MAKING IT HAPPEN

How Career Academies Can Build College and Career Exploration Programs

Mary G. Visher
Jacklyn N. Altuna
Stephanie Safran

mdrc
BUILDING KNOWLEDGE TO IMPROVE SOCIAL POLICY

January 2013

Making It Happen

How Career Academies Can Build College and Career Exploration Programs

Mary G. Visher

Jacklyn N. Altuna

Stephanie Safran

with

Marie-Andrée Somers

January 2013

mdrc

BUILDING KNOWLEDGE TO IMPROVE SOCIAL POLICY

Funding for this report was provided by the Institute of Education Sciences, U.S. Department of Education, under grant number PR/Award R305B070702, and by the Bill & Melinda Gates Foundation.

Dissemination of MDRC publications is supported by the following funders that help finance MDRC's public policy outreach and expanding efforts to communicate the results and implications of our work to policymakers, practitioners, and others: The Annie E. Casey Foundation, The George Gund Foundation, Sandler Foundation, and The Starr Foundation.

In addition, earnings from the MDRC Endowment help sustain our dissemination efforts. Contributors to the MDRC Endowment include Alcoa Foundation, The Ambrose Monell Foundation, Anheuser-Busch Foundation, Bristol-Myers Squibb Foundation, Charles Stewart Mott Foundation, Ford Foundation, The George Gund Foundation, The Grable Foundation, The Lizabeth and Frank Newman Charitable Foundation, The New York Times Company Foundation, Jan Nicholson, Paul H. O'Neill Charitable Foundation, John S. Reed, Sandler Foundation, and The Stupski Family Fund, as well as other individual contributors.

The findings and conclusions in this report do not necessarily represent the official positions or policies of the funders.

For information about MDRC and copies of our publications, see our Web site: www.mdrc.org.

Overview

Preparing high school students for both college and career is a goal that few can disagree with. But while much attention has focused on how to prepare students *academically* for life after high school, less has been directed at the nonacademic skills and knowledge that students need to succeed in college and the workplace. Schools are expected to teach these skills and knowledge, but they are rarely given the support, guidance, and tools needed to do so.

Career academies — small schools within schools that are organized by a career theme — are particularly well positioned to provide these "21st-century skills." Indeed, work-based learning experiences, such as internships, are a central, possibly an instrumental, component of the career academy model. Yet even career academies struggle to make college and career exploration and awareness-building curricula a central part of every student's experience.

With a grant from the Institute of Education Sciences in the U.S. Department of Education, MDRC and its project partner Bloom Associates piloted a program to help academies build college and career exploration programs. Called "Exploring Career and College Options (ECCO)," the program consists of a series of one-hour in-class lessons, visits to local work sites and college campuses, and a six-week internship with a concurrent weekly seminar that is offered in the summer before or during the senior year. If the program is fully implemented, by the time students graduate from an ECCO career academy, they will have received up to 44 lessons, participated in at least two visits to work sites and two to college campuses, and completed a six-week compensated internship.

This report summarizes findings from a three-year study of 18 academies in three states — California, Florida, and Georgia — that implemented ECCO from 2009 through 2012.

Key Findings

- ECCO significantly improved the capacity of career academies to offer college and career exploration curricula and activities. Academies with little or no existing capacity were able to launch all the components of the ECCO program within the first year.

- As a consequence of this increased capacity, students in ECCO academies participated in career and college exploration activities at substantially higher rates than students who were enrolled in the same academies before ECCO was implemented.

- The ECCO academies were successful in placing into internships most of the students who were interested in and available for them. The internship component of the academy model is often viewed as the most challenging aspect of implementation. Surprisingly, when students did not participate in the internship program, they more likely opted out of it, rather than what has commonly been cited as the reason for low take-up rates — that not enough employers choose to host interns. The students' reasons for opting out of an internship included mandatory summer school and already having a summer job lined up.

Contents

List of Exhibits

Table

[1]The findings result from comparing participation rates at three points in time: the year prior to the academy's implementing ECCO, one year after implementation started, and two years after implementation. The first comparison (before and after one year of implementation) uses data on students in two academies: the Academy of Art and Technology (AOAT) and the Center for Hospitality, Tourism, and Marketing (HTM). The second comparison (between one and two years of implementation) uses data on students in two other academies: the Culinary Operations Academy (COA) and the Digital Safari Academy (DSA).

Table

Table

Figure

Figure

Box

Preface

Operating within larger high schools, career academies are small, career-themed schools in which students take classes together as a cohort for three or four years and spend time in local work sites to experience firsthand the world of work. This approach is one of the most durable and popular high school reform models in the United States. Starting over 40 years ago in just a handful of schools, the career academy movement has grown to include over 7,000 academies, ranging from "green" academies in California to tourism academies in Florida to pre-engineering academies in the Northeast. Tens of thousands of students from a wide range of socioeconomic and racial/ethnic backgrounds, with different academic achievement levels and different educational and career aspirations, enroll in these schools.

