control group.

Plausible Outcomes

Project participants could be expected to make gains in the following areas:

- Improvement in attendance
- Possible improvement in school performance.

Results

Fort Berthold, North Dakota, a random assignment site, enrolled two cohorts, the first selected in spring 1990 and the second for fall 1990. Each cohort included a randomly assigned control group and a gap reduction group.

Baseline to 1989-1990. Treatment group members in Cohort 1 showed a significant *increase* in the number of courses failed in the gap reduction analysis. Both analyses of covariance found a reduced perception of receiving preparation for entry-level tasks in students' chosen occupation and an increased sensitivity toward the disruptive behavior of their classmates. The reliability-adjusted covariance analysis and the gap reduction analysis both found an increasing perception that classmates were preparing for college. The regular analysis of covariance found *reduced* expectations for the future. Finally, gap reduction analyses found a reduced perception among participants of receiving adequate help in choosing courses.

As with other project sites, project services at Fort Berthold were available to students for a short period in the spring of the year, a reality that must be considered in viewing these results. Further, the project's service arrangement for this period required that students be bused long distances from two of the three participating schools to receive services. Students often chose not to make the trip. Recognizing this problem, the project revised the service plan for year two, taking the services to the students. School administrators and project staff were considerably more comfortable with this arrangement.

Baseline to 1990-1991. By the end of this year, most Cohort 1 students were no longer available for analysis, and no significant results were found. For Cohort 2, participants earned fewer credits in comparison with the control group but more than the gap reduction group, as did the combined cohort. Cohort 2 students perceived teachers and teaching, and

counselors and counseling, more negatively than did the control group, but did perceive the school as safer and believed that classmates should not misbehave.

Baseline to 1991-1992. For the combined cohort, treatment students had fewer absences and failed fewer courses than did the control group. They earned more credits in comparison with the gap reduction group. Cohort 2 students continued to perceive teachers and teaching as worse.

Dropping out. Performance on this outcome was not significant, although dropout rates were quite high. For example, by the third year, 60 percent of Cohort 1 treatment students and 40 percent of control students had dropped out, compared with only 14 percent of Cohort 2 treatment, and 21 percent of control group members. However, the numbers available for analysis were consistently small in this site. In addition to students verified as having dropped out, the evaluation was unable to track most students after the first year, which seriously limits confidence in the findings.

Summary

The distances among the three schools participating in the project, along with relatively low levels of administrative support in two of the three schools, limited the ability of the project to perform. While the two project-employed instructors were enthusiastic and concerned, the necessity to implement an essentially pull-out remediation model of services, with low levels of integration between academic and vocational components, combined with limited vocational offerings and limited job opportunities, constrained their ability to improve the educational experiences and outcomes of participants.

Project COFFEE Vocational Training Program
Fort Yates (Standing Rock), North Dakota

Overview

Like other North Dakota sites, a variety of factors, including resource limitations, weak administrative support at some schools, and lack of work experience opportunities, prevented the site from implementing a COFFEE model. The project employed an academic instructor who provided individualized instruction on a pull-out basis to students who were having difficulty in their academic classes and a vocational instructor who provided career guidance and employability skills instruction. Additionally, the vocational instructor attempted to develop work experience slots for participants, although the very high local unemployment rate (nearly 80 percent) limited effectiveness of this effort. Students, who were drawn from three area schools, received payment for school attendance.

Most participants were male--53 percent of Cohort 1 and 69 percent of Cohort 2, and nearly all were Native American. A substantial majority were overage for grade--76 percent of Cohort 1 and 63 percent of Cohort 2. Information on characteristics of control group members appears in Table B-13.1 in Appendix B.

Plausible Outcomes

Expectable outcomes include the following:

- Improvement in school attendance
- Possible improvement in school performance.

Results

Like the other sites, Fort Yates implemented a random assignment design along with a gap reduction group. The first cohort entered the project in spring 1990, and the second in fall 1990.

Baseline to 1989-1990. In its first year, the project at Fort Yates did not demonstrate significant outcomes for any of the measures of interest. This project site was located in an

area characterized by the most difficult environmental problems of any in the evaluation. Unemployment was at 79 percent; there were almost no jobs available. Per capita income was very low, and many students were reported by school and project staff to come to school at least in part to eat breakfast and lunch--the only meals of the day for many of them. It was difficult to attract teachers, and relationships between the two public school districts and the BIA school were problematic. Further, many of the school administrators did not support the project, which made implementation even more difficult. The project's director hired two highly experienced and committed instructors for this site, and hoped that she and they would be able to solve some of the problems that this site experienced during the first year.

Baseline to 1990-1991. Cohort 1 achieved no significant school performance outcomes. Further, participants perceived teachers and teaching to be worse and that they received less academic encouragement in comparison with the control group. Cohort 2 experienced higher grade point averages (1.8 to 2.0 versus the control group's 1.9 to 1.5). The combined cohort also had a significantly higher grade point average. Cohort 2 had fewer absences than the control group; both groups' absences increased--the control group's from eight to 13 days and the treatment group's from eight to 10.

Baseline to 1991-1992. Neither cohort achieved significant improvement in any school performance outcomes, and the combined cohort failed significantly more courses. Similarly, there were no significant findings in school affiliation or student perception outcomes, other than Cohort 2 (and the combined cohort's) view that many of their classmates were college bound.

Dropping out. While the results were nonsignificant, substantially fewer students dropped out than was the case at the other North Dakota sites. For Cohort 1, only 19 percent of treatment students and 31 percent of controls had dropped out by the end of the third year, compared with 19 percent of treatment and 23 percent of control students in Cohort 2. These findings may reflect the severe restriction on nonschool options (particularly lack of jobs) available to youth in the Standing Rock area.

Summary

As noted earlier, environmental conditions in the area were consistently difficult. This problem was exacerbated by the lack of support for the project among school administrators, particularly those at the BIA school. At the same time, the fact that students received payment for school attendance probably had a salutary effect on their retention. Nevertheless, substantially more intensive interventions would likely be necessary to improve the educational experiences and outcomes of the youth living on or near this reservation.

CHAPTER 5: SUMMARY AND IMPLICATIONS

As noted throughout this report on the experience of the CDP dropout prevention and reentry projects, a number of factors affected the extent to which each of the projects included in the in-depth evaluation succeeded in implementing the project designs for which they received funding from OVAE and in achieving positive effects on participants' school performance and affiliation. Many of the early problems experienced by the projects resulted from issues of timing, in that the grantees received funding during the summer, too late to complete planning, staffing, and logistical arrangements required to begin serving students according to their initial schedules in fall of the 1989-90 school year. Two of the sites were unable to initiate services at all during the 1989-90 school year, while others began serving students during the second semester. To some extent the first year of the demonstration was really a "pilot" for these projects, during which they worked out operational details and essentially prepared for full-scale implementation in school year 1990-91. The few projects that began serving students in September 1989 experienced delays that affected some components of their activities. For example, Cushing, Woodside, and Carlmont were unable to get their computer labs underway until mid-year, primarily because of delays in delivery and installation of equipment. In some sense, then, evaluation of the second and third years of the projects is a fairer test of the types of outcomes that dropout prevention projects using vocational education as an intervention can achieve with students.

The relatively modest student-related outcomes demonstrated by many of the projects over the course of the evaluation reflect the difficulty of overcoming the myriad political, logistical, and environmental factors that require attention as grantees attempt to implement even well-conceived and tested strategies for improving the educational experiences and outcomes of at-risk adolescents. Perhaps more important, they reflect the difficulty of changing what have typically been many years of unproductive--often painful--educational experiences for these youth. Even so, the demonstration included some successful projects, reflecting a variety of strategies for addressing the problems of their target population. These strategies included the school-within-a-school model of the two Business Technology Academies, the alternative school for highly at-risk youth as implemented in rural South

Carolina, and the supportive services provided to students attending vocational-technical schools in both rural (Cushing) and urban (Detroit) settings. In this chapter we discuss our findings regarding the relative success of the projects in the evaluation. We begin with a brief review of the projects' outcomes as a context for our discussion of some possible explanations for the findings.

Summary of Participant Outcomes

As noted throughout this report, the CDP demonstration's primary intended outcome was reduction in dropping out among project participants, or, for reentry projects, return to school. Given the likelihood that projects might achieve other, intermediate, outcomes (e.g., improvement in school affiliation or performance) prior to changes in dropping out, we also examined a number of these outcomes. In sum, the number of the 12 total project sites that achieved each of the outcomes of interest, relative to the outcomes of the comparison or control group, in the evaluation were as follows.

Outcome	Number of Projects With Outcome
• Reduction in dropping out	4
• Increase in grade point average	10
• Reduction in number of courses failed	7
• Increase in number of credits earned	5
• Reduction in number of absences	5
• Improvement in students' perception of teachers and instruction	4
• Improvement in students' perception of counselors and counseling	2

• Increase in students' perception that school is safe	7
• Students' perception of receiving more academic encouragement	4
• Students' perception of receiving better job preparation	3

As this summary notes, only one-third of the projects achieved significant reduction in the number of participants who dropped out of school. They were generally more successful, however, in terms of school performance and affiliation, with 10 of the 12 demonstrating increases in participants' grade point average, seven showing reduction in number of courses failed, and seven showing improvements in participants' perceptions of the safety of their school environment. Five projects achieved reduction in the number of absences. Subsequent sections of this chapter discuss these findings in the context of the projects' "treatment" and relative levels of implementation over the three-year life of the demonstration.

Proximity

Our experience with the projects that participated in the evaluation suggest that organizational location, in combination with the location of project sites and services, affected project implementation and consequently participant outcomes. Three of the grantees (Sequoia Union High School District, Detroit Public Schools, and School District #1, Portland, Oregon) were local education agencies, with grantee staff located in district administrative offices. Sequoia and Portland located the project in comprehensive high schools, while Detroit provided services to students attending four of the district's five area vocational-technical centers. While school-level support was a problem for one or two of these project sites, in general the organizational (and probably geographical) proximity of the grantee to the location of services increased the likelihood that project staff could stay on top of project activities. In particular, this proximity facilitated identification of appropriate staff, resolution of resource problems and needs, and ongoing "hand holding." The fact that project

directors were central office staff carried with it a certain credibility that also facilitated cooperation at the school level. While other factors contributed to these projects' success, location of the project within the administrative structure that governed the location of project services probably contributed to the efficiency and effectiveness of the projects.

Conversely, three other grantees were physically and administratively distant from the sites. The Cushing project, located in a regional educational service organization with the project in a nearby area vocational-technical center (with 11 LEAs feeding students to the center), faced challenges in developing good working relationships with the school's staff and administrators, in part because the project staff were initially viewed as "outsiders" who lacked understanding of the area school's informal structure and were not widely experienced in vocational education. The fact that project staff all possessed extensive experience in working with school and district teachers and administrators around the state and nation in their role as facilitators for the National Diffusion Network helped them to overcome many of the barriers they faced initially in developing effective working relationships, as did their ability to visit the site of project services on a daily basis and to locate key staff onsite.

The other two grantees, one a university and the other a state board for vocational education, were far removed from the location of project services. The University established relationships with three LEAs, two of which, located in distant states, implemented services in area vocational-technical centers, while the third (the one located nearest the university) established an alternative school. The state board developed relationships with 10 independent school units (variously independent school districts, tribal organizations, and BIA schools) located at great distances from the state capital on or near four reservations across the state. None of these schools was a vocational school, which meant that the connections between the state board and the project sites was tenuous at best. Obtaining agreements from the schools and districts required a great deal of time and persuasion on the part of the project director, who worked in the state capital but spent much of her time traveling around the state on behalf of the project. While the impetus to establish a project under these conditions was laudable, the problems implicit in the distances and in the lack of any direct organizational control on the part of the grantee over the participating schools were nearly impossible to overcome. In combination with prevailing economic conditions and other factors, the paucity

of positive participant outcomes in these sites is not surprising. At the same time, this project's experience is instructive in the context of attempts to develop and implement strategies for improving education in extreme rural areas of the country.

Overall, then, our analyses suggest that a close linkage between the grantee and the location of project services is likely to facilitate both implementation and outcomes. While these close connections are not, by themselves, sufficient to ensure effective projects, their absence constitutes a barrier that is difficult to overcome in attempts to implement demonstration projects like those funded under CDP.

Experience With the Model

In general, our findings suggest that grantees interested in implementing strategies to improve the educational experiences and outcomes of at-risk youth achieve more early, and ongoing, success if they are implementing models they know well. The Sequoia Union High School District in California implemented the Academy model in two of the district's eight high schools. This district already had Academies in place in two other high schools, and the CDP grant's project director was responsible for implementation of the earlier Academies, which have been in place for about 10 years. Her familiarity with the model--and issues requiring resolution for its effective implementation--enabled the district to have most components in place, or at least arranged for, at grant award. Perhaps more important, her long career with the school district and high credibility with the implementing high schools' administrative and instructional staff facilitated effective response to ongoing problems that occurred over the course of the demonstration. In short, the high level of knowledge of this model, including its limitations as well as its advantages, facilitated its effective implementation and helps to explain the projects' success in terms of student outcomes.

Similarly, staff at the Oklahoma Child Service Demonstration Center in Cushing had developed the service design they implemented at the area vocational-technical center. Originally intended for adolescents with learning disabilities, the model was adapted to address the needs of at-risk youth attending the vocational-technical center. Further, prior to

award, the grantee had already finalized plans for collaborating with the area center, which included a formal agreement with the center's administration to participate in the project and to follow the evaluation's intended design. These factors facilitated the project's successful implementation in fall 1989. Even so, the project's participant outcomes were modest, principally, we believe, because most of the project's services were available to all students (participants, control group members, and classmates in the vocational programs in which participants enrolled during the demonstration) and because the center required participants to meet the school's regular eligibility requirements, thus probably masking the effects of the intervention.