The career academy model is also one of the most studied of reforms. Two decades ago, MDRC launched the first random assignment evaluation of career academies to test their impact on academic, labor market, and other student outcomes. The results of that study, which showed that academies have strong and sustained effects on earnings, have helped shape and fuel the growth of the academy movement ever since. One plausible interpretation of these findings is that it was the work-based learning component of the academy experience that drove these positive effects. In 2008, MDRC received a grant from the Institute of Education Sciences (IES) in the U.S. Department of Education to conduct a second impact study.

The process of recruiting academies for that study, however, led to a surprising discovery: In nearly all the academies visited, the researchers learned that one of the key components of the academy model — internships and other work-based learning experiences — either was nonexistent or served only a handful of students. Although teachers and leaders believed in the value of work-based learning, they explained that they lacked the time, resources, and (sometimes) the know-how needed to approach and recruit employer partners as well as to teach students about appropriate behavior at the work site. So MDRC switched gears and — with the support of IES — launched a different kind of project, whose goal was to create a program and curriculum that would build the capacity of academies to create strong work-based learning programs and to study what it takes for them to succeed. Because career academies are now as much about preparing students for postsecondary education as they are about preparing students to succeed in the workplace, a college exploration component was added to the program.

Eighteen academies in six school districts volunteered to pilot the program, which was developed by Bloom Associates, Inc., in partnership with MDRC and which eventually was named "Exploring College and Career Options," or "ECCO." This report summarizes the findings and lessons learned from the academies' experiences in creating from scratch or rebuilding a program that focused on work-based learning and college exploration activities.

The results show that, within just a year, academies can — with some help and support — build strong work-based learning and college exploration programs that reach most if not all of their students, rather than just a few.

The number of academies continues to grow, thanks in large part to recent federal support for this evidence-based model. The hope is that ECCO and the findings from this research, along with many other capacity-building efforts under way, will help academies fulfill their potential to make a difference for at-risk and low-income youth.

Gordon L. Berlin
President

Acknowledgments

This report reflects the collaborative efforts of many organizations and individuals, including the career academies that implemented the "Exploring Career and College Options (ECCO)" program, their employer partners, and their districts; the program developer, funders, and advisers; and our colleagues at MDRC. We owe everything to the teachers and students at the 18 career academies and the staff in the district offices of Atlanta (Georgia) Public Schools, Hillsborough County Public Schools (Tampa, Florida), Los Angeles Unified School District, Miami-Dade County Public Schools, Mt. Diablo Unified School District (Concord, California), and Oakland (California) Unified School District. Without their willingness to try out the program and so openly share with us their experiences, this report could not have been written.

The program developer, Bloom Associates, Inc., produced the ECCO curriculum and guides and provided support to the academies and districts as they delivered the program to their students. Materials produced by Susan Bloom, Andrea Baker, and Michael Sack with the expert support of Jill Philipson were received with enthusiasm and high praise by the academy teachers and district staff.

We received expert guidance on the materials from David Stern of the Career Academy Support Network, Leslie Haynes of the Completion by Design Assistance Team, and James Kemple of New York University. David Stern also provided invaluable comments on an earlier draft of this report, as did Deanna Hansen of the National Academy Foundation and Lupe Ferran Diaz and Ann Fields of the Miami-Dade County Public School District. Staff at ConnectEd — particularly, Brad Stam, Roman Stearns, Robert Atterbury, and Penni Hudis — were our valued "thought partners" as well as helpful in recruiting the Oakland Unified School District to the project. We are grateful to the Institute of Education Sciences and program officers David Sweet and Hiromi Ono for their thoughtful guidance at critical points throughout the project.

Throughout the three-year project, we often consulted with MDRC colleagues for advice. In particular, we appreciate the support of Robert Ivry, Fred Doolittle, Kristin Porter, Janet Quint, and John Hutchins. Other past and current MDRC staff played key roles in acquiring, entering, and analyzing the data; we thank Alison Black, Micah DeLaurentis, Jean Grossman, Shirley James, Alma Moedano, Shelley Rappaport, and Cynthia Willner. Nicole Clabaugh contributed in ways too many to count. Thanks are also due Robert Weber for his skillful editing and David Sobel and Stephanie Cowell, who prepared the report for production.

The Authors

Executive Summary

Overview of the ECCO Program

The phrase "preparing students for college and career" has become so ubiquitous that it has become almost a mantra in educators' discourse in recent years. Whether mentioned in the Common Core State Standards, in the mission statements of high schools, or in political campaigns, improving the college and career readiness of young people is a concept that few can disagree with. Much attention has focused on how to prepare students *academically* for life after high school. But "readiness" also means having the knowledge and skills to make informed choices about careers and postsecondary education options and — once graduated — to successfully navigate both worlds. High schools are expected to teach these skills and knowledge but are rarely given the guidance or tools to do so.