Even when grantees planned to adapt or expand locally developed service designs, local conditions could interfere. The experience of the Detroit Public Schools is instructive in this regard. Funded to expand a model that the district initially developed for youth with limited proficiency in English, the project was unable to initiate services as planned because of major changes in the district. These changes included replacement of most of the school board, appointment of an interim superintendent whose charge was to reorganize the district, and a hiring freeze that precluded hiring a project director until well into the second semester. Nevertheless, even given the late start of this project, its strategy of providing supplementary support to students attending the city's area vocational-technical centers proved effective in terms of student retention, with students who received the special instructional support, counseling, and other project services significantly more likely to remain in school and to improve their grade point averages.

Unlike these grantees, the two grantees that planned to replicate a nationally validated model, Project COFFEE, in a total of seven localities lacked experience with that model, a factor that probably exacerbated problems with its implementation. To facilitate local implementation, the Clemson project provided preimplementation training on COFFEE to representatives of each of the local sites that participated in the project, including a presentation by COFFEE's originator and provision of materials on replicating COFFEE. Additionally, the project made extensive technical assistance available to the three sites, through visits, telephone calls, and an electronic network. However, even this level of assistance failed to overcome the various local administrative and other problems that two of

the sites faced in attempting to implement COFFEE in a way that would be acceptable to the administrators of the two area vocational schools that served as the location of project services. Lack of adequate funds to implement the model also exacerbated the effects of low administrative support these two sites faced as well, an inference supported by the fact that the third participating district, which was able to obtain additional funds, experienced greater success in replicating the model.

It is important to point out that the problems faced by these and other sites attempting to replicate COFFEE were not necessarily the result of this model's complexity but rather at least in part the result of factors that had to be addressed during the projects' early stages. Also initially developed to serve youth identified for special education services (in this case youth with serious emotional disturbance), COFFEE is an alternative school model that differs more markedly from the organization of "regular" schools than many other dropout prevention initiatives. It requires a separate location, small class size, extra preparation and consultation time for teachers, an integrated academic/vocational curriculum, a student-operated business, availability of counseling, and other features, which make it expensive to implement. None of the funding levels proposed by, or awarded to, CDP grantees was sufficient to replicate this model, and decisions had to be made about which features to keep and which to drop in order to operate a project at all within the constraints of available funds. The changes that were necessary essentially diluted the model to the extent that intended outcomes were not achievable.

Other problems also limited the replication of the COFFEE model. For example, another of the intended COFFEE replications, in Broward County, Florida, elected to establish a school-within-a-school in one of the district's area vocational-technical centers. Issues of administrative control over the project's decisions regarding selection of curriculum and instructional design as well as other aspects meant that the environment was not favorable to implementation of the project as intended by its local director, and participants' lack of success in outcomes measured by the evaluation reflects the problems experienced by the project. Additionally, the evaluation itself was less effectively implemented in that locality than elsewhere, based on our early misunderstanding of district policies and operational realities. For this reason, implementation may have been difficult in several respects. As

noted in our discussion of the North Dakota experience, certain features of the model were incompatible with state policies and regulations for education. Other features were not susceptible to implementation locally because of economic conditions, resource issues, and distance. It is possible that prior experience with the model might have ameliorated some, though certainly not all, of these problems.

Only one site, Oconee County, was able to undertake a faithful replication of the model, using considerable additional funding obtained through a grant awarded by the state. In addition to following the essential features of the model, Oconee also targeted highly at-risk youth for services, which is essentially the population COFFEE intends to serve. Although Oconee students were not necessarily identified for special education services (a few were), they were youth with serious educational problems for whom the alternative school was probably a last resort, and project staff worked hard to implement a design that would enable them to reach these youth.

Again, however, Oconee was the only site of the seven that intended to replicate COFFEE to experience much success in adopting the model. The others were in most instances providing important services to their target groups, but they were not replicating the model. Perhaps, then, one of the lessons from our evaluation is that this type of demonstration program may not be the appropriate context for attempts to replicate validated models unless the grantees have prior experience with the model they select and the resources needed to implement it fully. Rather, it may be more productive to support districts in expanding or adapting designs with which they have prior experience. The alternative is to arrange for sufficient technical assistance to ensure that localities develop the capacity to replicate some of the validated models. Additionally, decisionmakers responsible for allocating resources in demonstration programs need to be sensitive to the costs of these validated models. Absent sufficient resources, effective replication is not possible even given adequate technical assistance or other capacity-building activities.

Matching of Services to Targeted Youth

Another factor that affects outcomes is the efficacy of particular service designs for participants. Project success hinges to a great extent on careful analysis of the types of youth targeted for services, and on provision of services that are appropriate to the specific target group. Outcomes achieved by the projects should be viewed in this light. It is clear that the definition of "at riskness" encompasses a broad range of youth, and a broad range of needs. For example, participants in Cushing's GRADS and Sequoia's Academies were at risk, with educational and personal problems that had constrained their affiliation with and performance in school. However, these youth could be considered less seriously at risk than the groups targeted by some of the other projects. Cushing participants had to qualify for the vocational-technical center, which meant that they must be on track to graduate. Academy students had to demonstrate motivation, a certain reading achievement level, and be without severe behavioral problems. The soundness of these projects' designs for these students is suggested by their outcomes, as well as by the success of their implementation.

On the other hand, even given effective implementation, committed staff, and a supportive environment, Oconee's efforts to improve the educational outcomes of a highly at-risk target population were likely to succeed slowly, if at all. Nevertheless, the project's early success was reflected in positive changes in some of the school affiliation outcomes, and to the extent that the project was able to encourage even some of these youth to finish school, it could be considered successful. Similarly, participants in the North Dakota projects experienced personal problems and environmental deprivations that would defeat most people. Even so, some of the project sites succeeded in encouraging participants to come to school more regularly, begin to think about their futures, and otherwise respond positively to their involvement in the project.

The Role of Academics

Academic components of the projects ranged from pull-out tutoring to help students catch up in academic courses, which was one of the key components of the North Dakota projects, to the integrated academic-vocational curriculum of the Business Technology Academies. All of the projects, even those whose original design focused mainly on supplementary assistance in vocational courses, eventually paid some attention to participants' academic needs. Cushing's GRADS project, for example, set up a learning center that contained materials intended to help students master their vocational course work. Early in the project's life, however, students began bringing their academic assignments to the center, and the two center staff devoted a fair amount of time to assisting participants with basic skills on the theory that such assistance would help students make the grades they needed to stay enrolled in vocational education as well as to perform better in their vocational courses.

The Anne Arundel and Broward projects offered at least some academic course work at the area vocational-technical centers in which the projects operated. Anne Arundel implemented a computer-based vocational English course, for which participants received regular academic credit, that focused on communication skills and employability development. As part of its school-within-a-school design, the Broward project implemented a computer-assisted instruction system for participants' academic course work that the school's executive director selected. The project made tutoring assistance available to students who experienced difficulty.

Finally, the two Academies and the Oconee alternative school provided academics as an integral component of their projects. All three projects implemented small classes, collaboration among teachers in planning courses and monitoring participants' progress, and integration of academic and vocational content. That this approach shows promise for improving academic performance and attitudes toward school is reflected in participants' outcomes. At one of the three, Carlmont Academy, participants became sufficiently engaged in their required math courses (algebra) that they successfully lobbied the project to add an Academy geometry course to the project.

The experience of the dropout prevention projects point to the importance of attention to both vocational and academic aspects of students' high school programs. In the past, many--perhaps most--high school vocational programs have been physically and psychologically dissociated from academics, in part because of the stereotypes vocational education has often suffered and in part because of physical separation of these two aspects of high school. Our study suggests that this separation is both unrealistic and misguided. Even in the projects that planned to provide supplementary assistance to participants' vocational work, staff inevitably found themselves attending to students' academic needs as well, through tutoring, coordinating with academic teachers, and teaching academics in order to teach vocational content. The more comprehensive projects typically recognized the inseparability of the two components of high school in their efforts to integrate the two, as well as to avoid perpetuating the traditional negative stereotypes that vocational education has typically faced. Our observations of students in the computer labs during lunch period, working on English papers, spreadsheets, and other vocational assignments supports the notion that a strategy that integrates academics into vocational curricula may help to engage students and improve their overall performance.

The Importance of Personal Supports

As noted earlier, the projects funded under CDP intended to affect students who had often experienced years of failure and frustration in school. Recognizing the difficulty of turning such youth around, many of the projects planned activities that would offer participants some level of adult supports beyond that available in the classroom. These included, for example, biweekly group counseling led by a licensed clinical psychologist; employment of specialized staff such as guidance counselors, instructional support staff, or attendance monitors; and implementation of mentoring. Perhaps equally important, virtually all of the projects in practice provided personal support to participants. Academic and vocational specialists in the North Dakota sites typically devoted much of their time with students to addressing personal concerns. The Oconee project director spent many hours

working with students, families, law enforcement, and others in attempts to help students resolve their serious personal problems. All of the projects located in area vocational-technical centers employed staff who provided student support, in addition to staff in charge of formal counseling activities. Perhaps least often acknowledged but equally important, many of the shops and labs that students spend much of their time in were organized in a way that provided a supportive environment. Typically, vocational classes are small; students often work in small groups or teams, collaborating on projects, and the instructor often functions more nearly as a "supervisor" than as a more traditional teacher. For many students, this environment, particularly in combination with other project components, appeared to facilitate engagement in a way that had not occurred in the more traditional school environment. Most of the projects with components that addressed participants' personal support needs showed improvements in students' affiliation with school; although our data do not permit us to say with confidence that these services by themselves made a difference, our anecdotal evidence suggests their importance in the overall success achieved by the projects.

The Efficacy of Vocational Education as a Dropout Prevention Strategy

As noted in Chapter 3, at the secondary level the term "vocational education" covers a broad range of activities, from a class in career exploration to preparation for entry-level jobs in a specific occupation (such as motorcycle mechanics or cosmetology). By design and in some instances by default, the projects that participated in the evaluation varied widely in the types and amounts of "vocational education" they provided participants, and the efficacy of this service as a dropout prevention strategy must be viewed in this light.

The projects located in area vocational-technical schools (Cushing, Detroit, Anne Arundel, Broward) provided services within the context of the vocational programs students were pursuing. For example, the Cushing project worked with vocational instructors to identify student needs, reviewed instructional materials, and developed more user-friendly materials based on analysis of reading levels and other factors. Additionally, the project

operated a learning center where students could obtain extra help with their vocational courses and work on computer programs keyed to vocational content. However, because most of these services were made available to all students, both project participants and control group members, their efficacy as dropout prevention was difficult to isolate.[1] While the project did achieve reduction in dropping out, outcomes in other areas might have been clearer had the "treatment" not been available to all students. At the same time, the efficacy of these "supplementary" services may not be sufficient to qualify as a true vocational intervention and thus may not be a fair test of vocational education in dropout prevention.

The other area school projects also contained such "supplemental" services--provision of instructional support staff in shops and labs, learning center services, vocational and personal counseling. Positive outcomes accompanied these supports in Detroit (reduced dropouts, higher GPAs) and in Anne Arundel. In addition to these supplementary services, the Anne Arundel project implemented a computer-based, credit-bearing vocational English class and credit-bearing, paid work experience. The latter was intended to be related to students' vocational programs, but in general students were unsuccessful in finding jobs in their vocational areas and were permitted to take any jobs available as part of the work experience component. The combination of these components did yield improvements in students' GPAs as well as some improvement in school affiliation measures (perceptions of job preparation and view of the safety of the school environment).

Overall, however, most of these projects did not really *establish* vocational education as an intervention, since most participants had already arranged to enroll in vocational education and received project services to supplement their vocational courses. This was not the case in Detroit, which recruited students to attend area schools in order to participate in the project, which may help to explain improvements in grades and persistence. A fairer test of vocational programs as a dropout prevention strategy might be examination of the extent to which selection of a vocational program in an area vocational-technical school instead of an

[1]Further, since the school declined to adjust admission requirements for the demonstration project, students served may have been less at risk and thus more nearly comparable to control group members, thus reducing the potential of the treatment to show large differences.

academic program in a "regular" high school affects youths' likelihood to remain in school. This comparison was not really available to the evaluation.

Our findings suggest that the type of vocational education provided to less severely at-risk youth through the Academy model does seem to work for those youth (given the caveat that the evaluation was unable to implement random assignment in the two Academy sites). The chief "vocational" component received by study participants in the two Academies was an integrated academic-vocational curriculum whose vocational emphasis was business technology provided in newly outfitted computer labs that housed up-to-date technology (part of which was donated by local businesses). Students worked on academic tasks (e.g., English papers) in the labs, and teachers worked together to plan assignments that would integrate their business technology with their academic course work. The evaluation's findings suggest that this curriculum succeeded in engaging participants, as evidenced by improvements in academic performance and school affiliation. It is interesting that the other "vocational" aspects of the traditional Academy model--mentors and paid work experience--did not work well in these two sites. Possibly because of economic conditions, jobs in fields related to students' course work were difficult to find. Further, many students already had jobs that, although they were not related to course work, paid better than related jobs; predictably, students were unwilling to give those jobs up. At least one of the Academies experienced difficulties in maintaining a mentoring program, with students apparently not much interested in having mentors and teachers not entirely successful in locating businessmen who would match up well with Academy students in terms of interests and personal characteristics. Further, given the existence of several other Academies in the area, it is possible that a saturation point may have been reached in terms of numbers of people who would be interested in making the commitment that this type of volunteer work requires.

The Oconee alternative school represents another approach to vocational education. While the intent had been that students in their second year of enrollment at OASIS would go to the area vocational-technical school and enroll in a vocational program, reluctance on the part of vocational school administrators along with district policies regarding eligibility for enrollment at the area school made this option infeasible for most participants. As a COFFEE replication, however, the project did establish an entrepreneurial business--

manufacture and sale of picnic furniture--that engaged the interest of many students. The business offered youth the opportunity to learn many aspects of small business, including marketing and sales, accounting, ordering and production, etc. Given the rural nature of the project's location, the opportunity to learn multiple aspects of small business or self-employment could be considered particularly useful to individuals who would likely enter such employment following graduation. Its availability may help to explain the improved school affiliation experienced by project participants as well as the modest improvement in school performance.

Finally, in part based on the EBCE model, the Portland project implemented a vocational mentoring model based on a formal agreement with a local hospital. The model involved students' exploration of health careers based on "shadowing" hospital employees, work with employees who served as mentors, and work experience in the hospital as well as conduct of some of their academic classes at the hospital. This model, intended in part to interest participants in pursuing health careers at the postsecondary level, yielded positive outcomes in terms of school affiliation and school performance, though it did not eventuate in reduced dropping out, based on the performance of a matched comparison group.

One of the continuing claims of vocational educators is that youth who are alienated from the traditional "seat-based" academic model of high school education are more likely to remain in and complete high school if they have the opportunity to enroll in vocational education. At the same time, these educators generally agree that haphazard enrollment in vocational education that does not include a coherent, sequenced program leading to entry-level employment or further training at the postsecondary level may not offer much payoff to youth in terms of posthigh-school options. The extent to which this evaluation sheds light on these issues is mixed. On the one hand, some of the "newer" generations of activities that fall under the rubric "vocational education," such as the integrated academic-vocational curriculum of the Academy model, Portland's vocational mentoring (which is one component of a districtwide continuum of vocational options geared to the full range of student capabilities and interests), and the COFFEE model of student-operated business, appeared to engage students and may have facilitated positive outcomes, although not a demonstrated reduction in dropping out.

On the other hand, the demonstration program was not structured to test whether enrollment in a program of vocational education, in an area school, retained students, primarily because the projects that operated in these schools provided supplements to the basic program rather than the program itself. Further, in most localities, the CDP project's existence caused discomfort within the environment of those schools, with administrators concerned that at-risk students would disrupt the school environment and instructors concerned that project services might interfere with the amount of time available for teaching. The answer to the question of whether vocational programs retain potential dropouts will require a study that involves comparison of individuals who either do or do not enroll in such programs rather than comparison of those who receive supplemental services with those in the same programs who do not receive the extra services. The one project, Detroit, that apparently did recruit students to vocational education and compared those students with a control group not enrolled in vocational education did achieve reduced dropout rates. While given various implementation problems this finding should be viewed as tentative, its existence does suggest the advisability of further study under better controlled conditions to provide an answer to the question of whether vocational education will both keep at-risk youth in school and improve their postschool economic prospects.

Structural Changes

Within the constraints of the high school environment as it currently exists, including, for example, increasingly complicated and time-consuming graduation requirements, limited resources to support "special" services for students who are headed toward failure and early departure, and increasingly rigorous responses to discipline and safety problems, the projects that participated in the evaluation experienced some success in designing and implementing strategies to improve the school experiences and outcomes for the at-risk adolescents they targeted for services. Two of the project models aimed to change all or most of the school experience. The school-within-a-school creates a smaller, more coherent environment for students on the theory that this environment will facilitate development of self-esteem and

motivation while not closing participants out completely from the activities of the larger school environment (e.g., extracurricular activities) for at least part of the day. These projects appear to succeed to the extent that they become identified as "special" in a positive way and that they develop the right mix of adults who have the skills and commitment to make the experience work for students. While the two schools that implemented this model did not achieve reduced dropping out, they did demonstrate a substantial number of school performance and affiliation improvements.

The alternative school also has the advantage of changing the school experience of students who have failed in the regular environment by moving them to another place and then attempting to make that place work for them. To increase the likelihood of success, this type of intervention typically places strong emphasis on recruiting teachers and counselors with particular sensitivity toward and sympathy for highly at-risk youth, creating a structured and nurturing environment characterized by a high level of consistency in treatment of all students, and provision of substantial support as students begin to work through personal issues that often exacerbate their problems with school. This type of school is most likely to succeed with its target population to the extent that staff are able to create a community in which individuals begin to succeed in their work and hence to build the confidence and self-esteem that are key to success. The danger of the alternative school is the stigma that many students experience as being "different," or "dumb," or "failures." Even so, as the director of OASIS commented, some highly at-risk youth are willing to endure these stereotypes in order to find an environment in which they can begin to experience success, develop affiliation with their peers and teachers, and eventually, perhaps, persist to graduation. It is unfortunate that changes in key staff at the school occurred before the treatment really had much of a chance to "take" with participants. Even so, the modest improvements that the project's first cohort experienced suggests that this model is worth considering for districts seeking strategies to improve the outcomes of highly at-risk youth.

Finally, projects that address only a part of students' school day can also achieve positive effects to the extent that they carefully design services to address the particular needs of targeted students. These projects typically used CDP funding to "add on" to the standard vocational programs available to youth attending area schools those supports thought to

facilitate success, including instructional support either in class or in a learning lab, development of instructional aids (including software and paper materials), and counseling to assist students in learning to function more effectively within their environments. While effects that such programs yield may be slower or smaller, the activities of projects like GRADS, STARS, and YES help to support students' vocational programs and, if well implemented, can be expected to improve not only educational outcomes but also postschool employment success. While the gains in student outcomes achieved by these projects were generally modest and in some cases nonexistent, given the reality that most participants had experienced difficulty in school for upwards of 10 years, even those outcomes suggest the legitimacy of ongoing initiatives that attempt to improve the educational experiences and outcomes of this segment of the nation's youth that may lead to improvements in their postschool employment and other options.

Components of Effective Dropout Prevention Programs in Vocational Education

Review of the experiences of the projects funded under the CDP demonstration from a summative perspective permits reflection on those components of the projects, taken together, that appear to have promise for improving the persistence and educational success of at-risk youth. Among the components that appear critical are the following:

- A smaller, more personal environment, such as that available in the school-within-a-school and alternative school environments;
- Vocational education, preferably that contains integration of academics with the vocational content, and, for most participants, has an occupational concentration leading to good entry-level jobs or continued training at the postsecondary level;
- A formal counseling component that incorporates attention to personal issues along with career counseling, employability development, and life skills instruction;
- Formal, ongoing coordination of the academic and vocational components of participants' high school programs;

- A structured environment that includes clear and equitably enforced behavioral expectations; and

- Personal, supportive attention from adults, through a mentoring or other project component.

Appendix A

Sample Sizes for Dropout Prevention and Reentry Projects

Table A.1

Cohort 1 Sample Sizes for All Dropout Retention Projects, by Year, Condition, and Outcome Measur

Outcomes	Yr.	Dropout Prevention Project															
		Woodside		Carbonne		Cushing		Oconee		Ann Arundel		Portland		Turtle Mtn		Fort Totten	
		T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C
		41	49	41	48	49	40	26	26	21	23	23	35	16	21	23	24
School performance																	
Dropout/Expelled	90	40	45	41	48	47	39	25	26	19	23	23	25	15	19	23	22
	91	40	45	41	48	47	39	25	26	19	23	23	25	15	19	23	22
	92	40	45	41	48	47	39	25	26	19	23	22	25	15	19	23	22
Higher GPA	90	34	37	37	40	44	32	24	24	20	21	19	22	4	5	18	22
	91	33	25	30	2[illegible]	36	25	20	19	12	12	11	17	1	6	5	16
	92	26	16	26	23	a	a	10	9	6	5	7	12	0	3	3	7
Higher number of credits earned	90	34	37	37	40	44	33	25	26	20	21	19	22	3	5	14	20
	91	33	25	30	28	36	25	21	19	12	10	11	17	1	6	5	15
	92	26	16	26	23	a	a	10	9	6	5	7	12	0	3	3	7
Fewer absences	90	32	37	36	39	44	35	24	25	19	21	20	26	4	5	17	22
	91	30	24	28	28	37	27	18	14	12	12	11	17	1	6	5	16
	92	26	16	25	23	a	a	10	10	6	5	7	14	0	3	3	7
Fewer courses failed	90	34	37	37	40	44	35	25	26	20	20	19	21	3	5	11	20
	91	33	25	30	28	36	24	21	18	12	12	11	17	1	6	5	16
	92	26	16	25	23	a	a	10	9	6	5	7	12	0	3	3	7
School affiliation																	
School thought safer	90	27	29	25	32	46	34	24	20	19	19	18	20	14	5	14	12
	91	17	17	17	17	31	20	16	14	13	12	10	19	2	5	5	16
	92	8	11	16	1	a	a	10	9	6	5	7	20	0	3	3	4
Teaching/Teachers better	90	23	27	25	32	43	34	24	19	18	18	15	19	14	4	14	12
	91	17	17	16	15	29	19	16	13	12	13	10	19	2	5	5	16
	92	7	11	17	1	a	a	9	9	6	5	7	12	0	3	3	4
Discipline fairer	90	27	28	25	32	46	33	24	20	18	19	18	19	14	5	13	13
	91	17	16	16	18	31	20	16	14	12	13	10	18	2	5	5	16
	92	8	11	18	1	a	a	10	9	6	5	6	12	0	3	3	4
More school spirit	90	25	28	25	32	46	34	24	20	19	20	18	20	14	5	14	12
	91	17	17	16	18	31	20	16	14	13	13	10	19	2	5	5	16
	92	8	11	18	1	a	a	10	9	6	5	7	12	0	3	3	4

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Outcomes	Yr	Woodside T	Woodside C	Carlment T	Carlment C	Cushing T	Cushing C	Ocoee T	Ocoee C	Ana Arundel T	Ana Arundel C	Portland T	Portland C	Turtle Mtn T	Turtle Mtn C	Port Townsend T	Port Townsend C
		41	49	41	48	49	40	26	26	21	23	23	35	16	21	33	24
Rules less strict	90	25	29	25	32	46	34	24	20	19	20	18	20	14	5	14	13
	91	17	17	16	18	31	20	16	14	13	11	10	19	2	5	5	16
	92	8	11	18	1	a	a	10	9	6	5	7	12	0	3	3	4
Better job preparation	90	25	28	25	32	46	34	24	20	18	19	18	19	14	5	14	13
	91	17	17	16	18	31	20	16	14	13	13	10	19	2	4	5	16
	92	8	11	17	1	a	a	10	9	6	5	7	12	0	3	3	4
Counseling/ Counselors better	90	26	29	25	32	46	34	24	19	18	18	17	19	14	4	14	13
	91	16	17	16	18	31	19	16	14	13	13	10	19	2	4	5	16
	92	8	11	17	1	a	a	10	9	6	5	7	12	0	3	3	3
More help choosing courses	90	27	29	25	32	46	34	24	20	18	19	18	20	14	5	14	13
	91	17	17	16	18	31	20	16	13	12	13	10	19	2	4	5	16
	92	8	11	18	1	a	a	10	9	6	5	7	12	0	3	3	4
More academic encouragement	90	27	29	25	32	45	34	21	20	18	19	18	19	14	5	14	13
	91	17	17	16	18	31	20	16	13	13	13	10	19	2	4	5	15
	92	8	11	17	1	a	a	10	9	6	5	7	12	0	3	3	4
Student perceptions																	
Classmates have diverse friendships	90	25	29	25	32	46	34	24	20	19	20	18	20	13	5	13	13
	91	17	17	16	18	31	20	16	14	13	13	10	19	2	5	5	16
	92	8	11	17	1	a	a	10	9	6	5	7	12	0	3	3	4
Fewer classmates are critical	90	27	29	25	32	46	34	24	20	19	19	18	20	14	5	14	13
	91	17	17	16	18	31	20	16	14	13	13	10	19	2	3	5	16
	92	8	11	18	1	a	a	10	8	6	5	7	12	0	4	3	4
Classmates should not misbehave	90	21	28	25	32	46	31	24	20	18	19	18	18	14	4	14	13
	91	17	17	15	18	31	20	16	13	13	13	10	18	2	5	5	16
	92	8	11	17	1	a	a	10	9	6	5	6	12	0	3	3	4
Future expectations are better	90	21	28	22	29	39	30	21	10	12	17	10	12	8	3	10	8
	91	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
	92	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Many classmates are college bound	90	27	28	25	32	46	34	24	20	18	19	18	20	14	5	14	13
	91	17	17	16	18	31	20	16	14	13	13	10	19	2	5	5	16
	92	8	11	18	1	a	a	10	9	6	5	7	12	0	3	3	4

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Outcomes	Yr	Woodside		Carimont		Cushing		Oconee		Ann Arundel		Portland		Turtle Mtn		[illegible]	
		T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C
		41	49	41	48	49	40	26	26	21	23	23	35	16	21	[illegible]	24
Student demographics																	
Female		18	24	15	22	11	13	8	12	4	5	5	14	7	8	9	4
Male		23	25	26	26	38	27	18	14	17	18	18	21	9	13	14	20
Native American		0	2	0	0	9	6	1	2	6	3	0	1	16	21	23	22
Black		13	4	12	7	1	0	1	2	4	3	20	14	0	0	0	[illegible]
White		12	24	16	15	38	32	23	22	11	17	2	16	0	0	0	[illegible]
Hispanic		15	16	10	19	1	1	0	0	0	0	1	2	0	0	0	[illegible]
Asian/Pacific Islander		1	3	3	7	0	1	0	0	0	0	0	2	0	0	0	[illegible]
Age Appropriate		27	30	29	29	33	22	11	7	4	6	11	16	2	3	5	[illegible]
Older		14	19	12	19	16	18	15	19	17	17	12	18	14	18	18	1[illegible]

Note. [a]Participants had graduated by Spring 1992.