With a grant from the Institute of Education Sciences in the U.S. Department of Education, MDRC and its project partner Bloom Associates developed and piloted a program to help schools build or strengthen their college and career exploration programs. Called "Exploring Career and College Options (ECCO)," the program was designed specifically for career academies but can be adapted to fit many educational settings. *Career academies* are schools within schools that enroll up to several hundred students. They are organized by a career theme, such as health sciences or media arts. Besides regular high school courses, career academy students enroll in a sequence of career-technical courses centering on the theme area. Finally, students participate in internships and other experiences in workplaces — which is often called "work-based learning" — to reinforce the connections between what they learn in the classroom and their future careers. An earlier random assignment study of career academies conducted by MDRC demonstrated the effectiveness of the model. Over the years, as the number of career academies grew, the parallel pressure to ensure that all students meet high academic standards inadvertently crowded out time for career exploration activities — the very activities that nonexperimental evidence from the MDRC study suggests may have played an instrumental role in causing the large increases in earnings that career academy participants experienced over the eight-year period following high school graduation. Career academies typically cite a lack of time, skills, and resources as the reason for not offering such activities to all of their students.

ECCO is a capacity-building program to help career academies offer opportunities to students to learn about their workplace and postsecondary options through four core components: a series of one-hour in-class lessons, visits to local work sites, visits to college campuses, and a six-week internship offered to all students in the summer before or during their senior year. The curriculum includes guidance for educators on how to arrange and manage students' out-of-school experiences as well as guides for partnering employers. As shown in Table ES.1, by the

The Career Academies Project

Table ES.1

ECCO Components, by Grade Level

Semester	ECCO Component	10th-Graders	11th-Graders	12th-Graders	Total
Fall	Career exploration lessons	5	5		10 lessons
	Career exploration visits	1	1		2 visits
Fall and/or spring	Career development lessons	7	7	5	19 lessons
Spring	College readiness lessons	5	6	4	15 lessons
	College visits	1	1		2 visits
Summer between 11th and 12th grades	Internship and seminar			1	1 internship

NOTE: The number of lessons listed in the Total column is the maximum number of lessons available. Some lessons are considered optional.

time students graduate from an ECCO career academy, they will have received up to 44 one-hour lessons, participated in at least two visits to work sites and two visits to college campuses, and completed a six-week compensated internship along with a concurrent weekly seminar.

This report summarizes findings from a three-year study of the implementation of the ECCO program. ECCO was launched in 18 career academies in six school districts in three states: California, Florida, and Georgia.[1] The purposes of the study are to document the experiences of these schools in adopting the program and to assess the extent to which, when given support and resources, programs like ECCO can be fully implemented. The study also collected descriptive data to assess the promise of the program to improve student participation in career and college exploration activities and to improve their awareness of postsecondary options.

Key Findings from the Project

- ECCO significantly improved the capacity of career academies to offer college and career exploration curricula and activities to their students. Acade-

[1]Nineteen academies volunteered to participate, but one academy withdrew before the program began.

mies with little or no existing capacity were able to launch all the components of the ECCO program within the first year.

- As a consequence of this increased capacity, students in academies that implemented ECCO participated in career and college awareness and exploration activities at substantially higher rates than students who were enrolled in the same academies before ECCO was implemented.
- Most of this increased participation in career and college exploration activities occurred in the first two semesters of exposure to ECCO; an additional two semesters of exposure did not appear to substantially improve participation beyond the boost achieved in the first year.
- ECCO academies that were given generous support in the form of financial assistance and coaching were able to implement the program and sustain it with high fidelity for up to three years. Somewhat surprisingly, however, even those academies in the study that received less support were able to establish or strengthen their programs.
- The ECCO academies were successful in placing into internships most of the students who were interested in and available for them. The internship component of the academy model is often viewed as the most challenging aspect of implementation. Surprisingly, when students did not participate in the internship program, they more likely opted out of it, rather than what has commonly been cited as the reason for low take-up rates — that not enough employers choose to host interns. The students' reasons for opting out of an internship included mandatory summer school and already having a summer job lined up.

Career Academies: A Proven High School Reform Model

The academy model is one of the oldest and most stable of high school reform models in the United States. A number of factors help explain the lasting appeal of career academies. Especially in recent years, academies focus on preparing students for *both* college and career, not one or the other, by offering not only a rigorous college preparatory curriculum but also career-technical education. Academy advocates reject the "false dichotomy" that students need to prepare for college *or* career, arguing that the skills needed to succeed in either arena are the same — or at least overlapping. Second, academies attract and are well suited to serve a broad cross-section of high school students, from those who are at high risk of dropping out to those who are on track to enroll in four-year universities. Finally, the career academy model has been the subject of much

research and evaluation, some of which has generated rigorous evidence of the model's effectiveness and much of which has shaped the evolution of the model over the past few decades.[2]

MDRC's pivotal study of career academies — started in the mid-1990s — was one of the most rigorous evaluations of any high school intervention conducted at that time.[3] The study used random assignment to construct a program group and a control group of about 1,800 students and then tracked them through and beyond high school for several years after their scheduled graduation. The study found strong and sustained positive impacts from participation in career academies on students' labor market experiences — notably, higher earnings. These impacts occurred without any detrimental effects on educational outcomes, such as graduation from high school or postsecondary enrollment.[4]

ECCO: A Career and College Exploration Program

ECCO teaches students about the workplace and postsecondary options through a series of one-hour in-class lessons, visits to local work sites (called "career exploration visits") and to college campuses ("college visits"), and a six-week internship offered to all students in the summer before or during their senior year. The curriculum includes guidance for teachers on how to teach the lessons, arrange and manage students' out-of-school experiences, and work with employers who host the visits and accept interns. To ensure solid program implementation, ECCO includes a professional development and technical assistance component.