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Table A.2

Cohort 2 Sample Sizes for All Dropout Retention Projects, by Year, Condition, and Outcome Measure

Outcome	Yr	Dropout Prevention Project																	
		Westside		Carlmont		Cushing		Detroit		Broward County		Ocean		Ann Arundel		Portland		Turtle Mtn	
		T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C
		35	40	44	47	47	48	87	99	24	30	12	8	18	18	20	29	11	13
School Performance																			
Dropout/Expelled	91	35	40	44	47	47	48	87	96	24	29	10	8	18	18	21	29	10	13
	92	35	40	44	47	47	48	87	96	24	26	10	8	18	18	17	28	11	13
Higher GPA	91	31	38	45	37	43	40	69	77	0	8	8	6	14	14	21	19	7	9
	92	29	29	39	32	37	32	62	61	10	3	4	1	12	12	7	12	3	3
Higher number of credits earned	91	31	38	45	37	43	40	70	77	20	15	8	6	14	14	21	19	7	9
	92	28	29	37	32	37	32	62	61	10	3	4	2	12	12	7	12	3	3
Fewer absences	91	31	35	45	37	43	41	70	77	21	15	7	4	14	14	21	19	7	9
	92	29	29	39	31	38	34	58	59	10	3	4	2	11	12	7	10	3	3
Fewer courses failed	91	31	38	45	37	43	40	68	76	19	15	8	6	14	14	21	19	7	8
	92	29	29	39	32	37	32	62	61	10	3	4	2	12	12	7	12	3	3
School affiliation																			
School thought safer	91	26	26	20	21	41	38	60	63	0	0	6	3	13	14	21	18	6	9
	92	22	15	24	7	29	26	60	62	8	4	4	2	12	12	7	10	3	3
Teaching/Teachers better	91	26	23	19	21	40	38	58	64	0	0	5	3	13	14	21	18	5	9
	92	22	15	23	7	29	26	60	59	7	4	4	2	11	11	7	9	3	3
Discipline fairer	91																		
	92																		
More school spirit	91																		
	92																		
Rules less strict	91																		
	92																		
Better job preparation	91	26	27	20	22	41	38	59	65	0	0	6	3	13	14	21	18	6	9
	92	21	15	24	7	29	26	60	63	8	4	4	2	12	12	7	10	3	3
Counseling/ Counselors better	91	27	27	20	22	41	38	58	63	0	0	5	2	13	14	21	18	6	9
	92	22	15	23	7	29	26	59	61	6	4	4	2	12	12	7	10	3	3
More help choosing courses	91																		
	92																		

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Outcomes	Yr	Dropout Prevention Project																	
		Woodside		Carlmont		Cushing		Detroit		Broward County		Oconee		Ann Arundel		Portland		Turtle Mtn	
		T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C
		35	40	44	47	47	48	87	99	26	30	12	8	18	18	26	29	11	13
More academic encouragement	91	27	26	20	22	41	38	59	65	0	0	5	3	13	14	21	18	6	9
	92	22	14	23	7	28	26	59	63	5	3	4	2	12	12	7	10	3	3
Student perceptions																			
Classmates have diverse friendships	91																		
	92																		
Fewer classmates are critical	91																		
	92																		
Classmates should not misbehave	91	24	26	20	19	41	38	58	62	0	0	5	3	13	14	21	18	6	8
	92	22	15	24	7	28	26	57	63	7	4	4	2	12	12	7	9	3	3
Future expectations are better	91	25	27	20	22	41	38	59	64	0	0	5	3	13	12	21	18	6	8
	92	20	15	24	7	27	25	58	60	8	4	4	2	11	12	7	6	2	3
Many classmates are college bound	91	25	27	19	22	41	38	60	65	0	0	5	3	12	14	21	18	6	9
	92	22	15	23	7	29	26	59	62	7	4	4	2	11	12	7	10	3	3
Student Demographics																			
Female		21	16	25	16	17	21	26	30	4	5	5	2	5	8	14	15	5	9
Male		14	24	23	31	30	27	61	69	22	25	7	6	13	10	12	14	6	4
Native American		2	1	2	1	7	5	0	3	6	2	0	1	0	0	1	0	11	13
Black		10	7	14	14	0	1	76	77	5	5	2	1	7	7	12	18	0	0
White		10	18	18	19	39	42	4	8	11	16	10	6	11	11	13	8	0	0
Hispanic		12	9	12	11	0	0	6	11	2	5	0	0	0	0	0	1	0	0
Asian/Pacific Islander		1	5	2	2	1	0	1	0	0	0	0	0	0	0	0	2	0	0
Age Appropriate		22	24	25	24	25	29	18	34	3	1	1	0	9	7	16	19	2	4
Older		13	16	23	23	22	19	69	65	21	21	11	8	9	11	10	10	9	9

Table A.3

Combined Cohorts Sample Sizes for All Dropout Retention Projects, by Year, Condition, and Outcome Me

Outcomes	Yr	Dropout Prevention Project															
		Woodside		Carlement		Cushing		Oconee		Ann Arundel		Portland		Turtle Mtn		Ft Totten	
		T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C
		76	89	89	95	96	88	38	34	39	41	49	64	27	34	38	79
School Performance																	
Dropout/Expelled	Y1	75	85	85	95	94	87	35	34	37	41	44	54	25	32	37	65
	Y2	75	85	85	95	94	87	35	34	37	41	39	53	26	32	37	65
Higher GPA	Y1	65	75	82	77	87	72	32	30	34	35	40	41	11	14	31	61
	Y2	62	54	69	60	73	57	24	20	24	24	18	29	4	9	10	34
Higher number of credits earned	Y1	65	75	82	77	87	73	33	32	34	35	40	41	10	14	27	53
	Y2	61	54	67	60	73	57	25	21	24	24	18	29	4	9	10	34
Fewer absences	Y1	32	37	36	39	44	35	24	25	19	21	20	26	4	5	17	22
	Y2	59	53	67	59	75	60	22	16	23	24	18	27	4	9	10	37
Fewer courses failed	Y1	65	75	82	77	87	75	33	32	34	34	40	40	10	13	24	54
	Y2	62	54	69	60	73	56	25	20	24	24	18	29	4	9	10	35
School affiliation																	
School thought safer	Y1	53	55	45	53	87	72	30	23	32	33	39	38	20	14	27	46
	Y2	22	15	24	7	29	26	4	2	12	12	7	10	3	3	3	16
Teaching/ Teachers better	Y1																
	Y2																
Discipline fairer	Y1																
	Y2																
More school spirit	Y1																
	Y2																
Rules less strict	Y1																
	Y2																
Better job preparation	Y1	51	55	45	54	87	72	30	23	31	33	39	37	20	14	27	46
	Y2	21	15	24	7	29	26	4	2	12	12	7	10	3	3	3	15
Counseling/ Counselors better	Y1																
	Y2																
More help choosing courses	Y1																
	Y2																

Outcomes	Yr	Dropout Prevention Project															
		Westside		Carlmont		Cushing		Oconee		Ann Arundel		Portland		Turtle Mtn		Ft Totten	
		T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C
		76	89	88	95	96	88	38	34	39	41	49	44	27	34	38	79
More academic encouragement	Y1	54	55	45	54	86	72	26	23	31	33	39	37	20	14	26	46
	Y2	39	31	39	25	59	46	20	15	25	25	17	29	5	7	8	31
Student perceptions																	
Classmates have div. friendships	Y1																
	Y2																
Fewer classmates are critical	Y1																
	Y2																
Classmates should not misbehave	Y1	45	54	45	51	87	69	29	23	31	33	39	36	20	12	27	48
	Y2	39	32	39	25	59	46	20	15	25	25	17	27	5	8	8	32
Future expectations are better	Y1																
	Y2																
Many classmates are college bound	Y1	52	55	44	54	87	72	29	23	30	33	39	38	20	14	27	47
	Y2	22	15	23	7	29	26	4	2	11	12	7	10	3	3	3	15
Student Demographics																	
Female		39	40	40	38	28	34	13	14	9	13	19	29	12	17	11	30
Male		37	49	49	57	68	54	25	20	30	28	30	35	15	17	27	49
Native American		2	3	2	1	16	11	1	3	6	3	1	1	27	34	37	76
Black		23	11	26	21	1	1	3	3	11	10	32	32	0	0	0	0
White		22	42	34	34	77	74	33	28	22	28	15	24	0	0	1	3
Hispanic		27	25	22	30	1	1	0	0	0	0	1	3	0	0	0	0
Asian/Pacific Islander		2	8	5	9	1	1	0	0	0	0	0	4	0	0	0	0
Age Appropiate		49	54	54	53	58	51	12	7	13	13	27	35	4	7	8	26
Older		27	35	35	42	38	37	26	27	26	28	22	28	23	27	30	53

Appendix B

Analytic Tables for Dropout Prevention and Reentry Projects

Introduction

For each of the 12 sites that participated in the national evaluation, we have included a set of tables that report participant outcomes. The sites appear in the following order:

Woodside Business Technology Academy, Woodside, California

Carlmont Business Technology Academy, Carlmont, California

Guidance in Retraining Adolescent Dropouts (GRADS), Cushing, Oklahoma

OASIS Alternative School, Oconee County, South Carokina

Youth Experiencing Success (Y.E.S.), Anne Arundel County, Maryland

Changing How Our Pupils Succeed (C.H.O.P.S.), Broward County, Florida

Vocational Continuum Program, Portland, Oregon

Preparing At-Risk Youth for Employment, Detroit, Michigan

Project COFFEE Vocational Training Program, Turtle Mountain, North Dakota

Project COFFEE Vocational Training Program, Fort Totten, North Dakota

Project COFFEE Vocational Training Program, Fort Berthold, North Dakota

Project COFFEE Vocational Training Program, Fort Yates, North Dakota

For each site, the appendix contains six tables, as follows:

Table 1:	Characterstics of Study Participants
Table 2:	Analysis of School Performance Outcomes, by Cohort by Year
Table 3:	Gap Reduction Analysis of School Performance Outcomes, by Cohort by Year
Table 4:	Analysis of Project Dropout Rates, by Cohort by Year
Table 5:	Analysis of School Affiliation and Student Perception Outcomes, by Cohort by Year
Table 6:	Gap Reduction Analysis of School Affiliation and Student Perception Outcomes, by Cohort by Year

Table B-1.1

Characteristics of Study Participants
Woodside Business Technology Academy

Characteristic*	Cohort 1				Cohort 2				Combi	
	Treatment Group (N = 40)		Control Group (N = 45)		Treatment Group (N = 35)		Control Group (N = 40)		Treatment Group (N = 75)	
	n	%	n	%	n	%	n	%	n	%
Gender										
Female	18	44%	24	49%	21	60%	16	40%	39	51%
Male	23	56%	25	51%	14	40%	24	60%	37	49%
Race/Ethnicity										
Native American	0	0%	2	4%	2	6%	1	3%	2	3%
Black	13	32%	4	8%	10	29%	7	18%	23	30%
White	12	29%	24	49%	10	29%	18	45%	22	29%
Hispanic	15	37%	16	33%	12	34%	9	23%	27	36%
Asian/Pacific Islander	1	2%	3	6%	1	3%	5	13%	2	3%
Age										
Age appropriate	27	66%	30	61%	22	63%	24	60%	49	65%
Overage for grade	14	34%	19	39%	13	37%	16	40%	27	36%

*Sample sizes for individual characteristics vary slightly across characteristics and cohorts.

Table B-1.2

Analysis of School Performance Outcomes, by Cohort by Year
Woodside Business Technology Academy

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
Dropout Status							
Higher GPA	A,R		-G,-A	G,A,R		G,A,R	
Higher number of credits earned	A,R			G,A,R		G,A,R	
Fewer absences					-G		-G
Fewer courses failed			-G	G,A		G,A	

Note: Statistical significance at $p < .05$ is represented by G (gain score analysis), A (analysis of covariance), and R (reliability adjusted analysis of covariance). Dropout analysis is conducted with Mantel-Haenszel test.

Table B-1.3

Gap Reduction Analysis of School Performance Outcomes, by Cohort by Year
Woodside Business Technology Academy

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
Higher GPA	+	+	+	+	+	+	+
Higher number of credits earned						-	
Fewer absences							
Fewer courses failed	+	+	+	+	+		+

Note: Direction of statistical significance at $p < .05$ is represented by +/-.

Table B-1.4

Analysis of Project Dropout Rates, by Cohort by Year
Woodside Business Technology Academy

Year	Cohort 1				Cohort 2			
	Treatment Group (N = 40)		Control Group (N = 45)		Treatment Group (N = 35)		Control Group (N = 40)	
	n	%	n	%	n	%	n	%
1989-90	1	3%	0	0%	--	--	--	--
1990-91	3	8%	4	9%	2	6%	2	5%
1991-92	4	10%	5	11%	2	6%	3	8%

Year	Combin	
	Treatment Group (N = 75)	
	n	%
Year 1	3	4%
Year 2	5	7%

Table B-1.5

Analysis of School Affiliation and Student Perception Outcomes, by Cohort by Year
Woodside Business Technology Academy

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
School Affiliation							
School thought safer	A,R					G	
Teaching/Teachers better	A,R					na	na
Better job preparation							
Counseling/Counselors better			A			na	na
More academic encouragement							
Student perceptions							
Classmates should not misbehave					G,A,R		G,A,R
Future expectations are better			-R		-G,-A	na	na
Many classmates are college bound			-A				

Note: Statistical significance at $p < .05$ is represented by G (gain score analysis), A (analysis of covariance), and R (reliability adjusted analysis of covariance).

Table B-1.6

Gap Reduction Analysis of School Affiliation and Student Perception Outcomes, by Cohort by Year
Woodside Business Technology Academy

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
School Affiliation							
School thought safer							
Teaching/Teachers better						na	na
Better job preparation							
Counseling/Counselors better						na	na
More academic encouragement							
Student perceptions							
Classmates should not misbehave							
Future expectations are better		-			-	na	na
Many classmates are college bound					-		-

Note: Direction of statistical significance at $p < .05$ is represented by +/-.

Table B-2.1

Characteristics of Study Participants
Carlmont Business Technology Academy

Characteristic*	Cohort 1				Cohort 2				Com	
	Treatment Group (N = 41)		Control Group (N = 48)		Treatment Group (N = 44)		Control Group (N = 47)		Treatmen Group (N = 89)	
	n	%	n	%	n	%	n	%	n	%
Gender										
Female	15	37%	22	46%	25	52%	16	34%	40	45
Male	26	63%	26	54%	23	48%	31	66%	49	58
Race/Ethnicity										
Native American	0	0%	0	0%	2	4%	1	2%	2	2
Black	12	29%	7	15%	14	29%	14	30%	26	29
White	16	39%	15	31%	18	38%	19	40%	34	38
Hispanic	10	24%	19	40%	12	25%	11	28%	22	25
Asian/Pacific Islander	3	7%	7	15%	2	4%	2	4%	5	6
Age										
Age appropriate	29	71%	29	60%	25	52%	24	51%	54	61
Overage for grade	12	29%	19	40%	23	48%	23	49%	35	39

*Sample sizes vary slightly across characteristics for each cohort.