As shown in Table ES.1, students who spend tenth, eleventh, and twelfth grades in an ECCO academy would experience — by the time of graduation — up to 44 lessons taught in

---

[2]David Stern, Charles Dayton, and Marilyn Raby, *Career Academies: A Proven Strategy to Prepare High School Students for College and Careers* (Berkeley: University of California, Graduate School of Education, Career Academy Support Network, 2010), Web site: http://casn.berkeley.edu/resources.php?r=158&c=1.

[3]James J. Kemple, *Long-Term Impacts on Labor Market Outcomes, Educational Attainment, and Transitions to Adulthood* (New York: MDRC, 2008). Web site: http://www.mdrc.org/sites/default/files/full_50.pdf.

[4]More recently, a study used state records data in California to describe the characteristics of students enrolled in California Partnership Academies (CPAs) and compare them with those of students who were not enrolled in academies. The study also looked at differences in graduation rates and test scores. Although the study found that academy students graduated at a higher rate, the design did not permit controlling for students' characteristics. But the study also compared the scores of academy and nonacademy students on the state's standardized tests, controlling for both school and demographic characteristics. No significant differences were detected. See Charles Dayton, Candace Hamilton Hester, and David Stern, *Profile of the California Partnership Academies, 2009-2010* (Berkeley: University of California, Graduate School of Education, Career Academy Support Network, October 2011), Web site: http://casn.berkeley.edu/downloads/CPA_Report_2009-10.pdf; see also David Stern, Phil Saroyan, and Candace Hamilton Hester, *Comparing Students in Each California Partnership Academy with Non-Academy Students at the Same High School, 2009-10* (Berkeley: University of California, Graduate School of Education, Career Academy Support Network, August 2012), Web site: http://casn.berkeley.edu/resource_files/ComparingAcad_%20Non-AcadStudents_2012.pdf.

their regular career-technical or academic classes. They would have gone on two visits to local work sites and two visits to college campuses. In the summer between eleventh and twelfth grades, they would have had a six-week internship in a local work site and attended a weekly, half-day seminar covering a variety of topics that are conducive to success in internship, college, and career.

A total of 18 career academies in five school districts volunteered to participate in this project. Four served as "pilot academies," two of which operated the program for three years and two of which operated the program for two years. These four academies received substantial support in the form of free materials, training, regular coaching, and a grant to compensate the teacher who served as the ECCO coordinator in each academy. The remaining academies were recruited for a "scale-up phase" in which they were asked to operate the program supported by a less intensive "train-the-trainer" model of coaching, to assess the feasibility of scaling up the program in several academies at a time within a district. During the first year of ECCO implementation, for example, whereas the pilot academies received monthly calls and a visit each semester from the program developer, the scale-up academies received monthly calls and occasional visits from a district employee who was trained by the program developer, with periodic participation by the developer.

Key Findings from the Implementation Study

Overall, the pilot academies implemented the core components of ECCO as they were designed. All four academies taught the lessons in the proper sequence; arranged for all the required career exploration visits (in which at least 80 percent of their students participated); visited a range of postsecondary educational institutions, including both community colleges and universities; and placed in an internship about 70 percent, on average, of the students who were interested and available.

This success was almost replicated by the scale-up academies using a train-the-trainer model and reduced support, although three of the fifteen academies did not complete the yearlong program. One academy withdrew before the project began, and two withdrew over the course of the year. The remaining scale-up academies were able to implement each component of the program with good fidelity. They conducted all the required off-campus visits and placed about the same percentage of their juniors in internships as the pilot academies did. But while the pilot sites taught all the required lessons, the scale-up sites taught, on average, about 80 percent of the required lessons.

Factors that appear to be associated with smooth program implementation across all the ECCO academies include:

- A strong district-level employee with the capacity and credibility to effectively support the academies
- A high level of commitment to the goals of the program at the academy level
- Alignment with the district's existing initiatives and priorities
- Flexibility in scheduling, within the academy's calendar, coupled with release time or stipends to compensate ECCO coordinators for the time they spent building and supporting partnerships with employers

Key Findings from the Analysis of Participation Rates and Short-Term Outcomes

The main outcome of interest is whether ECCO, a capacity-building intervention, resulted in increased student participation in career and college exploration activities. Surveys and a variety of other data sources were used to assess the evidence for this, as well as the extent to which ECCO could plausibly have improved other short-term outcomes, such as students' awareness of college and career options and the connections between high school, postsecondary education, and their career aspirations.

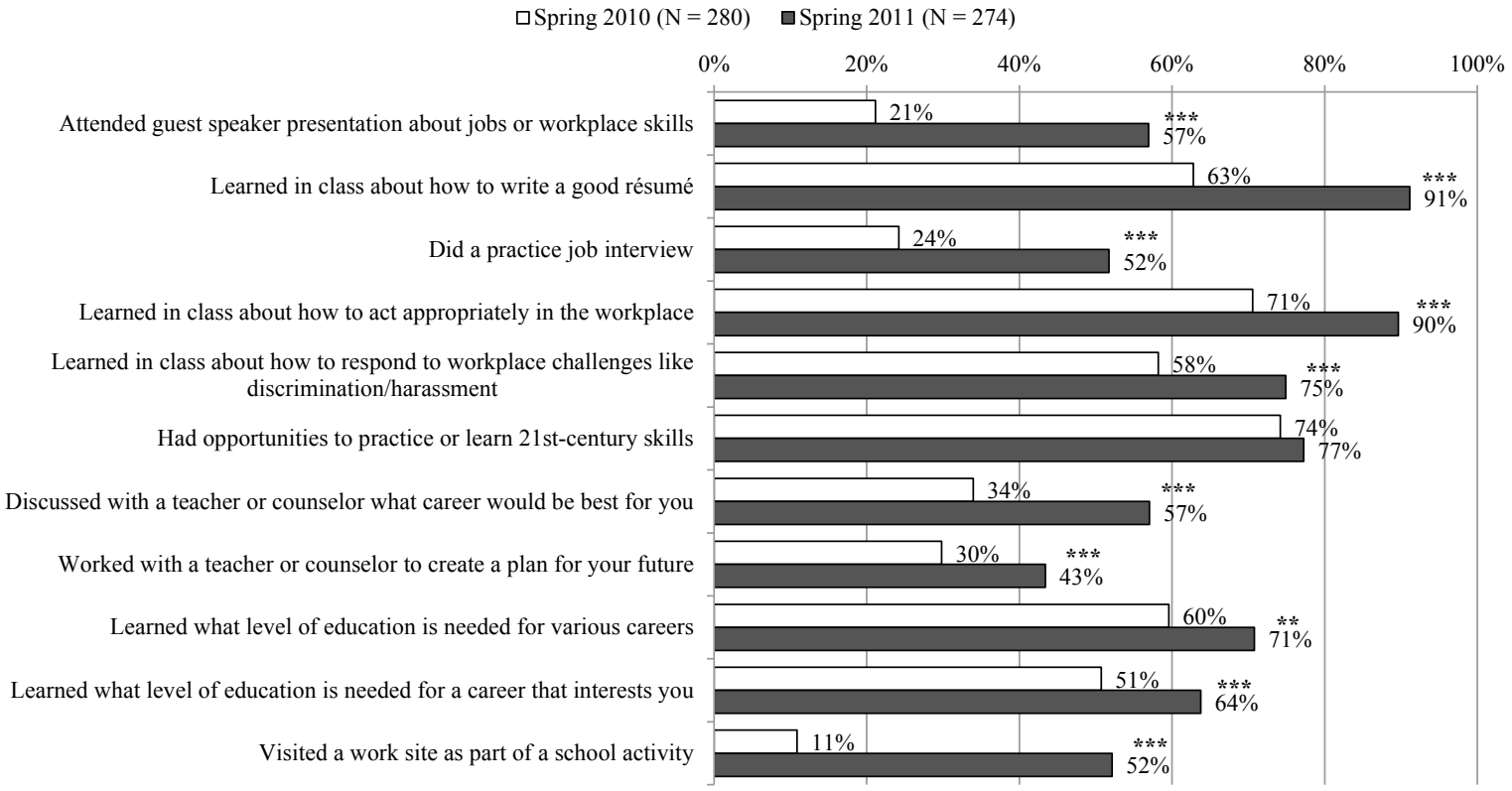
- Students with two semesters of exposure to the ECCO program participated in more career exploration activities than students in the same academies before the program was implemented. For example, after two semesters of participation in ECCO, the percentage of students who visited a local work site as part of their school programming more than quadrupled. The percentage of students who performed a practice job interview more than doubled, and the percentage of students who reported that they had learned about what level of education is needed for various careers increased by 9 percentage points. (See Figure ES.1.) A second year of exposure to ECCO generally resulted in little additional growth in participation in these activities over and above the growth that happened in the first year.[5]

[5]These findings result from comparing participation rates at three points in time: the year prior to the academy's implementing ECCO, one year after implementation started, and two years after implementation. The first comparison (before and after one year of implementation) uses data on students in two academies: the Academy of Art and Technology (AOAT) and the Center for Hospitality, Tourism, and Marketing (HTM). The second comparison (between one and two years of implementation) uses data on students in two other academies: the Culinary Operations Academy (COA) and the Digital Safari Academy (DSA).