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Table B-2.2

Analysis of School Performance Outcomes, by Cohort by Year
Carlmont Business Technology Academy

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
Dropout Status			+				+
Higher GPA		G	G	G		G	G
Higher number of credits earned						G,A	
Fewer absences							-G
Fewer courses failed	R	G,A,R				R	G,A,R

Note: Statistical significance at $p < .05$ is represented by G (gain score analysis), A (analysis of covariance), and R (reliability adjusted analysis of covariance). Dropout analysis is conducted with Mantel-Haenszel test.

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Table B-2.3

Gap Reduction Analysis of School Performance Outcomes, by Cohort by Year
Carlmont Business Technology Academy

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
Higher GPA	+	+	+	+	+	+	+
Higher number of credits earned						-	
Fewer absences							
Fewer courses failed	+		+	+	+		+

Note: Direction of statistical significance at $p < .05$ is represented by +/-.

Table B-2.4

Analysis of Project Dropout Rates, by Cohort by Year
Carlmont Business Technology Academy

Year	Cohort 1				Cohort 2			
	Treatment (N = 41)		Control (N = 48)		Treatment (N = 44)		Control (N = 47)	
	n	%	n	%	n	%	n	%
1989-90	0	0%	3	6%	na	na	na	na
1990-91	1	2%	8	17%	0	0%	3	6%
1991-92	0	0%	9	19%	4	9%	7	15%

Year	Co	
	Treatme (N = 85	
	n	
Year 1	0	0
Year 2	5	6

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Table B-2.5

Analysis of School Affiliation and Student Perception Outcomes, by Cohort by Year
Carlmont Business Technology Academy

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
School Affiliation							
School thought safer	A,R					A	
Teaching/Teachers better	A,R			R		na	na
Better job preparation							
Counseling/Counselors better						na	na
More academic encouragement	R						
Student perceptions							
Classmates should not misbehave							G,A,R
Future expectations are better						na	na
Many classmates are college bound							

Note: Statistical significance at $p < .05$ is represented by G (gain score analysis), A (analysis of covariance), and R (reliability adjusted analysis of covariance). Direction is presented by +/-.

Table B-2.6

Gap Reduction Analysis of School Affiliation and Student Perception Outcomes, by Cohort by Year
Carlmont Business Technology Academy

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
School Affiliation							
School thought safer	+					-	
Teaching/Teachers better						na	na
Better job preparation	+	+					
Counseling/Counselors better						na	na
More academic encouragement							
Student perceptions							
Classmates should not misbehave							-
Future expectations are better						na	na
Many classmates are college bound	+						

Note: Direction of statistical significance at $p < .05$ is represented by +/-.

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Table B-3.1

Characteristics of Study Participants
'ushing Guidance in Retraining Adolescent Dropouts (GRADS)

Characteristic*	Cohort 1				Cohort 2				Combi	
	Treatment Group (N = 49)		Control Group (N = 40)		Treatment Group (N = 47)		Control Group (N = 48)		Treatment Group (N = 96)	
	n	%	n	%	n	%	n	%	n	%
Gender										
Female	11	22%	13	33%	17	36%	21	44%	28	29%
Male	38	78%	27	68%	30	64%	27	56%	68	71%
Race/Ethnicity										
Native American	9	18%	6	15%	7	15%	5	10%	16	17%
Black	1	2%	0	0%	0	0%	1	2%	1	1%
White	38	78%	32	80%	39	83%	42	88%	77	80%
Hispanic	1	2%	1	3%	0	0%	0	0%	1	1%
Asian/Pacific Islander	0	0%	1	3%	1	2%	0	0%	1	1%
Age										
Age appropriate	33	67%	22	55%	25	53%	29	60%	58	60%
Overage for grade	16	33%	18	45%	22	47%	19	40%	38	40%

*Sample sizes for individual characteristics vary slightly across characteristics and cohorts.

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Table B-3.2

Analysis of School Performance Outcomes, by Cohort by Year
Cushing Guidance in Retraining Adolescent Dropouts (GRADS)

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
Dropout Status					+		+
Higher GPA							
Higher number of credits earned							
Fewer absences							
Fewer courses failed						G,A,R	

Note: Statistical significance at $p < .05$ is represented by G (gain score analysis), A (analysis of covariance), and R (reliability adjusted analysis of covariance). Dropout analysis is conducted with Mantel-Haenszel test.

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Table B-3.3

Gap Reduction Analysis of School Performance Outcomes, by Cohort by Year
Cushing Guidance in Retraining Adolescent Dropouts (GRADS)

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
Higher GPA	+	+		+	+	+	+
Higher number of credits earned	+	+		+	+	-	+
Fewer absences							
Fewer courses failed	+	+		+	+	-	+

Note: Direction of statistical significance at $p < .05$ is represented by +/-.

Table B-3.4

Analysis of Project Dropout Rates, by Cohort by Year
Cushing Guidance in Retraining Adolescent Dropouts (GRADS)

Year	Cohort 1				Cohort 2			
	Treatment Group (N = 47)		Control Group (N = 39)		Treatment Group (N = 47)		Control Group (N = 48)	
	n	%	n	%	n	%	n	%
1989-90	4	9%	4	10%	na	na	na	na
1990-91	7	15%	10	26%	2	4%	6	13%
1991-92	10	21%	13	33%	2	4%	9	19%

Year	Cont	
	Treatment Group (N = 94)	
	n	%
Year 1	6	6%
Year 2	9	10%

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Table B-3.5

Analysis of School Affiliation and Student Perception Outcomes, by Cohort by Year
Cushing Guidance in Retraining Adolescent Dropouts (GRADS)

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
School Affiliation							
School thought safer							
Teaching/Teachers better						na	na
Better job preparation							
Counseling/Counselors better						na	na
More academic encouragement	-A,-R					G,R	
Student perceptions							
Classmates should not misbehave							
Future expectations are better		A			-A	na	na
Many classmates are college bound							

Note: Statistical significance at $p < .05$ is represented by G (gain score analysis), A (analysis of covariance), and R (reliability adjusted analysis of covariance).

Table B-3.6

Gap Reduction Analysis of School Affiliation and Student Perception Outcomes, by Cohort by Year
Cushing Guidance in Retraining Adolescent Dropouts (GRADS)

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
School Affiliation							
School thought safer	-					-	
Teaching/Teachers better						na	na
Better job preparation					+		+
Counseling/Counselors better						na	na
More academic encouragement							
Student perceptions							
Classmates should not misbehave							
Future expectations are better						na	na
Many classmates are college bound							

Note: Direction of statistical significance at $p < .05$ is represented by +/-.

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Table B-4.1

Characteristics of Study Participants
Oconee County Alternative School (OASIS)

Characteristic*	Cohort 1				Cohort 2				Comb	
	Treatment Group (N = 26)		Control Group (N = 26)		Treatment Group (N = 12)		Control Group (N = 8)		Treatment Group (N = 38)	
	n	%	n	%	n	%	n	%	n	%
Gender										
Female	8	31%	12	46%	5	42%	2	25%	13	34%
Male	18	69%	14	54%	7	58%	6	75%	25	66%
Race/Ethnicity										
Native American	1	4%	2	8%	0	0%	1	13%	1	3%
Black	1	4%	2	8%	2	17%	1	13%	3	8%
White	23	92%	22	85%	10	83%	6	75%	33	89%
Hispanic	0	0%	0	0%	0	0%	0	0%	0	0%
Asian/Pacific Islander	0	0%	0	0%	0	0%	0	0%	0	0%
Age										
Age appropriate	11	42%	7%	27%	1	8%	0	0%	12	32%
Overage for grade	15	58%	19	73%	11	92%	8	100%	26	68%

*Sample sizes for individual characteristics vary slightly across characteristics and cohorts.

Table B-4.2

Analysis of School Performance Outcomes, by Cohort by Year
Oconee County Alternative School (OASIS)

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
Dropout Status							
Higher GPA		G,A,R					G,A,R
Higher number of credits earned							G
Fewer absences							
Fewer courses failed			G,A				

Note: Statistical significance at $p < .05$ is represented by G (gain score analysis), A (analysis of covariance), and R (reliability adjusted analysis of covariance). Dropout analysis is conducted with Mantel-Haenszel test.

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Table B-4.3

Gap Reduction Analysis of School Performance Outcomes, by Cohort by Year
Oconee County Alternative School (OASIS)

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
Higher GPA		+		*	*	na	na
Higher number of credits earned				*	*	na	na
Fewer absences			+	*	*	na	na
Fewer courses failed				*	*	na	na

Note: Direction of statistical significance at $p < .05$ is represented by +/-.
* Cohort without gap reduction group

Table B-4.4

Analysis of Project Dropout Rates, by Cohort by Year
Oconee County Alternative School (OASIS)

Year	Cohort 1				Cohort 2			
	Treatment Group (N = 25)		Control Group (N = 26)		Treatment Group (N = 10)		Control Group (N = 8)	
	n	%	n	%	n	%	n	%
1989-90	1	4%	3	12%	na	na	na	na
1990-91	9	36%	10	38%	6	60%	5	63%
1991-92	11	44%	15	58%	7	70%	5	63%

Year	Co	
	Treatme Group (N = 35	
	n	
Year 1	7	2
Year 2	16	4

Table B-4.5

Analysis of School Affiliation and Student Perception Outcomes, by Cohort by Year
Oconee County Alternative School (CASIS)

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
School Affiliation							
School thought safer				A			
Teaching/Teachers better	R					na	na
Better job preparation		A					
Counseling/Counselors better						na	na
More academic encouragement			A,R				
Student perceptions							
Classmates should not misbehave							-G
Future expectations are better				A		na	na
Many classmates are college bound							

Note: Statistical significance at $p < .05$ is represented by G (gain score analysis), A (analysis of covariance), and R (reliability adjusted analysis of covariance).

Table B-4.6

Gap Reduction Analysis of School Affiliation and Student Perception Outcomes, by Cohort by Year
Oconee County Alternative School (OASIS)

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
School Affiliation							
School thought safer		+	+	*	*	na	na
Teaching/Teachers better				*	*	na	na
Better job preparation	+	+	+	*	*	na	na
Counseling/Counselors better	+			*	*	na	na
More academic encouragement				*	*	na	na
Student perceptions							
Classmates should not misbehave				*	*	na	na
Future expectations are better				*	*	na	na
Many classmates are college bound				*	*	na	na

Note: Direction of statistical significance at $p < .05$ is represented by +/-.
* Cohort without gap reduction group

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Table B-5.1

Characteristics of Study Participants
Ann Arundel County Youth Experiencing Success (Y.E.S.)

Characteristic*	Cohort 1				Cohort 2				Cohort	
	Treatment Group (N = 21)		Control Group (N = 23)		Treatment Group (N = 18)		Control Group (N = 18)		Treatment Group (N = 39)	
	n	%	n	%	n	%	n	%	n	%
Gender										
Female	4	19%	5	22%	5	28%	8	44%	9	23
Male	17	81%	18	78%	13	72%	10	56%	30	77
Race/Ethnicity										
Native American	6	29%	3	13%	0	0%	0	0%	6	15
Black	4	19%	3	13%	7	39%	7	39%	11	28
White	11	52%	17	74%	11	61%	11	61%	22	56
Hispanic	0	0%	0	0%	0	0%	0	0%	0	0
Asian/Pacific Islander	0	0%	0	0%	0	0%	0	0%	0	0
Age										
Age appropriate	4	19%	6	26%	9	50%	7	39%	13	33
Overage for grade	17	81%	17	74%	9	50%	11	61%	26	67

*Sample sizes for individual characteristics vary slightly across characteristics and cohorts.

Table B-5.2

Analysis of School Performance Outcomes, by Cohort by Year
Ann Arundel County Youth Experiencing Success (Y.E.S.)

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
Dropout Status							
Higher GPA					G		G
Higher number of credits earned							
Fewer absences	R						
Fewer courses failed			−R				

Note: Statistical significance at $p < .05$ is represented by G (gain score analysis), A (analysis of covariance), and R (reliability adjusted analysis of covariance). Dropout analysis is conducted with Mantel-Haenszel test.

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Table B-5.3

Gap Reduction Analysis of School Performance Outcomes, by Cohort by Year
Ann Arundel County Youth Experiencing Success (Y.E.S.)

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
Higher GPA	+	+	+				+
Higher number of credits earned							
Fewer absences							
Fewer courses failed			+				

Note: Direction of statistical significance at $p < .05$ is represented by +/-.

Table B-5.4

Analysis of Project Dropout Rates, by Cohort by Year
Ann Arundel County Youth Experiencing Success (Y.E.S.)

Year	Cohort 1				Cohort 2			
	Treatment Group (N = 19)		Control Group (N = 23)		Treatment Group (N = 18)		Control Group (N = 18)	
	n	%	n	%	n	%	n	%
1989-90	0	0%	2	9%	na	na	na	na
1990-91	9	47%	10	43%	4	22%	3	17%
1991-92	9	47%	11	48%	4	22%	4	22%

Year	Comb	
	Treatment Group (N = 37)	
	n	%
Year 1	4	11%
Year 2	13	35%

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Table B-5.5

Analysis of School Affiliation and Student Perception Outcomes, by Cohort by Year
Ann Arundel County Youth Experiencing Success (Y.E.S.)

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
School Affiliation							
School thought safer					A		A
Teaching/Teachers better						na	na
Better job preparation		A					
Counseling/Counselors better						na	na
More academic encouragement							
Student perceptions							
Classmates should not misbehave							
Future expectations are better						na	na
Many classmates are college bound							

Note: Statistical significance at $p < .05$ is represented by G (gain score analysis), A (analysis of covariance), and R (reliability adjusted analysis of covariance).

Table B-5.6

Gap Reduction Analysis of School Affiliation and Student Perception Outcomes, by Cohort by Year
Ann Arundel County Youth Experiencing Success (Y.E.S.)

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
School Affiliation							
School thought safer							
Teaching/Teachers better						na	na
Better job preparation							
Counseling/Counselors better						na	na
More academic encouragement							
Student perceptions							
Classmates should not misbehave							
Future expectations are better						na	na
Many classmates are college bound				+			

Note: Direction of statistical significance at $p < .05$ is represented by +/-.

Table B-6.1

Characteristics of Study Participants
Broward County Changing How Our Pupils Succeed (C.H.O.P.S.)

Characteristic*	Cohort 1				Cohort 2				Coml	
	Treatment Group (N =)		Control Group (N =)		Treatment Group (N = 26)		Control Group (N = 30)		Treatmen Group (N =)	
	n	%	n	%	n	%	n	%	n	%
Gender										
Female	na	na	na	na	4	15%	5	17%	na	n
Male	na	na	na	na	22	85%	25	83%	na	n
Race/Ethnicity										
Native American	na	na	na	na	6	25%	2	7%	na	n
Black	na	na	na	na	5	21%	5	18%	na	n
White	na	na	na	na	11	46%	16	57%	na	n
Hispanic	na	na	na	na	2	8%	5	18%	na	n
Asian/Pacific Islander	na	na	na	na	0	0%	0	0%	na	n
Age										
Age appropriate	na	na	na	na	3	13%	1	5%	na	n
Overage for grade	na	na	na	na	21	88%	21	95%	na	n

*Sample sizes for individual characteristics vary slightly across characteristics and cohorts.

Table B-6.2

Analysis of School Performance Outcomes, by Cohort by Year
Broward County Changing How Our Pupils Succeed (C.H.O.P.S.)

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
Dropout Status	na	na	na			na	na
Higher GPA	na	na	na			na	na
Higher number of credits earned	na	na	na			na	na
Fewer absences	na	na	na			na	na
Fewer courses failed	na	na	na			na	na

Note: Statistical significance at $p < .05$ is represented by G (gain score analysis), A (analysis of covariance), and R (reliability adjusted analysis of covariance). Dropout analysis is conducted with Mantel-Haenszel test.

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Table B-6.3

Gap Reduction Analysis of School Performance Outcomes, by Cohort by Year
Broward County Changing How Our Pupils Succeed (C.H.O.P.S.)

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
Higher GPA	na	na	na			na	na
Higher number of credits earned	na	na	na	-	-	na	na
Fewer absences	na	na	na			na	na
Fewer courses failed	na	na	na			na	na

Note: Direction of statistical significance at $p < .05$ is represented by +/-.

207

Table B-6.4

Analysis of Project Dropout Rates, by Cohort by Year
Broward County Changing How Our Pupils Succeed (C.H.O.P.S.)

Year	Cohort 1				Cohort 2			
	Treatment Group (N =)		Control Group (N =)		Treatment Group (N = 19)		Control Group (N = 16)	
	n	%	n	%	n	%	n	%
1989-90	na	na	na	na	na	na	na	na
1990-91	na	na	na	na	3	16%	4	25%
1991-92	na	na	na	na	6	32%	7	44%

Table B-6.5

Analysis of School Affiliation and Student Perception Outcomes, by Cohort by Year
Broward County Changing How Our Pupils Succeed (C.H.O.P.S.)

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
School Affiliation							
School thought safer	na	na	na			na	na
Teaching/Teachers better	na	na	na			na	na
Better job preparation	na	na	na			na	na
Counseling/Counselors better	na	na	na			na	na
More academic encouragement	na	na	na			na	na
Student perceptions							
Classmates should not misbehave	na	na	na			na	na
Future expectations are better	na	na	na			na	na
Many classmates are college bound	na	na	na			na	na

Note: Statistical significance at $p < .05$ is represented by G (gain score analysis), A (analysis of covariance), and R (reliability adjusted analysis of covariance).

Table B-6.6

Gap Reduction Analysis of School Affiliation and Student Perception Outcomes, by Cohort by Year
Broward County Changing How Our Pupils Succeed (C.H.O.P.S.)

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
School Affiliation							
School thought safer	na	na	na			na	na
Teaching/Teachers better	na	na	na			na	na
Better job preparation	na	na	na			na	na
Counseling/Counselors better	na	na	na			na	na
More academic encouragement	na	na	na			na	na
Student perceptions							
Classmates should not misbehave	na	na	na			na	na
Future expectations are better	na	na	na			na	na
Many classmates are college bound	na	na	na			na	na

Note: Direction of statistical significance at $p < .05$ is represented by +/-.

Table B-7.1

Characteristics of Study Participants
Portland Vocational Continuum Program

Characteristic*	Cohort 1				Cohort 2				Combi	
	Treatment Group (N = 23)		Control Group (N = 35)		Treatment Group (N = 26)		Control Group (N = 29)		Treatment Group (N = 49)	
	n	%	n	%	n	%	n	%	n	%
Gender										
Female	5	22%	14	40%	14	54%	15	52%	19	39%
Male	18	78%	21	60%	12	46%	14	48%	30	61%
Race/Ethnicity										
Native American	0	0%	1	3%	1	4%	0	0%	1	2%
Black	20	87%	14	40%	12	46%	18	62%	32	65%
White	2	9%	16	46%	13	50%	8	28%	15	31%
Hispanic	1	4%	2	6%	0	0%	1	3%	1	2%
Asian/Pacific Islander	0	0%	2	6%	0	0%	2	7%	0	0%
Age										
Age appropriate	11	48%	16	47%	16	62%	19	66%	27	55%
Overage for grade	12	52%	18	53%	10	38%	10	34%	22	45%

*Sample sizes for individual characteristics vary slightly across characteristics and cohorts.

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Table B-7.2

Analysis of School Performance Outcomes, by Cohort by Year
Portland Vocational Continuum Program

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
Dropout Status							
Higher GPA							G
Higher number of credits earned	-A		G		G,A	-G	G
Fewer absences				-G	A,R		A,R
Fewer courses failed		G					G

Note: Statistical significance at $p < .05$ is represented by G (gain score analysis), A (analysis of covariance), and R (reliability adjusted analysis of covariance). Dropout analysis is conducted with Mantel-Haenszel test.

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Table B-7.3

Gap Reduction Analysis of School Performance Outcomes, by Cohort by Year
Portland Vocational Continuum Program

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
Higher GPA					+		
Higher number of credits earned	-		+		+		
Fewer absences							
Fewer courses failed		+	+			+	+

Note: Direction of statistical significance at $p < .05$ is represented by +/-.

Table B-7.4

Analysis of Project Dropout Rates, by Cohort by Year
Portland Vocational Continuum Program

Year	Cohort 1				Cohort 2			
	Treatment Group (N = 23)		Control Group (N = 24)		Treatment Group (N = 21)		Control Group (N = 29)	
	n	%	n	%	n	%	n	%
1989-90	1	4%	3	13%	na	na	na	na
1990-91	5	22%	5	21%	5	24%	7	24%
1991-92	7	30%	4	17%	5	24%	9	31%

Year	Com	
	Treatment Group (N = 44)	
	n	%
Year 1	6	17
Year 2	10	23

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Table B-7.5

Analysis of School Affiliation and Student Perception Outcomes, by Cohort by Year
Portland Vocational Continuum Program

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
School Affiliation							
School thought safer		R					
Teaching/Teachers better				G,A,R		na	na
Better job preparation						G,A,R	
Counseling/Counselors better	R					na	na
More academic encouragement			A		-G		
Student perceptions							
Classmates should not misbehave							
Future expectations are better				A		na	na
Many classmates are college bound							

Note: Statistical significance at $p < .05$ is represented by G (gain score analysis), A (analysis of covariance), and R (reliability adjusted analysis of covariance).

Table B-7.6

Gap Reduction Analysis of School Affiliation and Student Perception Outcomes, by Cohort by Year
Portland Vocational Continuum Program

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
School Affiliation							
School thought safer					+		+
Teaching/Teachers better						na	na
Better job preparation							
Counseling/Counselors better						na	na
More academic encouragement							
Student perceptions							
Classmates should not misbehave							
Future expectations are better			-			na	na
Many classmates are college bound		+		-			

Note: Direction of statistical significance at $p < .05$ is represented by +/-.

Table B-8.1

Characteristics of Study Participants
Detroit Preparing At-Risk Youth for Employment

Characteristic*	Cohort 1				Cohort 2				Com	
	Treatment Group (N =)		Control Group (N =)		Treatment Group (N = 87)		Control Group (N = 99)		Treatmen Group (N =)	
	n	%	n	%	n	%	n	%	n	%
Gender										
Female	na	na	na	na	26	30%	30	30%	na	n
Male	na	na	na	na	61	70%	69	70%	na	n
Race/Ethnicity										
Native American	na	na	na	na	0	0%	3	3%	na	n
Black	na	na	na	na	76	87%	77	78%	na	n
White	na	na	na	na	4	5%	8	8%	na	n
Hispanic	na	na	na	na	6	7%	11	11%	na	n
Asian/Pacific Islander	na	na	na	na	1	1%	0	0%	na	n
Age										
Age appropriate	na	na	na	na	18	21%	34	34%	na	n
Overage for grade	na	na	na	na	69	79%	65	66%	na	n

*Sample sizes for individual characteristics vary slightly across characteristics and cohorts.

Table B-8.2

Analysis of School Performance Outcomes, by Cohort by Year
Detroit Preparing At-Risk Youth for Employment

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
Dropout Status	na	na	na	+	+	na	na
Higher GPA	na	na	na	A,R	R	na	na
Higher number of credits earned	na	na	na	G,A,R		na	na
Fewer absences	na	na	na			na	na
Fewer courses failed	na	na	na			na	na

Note: Statistical significance at $p < .05$ is represented by G (gain score analysis), A (analysis of covariance), and R (reliability adjusted analysis of covariance). Dropout analysis is conducted with Mantel-Haenszel test.

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Table B-8.3

Gap Reduction Analysis of School Performance Outcomes, by Cohort by Year
Detroit Preparing At-Risk Youth for Employment

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
Higher GPA	na	na	na	+	+	na	na
Higher number of credits earned	na	na	na			na	na
Fewer absences	na	na	na	–	–	na	na
Fewer courses failed	na	na	na		+	na	na

Note: Direction of statistical significance at $p < .05$ is represented by +/-.

Table B-8.4

Analysis of Project Dropout Rates, by Cohort by Year
Detroit Preparing At-Risk Youth for Employment

Year	Cohort 1				Cohort 2			
	Treatment Group (N =)		Control Group (N =)		Treatment Group (N = 87)		Control Group (N = 96)	
	n	%	n	%	n	%	n	%
1989-90	na	na	na	na	na	na	na	na
1990-91	na	na	na	na	3	3%	13	14%
1991-92	na	na	na	na	10	11%	25	26%

Table B-8.5

Analysis of School Affiliation and Student Perception Outcomes, by Cohort by Year
Detroit Preparing At-Risk Youth for Employment

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
School Affiliation							
School thought safer	na	na	na			na	na
Teaching/Teachers better	na	na	na			na	na
Better job preparation	na	na	na			na	na
Counseling/Counselors better	na	na	na			na	na
More academic encouragement	na	na	na			na	na
Student perceptions							
Classmates should not misbehave	na	na	na			na	na
Future expectations are better	na	na	na		-G	na	na
Many classmates are college bound	na	na	na			na	na

Note: Statistical significance at $p < .05$ is represented by G (gain score analysis), A (analysis of covariance), and R (reliability adjusted analysis of covariance).

226

Table B-8.6

Gap Reduction Analysis of School Affiliation and Student Perception Outcomes, by Cohort by Year

Detroit Preparing At-Risk Youth for Employment

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
School Affiliation							
School thought safer	na	na	na			na	na
Teaching/Teachers better	na	na	na			na	na
Better job preparation	na	na	na			na	na
Counseling/Counselors better	na	na	na			na	na
More academic encouragement	na	na	na			na	na
Student perceptions							
Classmates should not misbehave	na	na	na			na	na
Future expectations are better	na	na	na			na	na
Many classmates are college bound	na	na	na			na	na

Note: Direction of statistical significance at $p < .05$ is represented by +/-.

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Table B-9.1

Characteristics of Study Participants
Project COFFEE Vocational Training Program (Turtle Mountain)

Characteristic*	Cohort 1				Cohort 2				Com	
	Treatment Group (N = 16)		Control Group (N = 21)		Treatment Group (N = 11)		Control Group (N = 13)		Treatment Group (N = 27)	
	n	%	n	%	n	%	n	%	n	%
Gender										
Female	7	44%	8	38%	5	45%	9	69%	12	44
Male	9	56%	13	62%	6	55%	4	31%	15	56
Race/Ethnicity										
Native American	16	100%	21	100%	11	100%	13	100%	27	100
Black	0	0%	0	0%	0	0%	0	0%	0	0
White	0	0%	0	0%	0	0%	0	0%	0	0
Hispanic	0	0%	0	0%	0	0%	0	0%	0	0
Asian/Pacific Islander	0	0%	0	0%	0	0%	0	0%	0	0
Age										
Age appropriate	2	13%	3	14%	2	18%	4	31%	4	15
Overage for grade	14	88%	18	86%	9	82%	9	69%	23	85

*Sample sizes for individual characteristics vary slightly across characteristics and cohorts.

Table B-9.2

Analysis of School Performance Outcomes, by Cohort by Year
Project COFFEE Vocational Training Program (Turtle Mountain)

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
Dropout Status	+	+				+	
Higher GPA						G	
Higher number of credits earned							
Fewer absences	A,R						
Fewer courses failed							

Note: Statistical significance at $p < .05$ is represented by G (gain score analysis), A (analysis of covariance), and R (reliability adjusted analysis of covariance). Dropout analysis is conducted with Mantel-Haenszel test.