The Career Academies Project

Figure ES.1

Participation in Career Exploration Activities During the School Year: Comparison of Tenth- and Eleventh-Grade Cohorts Combined, with Zero and Two Semesters of ECCO, First-Year Academies (AOAT and HTM)



(continued)

Figure ES.1 (continued)

SOURCE: MDRC calculations are from the ECCO spring student surveys.

NOTES: This analysis is based on survey respondents enrolled in a given grade in spring 2010 and spring 2011. The white bars are the regression-adjusted outcomes of students who responded to the spring 2010 student survey. The dark bars are the regression-adjusted outcomes of students who responded to the spring 2011 survey.

Outcomes are adjusted for the following student characteristics: academy fixed effects, grade fixed effects, whether a student belonged to a racial or ethnic minority, gender, mother's educational attainment, whether a student was ever held back, whether the student received a D or below in English or math in the previous school year, and missing indicators for each of these characteristics.

A two-tailed t-test is used for all statistical tests presented in this figure. Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

Due to missing values on some survey items, the number of students included in the analysis varies by activity. The numbers of students reported in the figure are the number of students who responded to the survey.

AOAT = Academy of Art and Technology; HTM = Center for Hospitalty, Tourism, and Marketing.

- Similarly, students with two semesters in ECCO participated in substantially more activities to improve their understanding of their college options and to help them make informed choices. For example, after two semesters of participation in ECCO, the percentage of students who visited a four-year campus doubled, and the percentage of students who reported that they had talked with a teacher about their college plans increased by 20 percentage points. Exposure to ECCO was also associated with a significantly higher percentage of students who attended a college fair, heard a presentation with college representatives, and talked with a teacher about how to pay for college. (See Figure ES.2.)

- Students with two semesters of participation in ECCO showed positive but modest growth on scales measuring awareness of career and college options.

Conclusions

The purpose of the project described in this report was to design and test an intervention that would systematically build the capacity of academies to offer career *and* college exploration activities for *all* their students. The primary question that drove the research is whether academies — if given the resources and the support to do so — *can* launch and maintain a high-quality work-based learning program that includes all students.

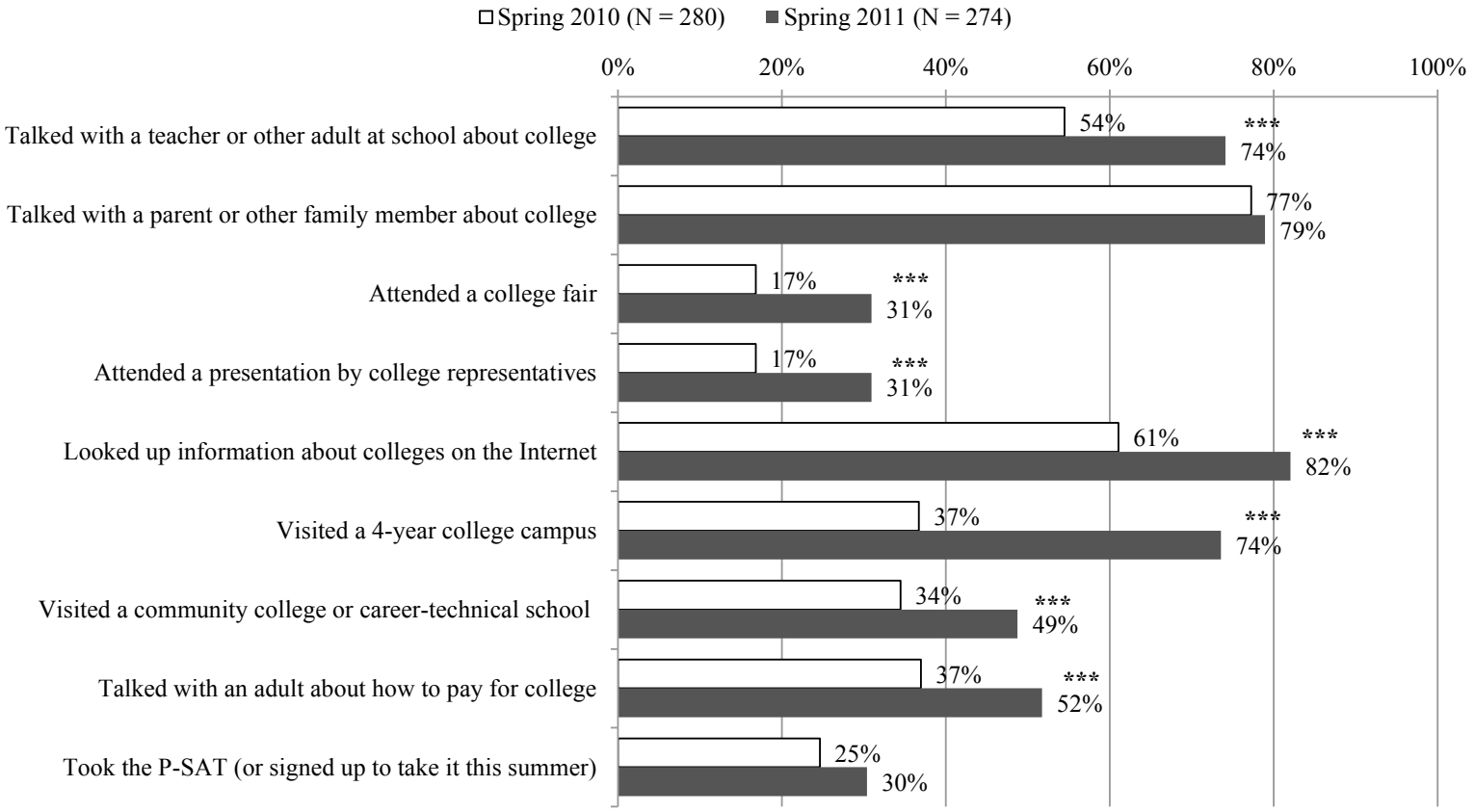
Nineteen academies in six school districts volunteered to implement ECCO — a program consisting of a sequenced set of lessons and off-campus experiences for students in tenth through twelfth grades who enrolled in career academies.[6] All but three academies — those that dropped out early in the project — were able to offer significantly more career and college exploration activities than they offered before ECCO. More students experienced more activities. That being said, the work of building career and college exploration programs was not without significant challenges, even when academies had access to generous resources and support. Fitting new curricula into already-packed courses (whether it was a career-technical course or an English course), arranging visits to workplaces and college campuses, and finding suitable employers to serve as internship hosts took time and skill. Implementation was not perfect. But the accomplishments of the academies in implementing ECCO leave little doubt that the program succeeded in increasing their capacity to build career and college exploration programs that could reach all students rather than just a few, even for the group of academies that received less support.

[6]ECCO was designed for students in ninth through twelfth grades, but, for the purposes of this study, the academies were not required to include ninth-graders.

The Career Academies Project

Figure ES.2

Participation in College Exploration Activities During the School Year: Comparison of Tenth- and Eleventh-Grade Cohorts Combined, with Zero and Two Semesters of ECCO, First-Year Academies (AOAT and HTM)



(continued)

Figure ES.2 (continued)

SOURCE: MDRC calculations are from the ECCO spring student surveys.

NOTES: This analysis is based on survey respondents enrolled in a given grade in spring 2010 and spring 2011. The white bars are the regression-adjusted outcomes of students who responded to the spring 2010 student survey. The dark bars are the regression-adjusted outcomes of students who responded to the spring 2011 survey.

Outcomes are adjusted for the following student characteristics: academy fixed effects, grade fixed effects, whether a student belonged to a racial or ethnic minority, gender, mother's educational attainment, whether a student was ever held back, whether the student received a D or below in English or math in the previous school year, and missing indicators for each of these characteristics.

A two-tailed t-test is used for all statistical tests presented in this figure. Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

Due to missing values on some survey items, the number of students included in the analysis varies by activity. The numbers of students reported in the figure are the number of students who responded to the survey.

AOAT = Academy of Art and Technology; HTM = Center for Hospitalty, Tourism, and Marketing.

While the study clearly establishes the feasibility of building the capacity of academies to offer career and college exploration activities and demonstrates that this increased capacity led to greater student participation in such activities, the evidence is less clear about whether increased participation in those new programs made a difference in the short-term outcomes that were predicted by the theory of change. An analysis of scores on scales measuring changes in career and college awareness, engagement, and 21st-century skills points to statistically significant and substantial differences for some indicators before and after students participated in ECCO. Without a more rigorous research design, however, it is difficult to attribute these differences to ECCO with confidence.

Implications of the Findings for Policy and Practice

The findings from this study of a capacity-building project to help academies offer their high school students a program of career and college exploration experiences suggest several implications for educators and researchers. First, while it is feasible to implement in academies a cohesive program of college and career exploration curricula and activities, this is unlikely to happen without support. Teachers need resources, time, and training. This is particularly true for developing work-based learning programs that directly involve employers. Yet good results can be achieved in a relatively inexpensive "train-the-trainer" model of professional development whereby the school district provides most if not all of the direct support that academies need.

Second, with resources and support, academies in this project were generally able to place about half of their juniors in internships. Although a handful of students were not placed because of a shortage of employer hosts, most of the juniors who did not participate opted out for reasons including obligations to attend summer school, the need to earn money, family summer plans, and the inability to pay for public transportation. This implies that alternatives to the traditional internship model — whereby one student is placed with one employer during the summer — should be considered. Many academies are already experimenting with such alternatives as "virtual internships," group internships, employer mentoring programs, and school-based enterprises that arguably have the same desired learning outcomes of internships. Ideally, the traditional internship should be just one of several outcome-driven options that academies can offer to provide students with work-based learning experiences.

Third, college and career exploration activities should be tightly integrated with the totality of the academy experience. These activities are best not relegated to the career-technical teacher alone. English, history, and math teachers should be involved with teaching an in-class career and college exploration curriculum, and they should find ways to integrate this material with their subject curriculum, accompany students on visits to the workplace and to college campuses, and create and monitor internships. When this occurs, students may be more likely to better understand the connections between what they are learning in their math

and English classes and their futures, leading to deeper engagement in school and better postsecondary outcomes.