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Table B-9.3

Gap Reduction Analysis of School Performance Outcomes, by Cohort by Year
Project COFFEE Vocational Training Program (Turtle Mountain)

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
Higher GPA				+			
Higher number of credits earned							
Fewer absences							
Fewer courses failed				+			

Note: Direction of statistical significance at $p < .05$ is represented by +/-.

Table B-9.4

Analysis of Project Dropout Rates, by Cohort by Year
Project COFFEE Vocational Training Program (Turtle Mountain)

Year	Cohort 1				Cohort 2			
	Treatment Group (N = 15)		Control Group (N = 19)		Treatment Group (N = 10)		Control Group (N = 13)	
	n	%	n	%	n	%	n	%
1989-90	3	20%	13	68%	na	na	na	na
1990-91	5	33%	15	79%	2	20%	3	23%
1991-92	10	67%	16	84%	5	50%	5	38%

Year	Com	
	Treatmen Group (N = 25)	
	n	%
Year 1	5	20
Year 2	10	40

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Table B-9.5

Analysis of School Affiliation and Student Perception Outcomes, by Cohort by Year
Project COFFEE Vocational Training Program (Turtle Mountain)

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
School Affiliation							
School thought safer						G,R	
Teaching/Teachers better						na	na
Better job preparation							
Counseling/Counselors better						na	na
More academic encouragement							
Student perceptions							
Classmates should not misbehave							
Future expectations are better	-A,-R					na	na
Many classmates are college bound							

Note: Statistical significance at $p < .05$ is represented by G (gain score analysis), A (analysis of covariance), and R (reliability adjusted analysis of covariance).

Table B-9.6

Gap Reduction Analysis of School Affiliation and Student Perception Outcomes, by Cohort by Year

Project COFFEE Vocational Training Program (Turtle Mountain)

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
School Affiliation							
School thought safer							
Teaching/Teachers better						na	na
Better job preparation							
Counseling/Counselors better						na	na
More academic encouragement							
Student perceptions							
Classmates should not misbehave							
Future expectations are better						na	na
Many classmates are college bound							

Note: Direction of statistical significance at $p < .05$ is represented by +/-.

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Table B-10.1

Characteristics of Study Participants
Project COFFEE Vocational Training Program (Fort Totten)

Characteristic*	Cohort 1				Cohort 2				Combi	
	Treatment Group (N = 23)		Control Group (N = 24)		Treatment Group (N = 15)		Control Group (N = 55)		Treatment Group (N = 38)	
	n	%	n	%	n	%	n	%	n	%
Gender										
Female	9	39%	4	17%	2	13%	26	47%	11	29%
Male	14	61%	20	83%	13	87%	29	53%	27	71%
Race/Ethnicity										
Native American	23	100%	22	92%	14	93%	54	98%	37	97%
Black	0	0%	0	0%	0	0%	0	0%	0	0%
White	0	0%	2	8%	1	7%	1	2%	1	3%
Hispanic	0	0%	0	0%	0	0%	0	0%	0	0%
Asian/Pacific Islander	0	0%	0	0%	0	0%	0	0%	0	0%
Age										
Age appropriate	5	22%	8	33%	3	20%	18	33%	8	21%
Overage for grade	18	78%	16	67%	12	80%	37	67%	30	79%

*Sample sizes for individual characteristics vary slightly across characteristics and cohorts.

Table B-10.2

Analysis of School Performance Outcomes, by Cohort by Year
Project COFFEE Vocational Training Program (Fort Totten)

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
Dropout Status	-				+		
Higher GPA	R			A,R		A,R	
Higher number of credits earned	-A,-R					-G,-A	
Fewer absences							
Fewer courses failed	R						-A,-R

Note: Statistical significance at $p < .05$ is represented by G (gain score analysis), A (analysis of covariance), and R (reliability adjusted analysis of covariance). Dropout analysis is conducted with Mantel-Haenszel test.

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Table B-10.3

Gap Reduction Analysis of School Performance Outcomes, by Cohort by Year
Project COFFEE Vocational Training Program (Fort Totten)

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
Higher GPA	+	+		+		+	+
Higher number of credits earned						-	
Fewer absences							
Fewer courses failed	+	+					

Note: Direction of statistical significance at $p < .05$ is represented by +/-.

Table B-10.4

Analysis of Project Dropout Rates, by Cohort by Year
Project COFFEE Vocational Training Program (Fort Totten)

Year	Cohort 1				Cohort 2			
	Treatment Group (N = 23)		Control Group (N = 22)		Treatment Group (N = 14)		Control Group (N = 43)	
	n	%	n	%	n	%	n	%
1989-90	10	43%	3	14%	na	na	na	na
1990-91	15	65%	7	32%	1	7%	12	28%
1991-92	17	74%	9	41%	1	7%	18	42%

Year	Com	
	Treatment Group (N = 37)	
	n	%
Year 1	11	30
Year 2	16	43

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Table B-10.5

Analysis of School Affiliation and Student Perception Outcomes, by Cohort by Year
Project COFFEE Vocational Training Program (Fort Totten)

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
School Affiliation							
School thought safer							
Teaching/Teachers better						na	na
Better job preparation						-R	
Counseling/Counselors better	-A,-R					na	na
More academic encouragement							
Student perceptions							
Classmates should not misbehave							A
Future expectations are better						na	na
Many classmates are college bound							

Note: Statistical significance at $p < .05$ is represented by G (gain score analysis), A (analysis of covariance), and R (reliability adjusted analysis of covariance).

Table B-10.6

Gap Reduction Analysis of School Affiliation and Student Perception Outcomes, by Cohort by Year
Project COFFEE Vocational Training Program (Fort Totten)

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
School Affiliation							
School thought safer							
Teaching/Teachers better						na	na
Better job preparation		+					
Counseling/Counselors better						na	na
More academic encouragement							
Student perceptions							
Classmates should not misbehave							
Future expectations are better						na	na
Many classmates are college bound							

Note: Direction of statistical significance at $p < .05$ is represented by +/-.

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Table B-11.1

Characteristics of Study Participants
Project COFFEE Vocational Training Program (Fort Berthold)

Characteristic*	Cohort 1				Cohort 2				Comb	
	Treatment Group (N = 13)		Control Group (N = 17)		Treatment Group (N = 15)		Control Group (N = 14)		Treatment Group (N = 28)	
	n	%	n	%	n	%	n	%	n	%
Gender										
Female	5	38%	6	35%	5	33%	2	14%	10	36%
Male	8	62%	11	65%	10	67%	12	86%	18	64%
Race/Ethnicity										
Native American	13	100%	16	94%	14	93%	14	100%	27	96%
Black	0	0%	0	0%	0	0%	0	0%	0	0%
White	0	0%	1	6%	1	7%	0	0%	1	4%
Hispanic	0	0%	0	0%	0	0%	0	0%	0	0%
Asian/Pacific Islander	0	0%	0	0%	0	0%	0	0%	0	0%
Age										
Age appropriate	4	31%	2	13%	4	27%	7	50%	8	29%
Overage for grade	9	69%	14	88%	11	73%	7	50%	20	71%

*Sample sizes for individual characteristics vary slightly across characteristics and cohorts.

Table B-11.2

Analysis of School Performance Outcomes, by Cohort by Year
Project COFFEE Vocational Training Program (Fort Berthold)

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
Dropout Status							
Higher GPA					G		
Higher number of credits earned				-R		-G,-A,-R	
Fewer absences							G,A
Fewer courses failed					G		G

Note: Statistical significance at $p < .05$ is represented by G (gain score analysis), A (analysis of covariance), and R (reliability adjusted analysis of covariance). Dropout analysis is conducted with Mantel-Haenszel test.

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Table B-11.3

Gap Reduction Analysis of School Performance Outcomes, by Cohort by Year
Project COFFEE Vocational Training Program (Fort Berthold)

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
Higher GPA							
Higher number of credits earned				+	+	+	
Fewer absences							
Fewer courses failed	–						

Note: Direction of statistical significance at $p < .05$ is represented by +/-.

Table B-11.4

Analysis of Project Dropout Rates, by Cohort by Year
Project COFFEE Vocational Training Program (Fort Berthold)

Year	Cohort 1				Cohort 2			
	Treatment Group (N = 10)		Control Group (N = 15)		Treatment Group (N = 14)		Control Group (N = 14)	
	n	%	n	%	n	%	n	%
1989-90	3	30%	5	33%	na	na	na	na
1990-91	6	60%	6	40%	2	14%	1	7%
1991-92	6	60%	6	40%	2	14%	3	21%

Year	Co	
	Treatme Group (N = 24	
	n	
Year 1	5	2
Year 2	8	3

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Table B-11.5

Analysis of School Affiliation and Student Perception Outcomes, by Cohort by Year
Project COFFEE Vocational Training Program (Fort Berthold)

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
School Affiliation							
School thought safer				A,R			
Teaching/Teachers better				-G,-A,-R	-G,-A,-R	na	na
Better job preparation	-A,-R					-A,-R	
Counseling/Counselors better				-G,-A,-R		na	na
More academic encouragement							
Student perceptions							
Classmates should not misbehave	A,R			A		G,A,R	G,A
Future expectations are better	-A					na	na
Many classmates are college bound	R						

Note: Statistical significance at $p < .05$ is represented by G (gain score analysis), A (analysis of covariance), and R (reliability adjusted analysis of covariance).

Table B-11.6

Gap Reduction Analysis of School Affiliation and Student Perception Outcomes, by Cohort by Year
Project COFFEE Vocational Training Program (Fort Berthold)

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
School Affiliation							
School thought safer							
Teaching/Teachers better						na	na
Better job preparation					+		
Counseling/Counselors better						na	na
More academic encouragement							
Student perceptions							
Classmates should not misbehave							
Future expectations are better						na	na
Many classmates are college bound	+						

Note: Direction of statistical significance at $p < .05$ is represented by +/-.

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Table B-12.1

Characteristics of Study Participants
Project COFFEE Vocational Training Program (Fort Yates)

Characteristic*	Cohort 1				Cohort 2				Comb	
	Treatment Group (N = 17)		Control Group (N = 16)		Treatment Group (N = 16)		Control Group (N = 62)		Treatment Group (N = 33)	
	n	%	n	%	n	%	n	%	n	%
Gender										
Female	8	47%	7	44%	5	31%	33	53%	13	39%
Male	9	53%	9	56%	11	69%	29	47%	20	61%
Race/Ethnicity										
Native American	16	94%	16	100%	14	88%	57	92%	30	91%
Black	0	0%	0	0%	0	0%	0	0%	0	0%
White	1	6%	0	0%	2	13%	5	8%	3	9%
Hispanic	0	0%	0	0%	0	0%	0	0%	0	0%
Asian/Pacific Islander	0	0%	0	0%	0	0%	0	0%	0	0%
Age										
Age appropriate	4	24%	3	19%	6	38%	32	52%	10	30%
Overage for grade	13	76%	13	81%	10	63%	30	48%	23	70%

*Sample sizes for individual characteristics vary slightly across characteristics and cohorts.

Table B-12.2

Analysis of School Performance Outcomes, by Cohort by Year
Project COFFEE Vocational Training Program (Fort Yates)

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
Dropout Status							
Higher GPA				G,A,R		G,A	
Higher number of credits earned							
Fewer absences				G			
Fewer courses failed							-G

Note: Statistical significance at $p < .05$ is represented by G (gain score analysis), A (analysis of covariance), and R (reliability adjusted analysis of covariance). Dropout analysis is conducted with Mantel-Haenszel test.

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Table B-12.3

Gap Reduction Analysis of School Performance Outcomes, by Cohort by Year
Project COFFEE Vocational Training Program (Fort Yates)

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
Higher GPA	*	*	*			na	na
Higher number of credits earned	*	*	*			na	na
Fewer absences	*	*	*			na	na
Fewer courses failed	*	*	*			na	na

Note: Direction of statistical significance at $p < .05$ is represented by +/-.
* Cohort without gap reduction group

Table B-12.4

Analysis of Project Dropout Rates, by Cohort by Year
Project COFFEE Vocational Training Program (Fort Yates)

Year	Cohort 1				Cohort 2			
	Treatment Group (N = 16)		Control Group (N = 16)		Treatment Group (N = 16)		Control Group (N = 62)	
	n	%	n	%	n	%	n	%
1989-90	2	13%	1	6%	na	na	na	na
1990-91	3	19%	4	25%	0	0%	12	19%
1991-92	3	19%	5	31%	3	19%	14	23%

Year	Com	
	Treatment Group (N = 32)	
	n	%
Year 1	2	6
Year 2	6	19

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Table B-12.5

Analysis of School Affiliation and Student Perception Outcomes, by Cohort by Year
Project COFFEE Vocational Training Program (Fort Yates)

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
School Affiliation							
School thought safer		A					
Teaching/Teachers better		-A,-R				na	na
Better job preparation							
Counseling/Counselors better						na	na
More academic encouragement		-A,-R					
Student perceptions							
Classmates should not misbehave							
Future expectations are better						na	na
Many classmates are college bound					R		R

Note: Statistical significance at $p < .05$ is represented by G (gain score analysis), A (analysis of covariance), and R (reliability adjusted analysis of covariance).

Table B-12.6

Gap Reduction Analysis of School Affiliation and Student Perception Outcomes, by Cohort by Year

Project COFFEE Vocational Training Program (Fort Yates)

Outcome	Cohort 1			Cohort 2		Combined Cohort	
	1989-90	1990-91	1991-92	1990-91	1991-92	Year 1	Year 2
School Affiliation							
School thought safer	*	*	*			na	na
Teaching/Teachers better	*	*	*			na	na
Better job preparation	*	*	*			na	na
Counseling/Counselors better	*	*	*			na	na
More academic encouragement	*	*	*			na	na
Student perceptions							
Classmates should not misbehave	*	*	*			na	na
Future expectations are better	*	*	*			na	na
Many classmates are college bound	*	*	*			na	na

Note: Direction of statistical significance at $p < .05$ is represented by +/-.
* Cohort without gap reduction group

Appendix C

Derivation of Analytical Approach

The following derivation is presented to explain the differences among the three analytical methods used in the dropout prevention study: analysis of covariance, reliability-adjusted analysis of covariance, and probabilistic gain scores. The basic paradigm is to assume that the data fit some reasonable model, in which a parameter represents the treatment effect, and to determine whether the results of specific computational models produce unbiased estimates of that parameter.

The model for the data assumes that the post-treatment measure, Y_2, and the pre-treatment measure, Y_1, are both distributed with error, E_2 and E_1, and that the post-treatment measure includes an effect for the treatment, G, which is parameterized by γ.

Suppose that the true model for a set of scores is represented by:

$$Y_{1ij} = c_1 + T_{ij} + E_{1ij}, \qquad Y_{2ij} = c_1 + \eta + \beta\, T_{ij} + E_{2ij} + \gamma\, G_{ij},$$

for person j in group i at time 1 (pretest) and time 2 (posttest). The mean score at time 1 is c_1, and the mean score at time 2 is c_1 plus a gain, η, for the control group, with an additional γ for the treatment group. The "true" score, or the reliable variation in Y, is denoted by T. It can be assumed to have a mean of zero, or alternatively, the value of c_1 can be assumed to be zero. When the true score may be correlated with group membership, randomization or matching often is employed to assure that the correlation is as close to zero as possible. Finally, the gain may or may not be a function of the individual's original true score component (in which case β is different from one). The goal of the analysis is to obtain an unbiased estimate of γ.

Gain Scores, Analysis of Covariance, and Reliability-Adjusted Analysis of Covariance

The assumptions in this model are that the error terms, E_1 and E_2, are uncorrelated with each other and with T and G. There is no assumption about the relative sizes of the variances of E_1 and E_2, although in the absence of evidence to the contrary one might expect them to be similar. If the within-group variance of the post-measure is larger than the

variance of the pre-measure, it may be an indication that (a) the variance of E_2 is larger than the variance of E_1, (b) $\beta > 1$, or (c) the probabilistic gain score analysis is appropriate.

The model as set forth is not identifiable, and some additional data or an additional assumption is necessary to enable appropriate interpretation of analytical results. One possible simplifying assumption is that the variance of E_1 is zero. In that case, traditional analysis of covariance is appropriate. Unfortunately, in the present case, this assumption is patently false because the pre- and post-measures are the same scholastic performance measures made in two different years and there is little reason to believe that they were measured without error one year and with error the next. Nevertheless, simple analyses of covariance were performed as one of several methods of analysis used to "triangulate" the results. One rationale for this approach was that if there were substantial effects of a treatment, then they should show up across analytical methods.

There is a second assumption that would validate the use of analysis of covariance, even if there were error in the pre-measurement: that there was no correlation between group membership and the true score at pre-test. If assignment to treatment and control conditions had been randomized, *and* if there were no differential attrition associated with values of the true score, then this would be a valid assumption. However, because there was substantial attrition in this study by its very nature (i.e., a dropout prevention program evaluation), this assumption is questionable.

A third assumption that can be made to render the model useable is that β is one. In other words, gains are not proportional to the true scores measured at pre-treatment. If gains are not restricted primarily to students who start out high or, alternatively, to students who start out low, then a simple gain score analysis, in which the pre measure is subtracted from the post-measure and the difference is the object of analysis, is appropriate. The primary indicator used to test for a difference between β and one is the variance of the scores (within-group). A larger variance at post-measurement may imply that (a) β is greater than one, (b) the variance of E_2 is larger than the variance of E_1, or (c) the probabilistic gain score model is applicable.

There is no simple way to differentiate these two possibilities, one of which calls the simple gain score analysis into question while the other does not. However, there is an

additional process that may lead to larger post-measurement variances (within group) than pre-measurement variances. It may be that some individuals are engaged by the treatment (in either group) and therefore make a large gain while others make an "average" gain. This "probabilistic gain" model is identifiable, and it can account for a larger within-group variance at post-measurement than at pre-measurement. Analyses of the data using the probabilistic gain score model were carried out whenever (a) the variance at post-measurement was significantly larger than the pre-measurement variance and (b) a test of the appropriateness of the probabilistic gain score model was positive. The details of the probabilistic gain score model are described at the end of this section.

Finally, if information about the relative sizes of the variances of the true scores and the error scores at pre-measurement (i.e., about the reliability of Y_1) is available, that information can be used in a "reliability-adjusted analysis of covariance." The problem for this approach in practice is that information about reliability is rarely known. The standard procedure in program evaluation, in which there is no external body of evidence about the reliability of measures, especially for the particular populations under study, is to use the pre/post correlation as the measure of reliability in carrying out reliability-adjusted analysis of covariance.

In the present study, there were too few scores at any particular site to estimate the "reliability" accurately. Indeed, at a few sites, the pre/post correlations of the observed scores were actually slightly negative. Therefore, the data were pooled across sites to obtain a single estimate of the reliability of each measure, the pooled-within-site, within-group, correlation between pre-measurement and post-measurement.

Each of the possible analytical options will produce unbiased estimates of the effects of the treatment if its assumptions are met, and each will produce biased estimates if its assumptions are violated. The following derivation shows the relations among these models and assumptions. To simplify the presentation, other covariates, such as race/ethnic group, are not included: the issue at hand concerns the treatment of pre-existing differences on the outcome measure, Y.

Consider three different linear regression models:

Model 1: $Y_2 = Y_1 + G$ (simple analysis of covariance)

Model 2: $Y_2 - Y_1 = G$ (simple gain score analysis)

Model 3: $Y_2 - (b/rel)\, Y_1 = G$ (reliability-adjusted analysis of covariance)

The first model generates estimates of effects both for Y_1, which we shall refer to as β, and for G, which we shall refer to as γ. The second model generates only an estimate of γ. The third model pre-estimates the relation between Y_1 and Y_2 (*b*) and inflates that estimate by dividing by the reliability estimate (*rel*) to eliminate the true-score component from the left-side of the model. Only the second and third of these models gives an unbiased estimate of γ when there is a combination of pre-measurement error and correlation between group membership and true-score at pre-measurement. To see this, we have computed the expected value of the estimates of β and γ, which we refer to as $E(\hat{\beta},\hat{\gamma})$. For simplicity in the presentation, we refer to cov(T,G) as λ and to $\sigma^2_T / (\sigma^2_T + \sigma^2_{E_1})$ as ρ.

In Model 1,

$$E(\hat{\beta},\hat{\gamma}) = (cov(Y_2,Y_1),\ cov(Y_2,G)) \begin{pmatrix} \sigma^2_{Y_1} & cov(Y_1,G) \\ cov(Y_1,G) & \sigma^2_G \end{pmatrix}^{-1}$$

$$= ((\beta\sigma^2_T+\gamma\lambda),\ (\beta\lambda+\gamma\sigma^2_G)) \begin{pmatrix} \sigma^2_T+\sigma^2_{E_1} & \lambda \\ \lambda & \sigma^2_G \end{pmatrix}^{-1}$$

$$= \frac{((\beta\sigma^2_T+\gamma\lambda),\ (\beta\lambda+\gamma\sigma^2_G)) \begin{pmatrix} \sigma^2_G & -\lambda \\ -\lambda & \sigma^2_T+\sigma^2_{E_1} \end{pmatrix}}{\sigma^2_G(\sigma^2_T+\sigma^2_{E_1})-\lambda^2}$$

from which we can compute the expected value of the estimate of γ as:

$$E(\hat{\gamma}) = \frac{(\beta\sigma^2_T+\gamma\lambda)(-\lambda) + (\beta\lambda+\gamma\sigma^2_G)\ (\sigma^2_T+\sigma^2_{E_1})}{\sigma^2_G(\sigma^2_T+\sigma^2_{E_1})-\lambda^2}$$

$$= \gamma + \frac{\beta\lambda\sigma^2_{E_1}}{\sigma^2_G(\sigma^2_T+\sigma^2_{E_1})-\lambda^2}$$

which clearly includes a bias, proportional to the covariance between the treatment and the pre-treatment measure and to the error variance in the pre-treatment measure. Likewise, the expected value of the estimate of β is:

$$E(\hat{\beta}) = \beta\frac{\sigma^2_G\sigma^2_T-\lambda^2}{\sigma^2_G(\sigma^2_T+\sigma^2_{E_1})-\lambda^2} = \beta\rho\frac{\sigma^2_G\sigma^2_T-\lambda^2}{\sigma^2_G\sigma^2_T-\rho\lambda^2}$$

In Model 2,

$$E(\hat{\gamma}) = \frac{cov(Y_2-Y_1,\ G)}{\sigma^2_G}$$

$$E(\hat{\gamma}) = \frac{cov((\beta-1)T+E_2-E_1+\gamma G,\ G)}{\sigma^2_G}$$

$$= \gamma + \frac{(\beta-1)\lambda}{\sigma^2_G}$$

In other words, the expected value of the estimate of γ is γ if either β is one or the two groups are matched on the true score at pre-measurement.

It should be noted that analysis of covariance (Model 1) can be viewed as a two-step analysis. In the first step, the contribution of the pre-measurement to post-measurement is estimated; in the second step that contribution is eliminated by subtracting the appropriate multiple of the pre-measurement score from the post-measurement and then testing whether group membership accounts for significant variance of the difference. The appropriate multiplier to use in the subtraction is β, or an unbiased estimate of β.

The problem is that if the pre-measurement has error, the regression coefficient obtained is not an unbiased estimate of β, as shown above (the expected value of the estimate of β is not β). In Model 3, that estimate of β is inflated by dividing by the "reliability," or

by $\sigma^2_T / (\sigma^2_T + \sigma^2_{E_1})$, which approximately eliminates the bias in the estimate of β. (As shown by the derivation for Model 1, it fails to eliminate the bias completely if λ is non-zero.) This leads to the following equation:

$$E(\hat{\gamma}) = \frac{cov(Y_2 - \frac{\hat{\beta}}{rel} Y_1, G)}{\sigma^2_G}$$

where *rel* is the "reliability" of Y. Note that when the variances of Y_1 and Y_2 are equal and the pre/post correlation is used as the reliability, the value of *rel* is exactly the estimate of β, so this is the same as the simple gain score model.

$$E(\hat{\gamma}) = \frac{cov((\beta - \frac{\hat{\beta}}{rel})T + E_2 - E_1 + \gamma G, G)}{\sigma^2_G}$$

and if the reliability inflation renders the estimate of beta equal to the parameter it is estimating, the first term will vanish. Thus the expected value of the estimate of γ is:

$$= \gamma + \frac{(\beta - \frac{\hat{\beta}}{rel})\lambda}{\sigma^2_G}$$

which is biased to the extent that (a) there is a correlation between treatment group and true score at pre-test and (b) the reliability adjustment is imprecise.

Probabilistic Gain Score Analysis

If the post-measurement variance is greater than the pre-measure variance, this may be because some individuals "gained" while others did not. The model presented in this section

addresses this situation, providing an unbiased estimate of the treatment effect and a test for the appropriateness of this model. We suppose that there are two groups, i=1 (Treatment) and i=2 (Control). There is a measure Y, taken on individuals both pre (Y_{1ij}) and post (Y_{2ij}). This model retains the assumption, used in the simple gain score analysis, that the coefficient of T does not change from pre-measurement to post-measurement.

As before, the underlying model assumes that Y is measured with error at both points in time, with the same true score variance component at both times. We suppose, further, that everybody may have some average gain, but that some individuals experience an additional gain. The null hypothesis is that the percentage of subjects that experience the additional gain is the same in group 1 and group 2. The alternative hypothesis is that more people receive gains in one of the groups.

$$Y_{1ij}=T_{ij}+E_{1ij}$$

$$Y_{2ij}=T_{ij}+E_{2ij}+\eta+\gamma\delta_{ij},$$

where

$$prob(\delta_{1j}=1)=\pi+\lambda \quad and \quad prob(\delta_{2j}=1)=\pi$$

η represents the average gain for all individuals, and γ is the additional gain for individuals who experienced the increase. δ is the (1,0) variable indicating who got the additional gain; π is the base percentage of those who got the additional gain in both groups; and λ is the incremental number of individuals in the treatment group who got the gain. An implicit parameter, σ, is the sum of variances of the two error terms. The statistic used for the test is the gain, G_{ij}, the post minus pre difference for each individual. The test is a likelihood ratio test between two models, the one given and the one that assumes λ is zero.

These equations can be solved for maximum likelihood estimators of the parameters in the following way. First, there are a discrete number of combinations of the delta i j's. The maximum likelihood is the maximum over these combinations of the maximum given the

combination of deltas. To maximize the likelihood with respect to pi, lambda, gamma, and eta, for a given set of deltas, we solve the equations that are of the form dlog(L)/d(theta)=0, where theta is some parameter. The log likelihood is given by:

$$\log(L) = -\sum_{i=1}^{2}\sum_{j=1}^{n_i}\frac{1}{2}((G_{ij}-\eta-\gamma\delta_{ij})/\sigma)^2-(n_1+n_2)\log\sigma\sqrt{2\pi}$$
$$+\sum_{j=1}^{n_1}(\delta_{1j}\log(\pi+\lambda)+(1-\delta_{1j})\log(1-\pi-\lambda)$$
$$+\sum_{j=1}^{n_2}(\delta_{2j}\log(\pi)+(1-\delta_{2j})\log(1-\pi)$$

The equations can be solved easily, given a specific set of deltas.

It is not essential to consider all possible values of the deltas separately, because, for a given average delta in each group, the allocation of the deltas among individual cases which maximizes the likelihood is clear: for example, given that four of eight deltas are 1 and four are 0, the maximum likelihood assignment is that the four 1's go to the four individuals in the group with the highest gains.[1]

One assumption of this model is that the deltas who received gains are uncorrelated with the preexisting true score differences, and therefore with Y_{1ij}. This correlation can be estimated by the correlation of "delta" with the score at pre-test; and this model can be used in place of the simple gain score analysis if (a) the variance of Y_{2ij} is significantly greater than the variance of Y_{1ij} and (b) the correlation between Y_{1ij} with $delta_{ij}$ is not significantly different from zero.

[1]Sign unidentifiability can be removed by assuming that γ is not negative.

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