Fourth, preparing young people for success in the workplace and college is part of the mission of many programs serving young people, including regular high schools, extended learning programs, youth development programs, job training programs, community colleges, middle schools, after-school programs, and area vocational schools. ECCO — or programs like it — can be adapted and tested easily in a variety of such settings to learn what it takes to move beyond the rhetoric and actually bring effective services to low-income or at-risk young people.

Fifth, many questions remain about the effects that career and college exploration and preparation programs in high school (offered both inside and outside career academies) have on long-term outcomes, such as enrollment in and completion of postsecondary education and participation in the labor market. While such programs hold promise to make a difference in the lives of at-risk, low-income students, without more rigorous evidence than is presented in this report, their true potential remains unknown.

For more information about the ECCO program and how to access it, see www.connectedstudios.org/ecco.

Chapter 1

Introduction

Overview of the ECCO Program

The phrase "preparing students for college and career" has become so ubiquitous that it has become almost a mantra in educators' discourse in recent years. Whether mentioned in the Common Core State Standards, in the mission statements of high schools, or in political campaigns, improving the college and career readiness of young people is a concept that few can disagree with. Much attention has focused on how to prepare students *academically* for life after high school. But "readiness" also means having the knowledge and skills to make informed choices about postsecondary education options and to learn the skills and behaviors to succeed in both college and careers. High schools are expected to teach these skills and knowledge but are rarely given the guidance or tools to do so.

With a grant from the Institute of Education Sciences in the U.S. Department of Education, MDRC and its project partner Bloom Associates developed and piloted a program to help school districts and academies build or strengthen their college and career exploration programs. Called "Exploring Career and College Options (ECCO),"[1] the program was designed explicitly for career academies but is relevant and adaptable for many educational settings.[2] *Career academies* are schools within schools that enroll up to several hundred students. They are organized by a career theme, such as health sciences or media arts. Besides regular high school courses, career academy students enroll in a sequence of career-technical courses centering on the theme area. Finally, students participate in internships and other experiences in workplaces — which is often called "work-based learning" — to reinforce the connections between what they learn in the classroom and their future careers. Career academies often struggle to offer college and career exploration and awareness-building curricula and activities, and they typically cite a lack of time, skills, and resources as the reason for the struggle.

ECCO's goal was to build the capacity of academies to offer college and career exploration experiences to *all* their students from tenth through twelfth grades. The program combines an in-school curriculum with out-of-school experiences in postsecondary institutions and workplaces. To test the feasibility of implementing the program and to assess its success in

[1]ECCO was first named "The Career Academies Project: Linking Education and Careers (CAP)." An ECCO teacher in the Oakland Unified School District — an ECCO district — suggested this name change.

[2]One section of the curriculum, the Internship Seminar Lessons, was adapted from an existing curriculum created by the Institute for Research and Reform in Education (IRRE); MDRC and IRRE share the copyright.

increasing participation in the programs, ECCO was launched in 18 career academies in six school districts in three states: California, Florida, and Georgia.[3]

Key Findings from the Project

- ECCO significantly improved the capacity of career academies to offer college and career exploration curricula and activities to their students. Academies with little or no existing capacity were able to launch all the components of the ECCO program within the first year.
- As a consequence of this increased capacity, students in academies that implemented ECCO participated in career and college awareness and exploration activities at substantially higher rates than students who were enrolled in the same academies before ECCO was implemented.
- Most of this increased participation in career and college exploration activities occurred in the first two semesters of exposure to ECCO; an additional two semesters of exposure did not appear to substantially improve participation beyond the boost achieved in the first year.
- ECCO academies that were given generous support in the form of financial assistance and coaching were able to implement the program and sustain it with high fidelity for up to three years. Somewhat surprisingly, however, even those academies in the study that received less support were able to establish or strengthen their programs.
- The ECCO academies were successful in placing into internships most of the students who were interested in and available for them. The internship component of the academy model is often viewed as the most challenging aspect of implementation. Surprisingly, when students did not participate in the internship program, they more likely opted out of it, rather than what has commonly been cited as the reason for low take-up rates — that not enough employers choose to host interns. The students' reasons for opting out of an internship included mandatory summer school and already having a summer job lined up.

[3]Nineteen academies volunteered to participate, but one academy withdrew before the program began.

Career Academies: A Durable and Effective Model for High School Reform

ECCO is designed to work within a career academy environment.[4] Career academies were first developed some 40 years ago with the aim of restructuring large high schools into small learning communities to create better pathways between high school and higher education and/or the workplace. Since then, the career academy movement has grown steadily. By 2008, at least 7,000 academies were operating in hundreds of public high schools in the United States.[5]

Career academies operate as schools within schools, usually enrolling 30 to 60 students per grade. They typically start with the tenth grade, but some also enroll ninth-graders. Academies are organized around broadly defined occupational sectors, such as health sciences, hospitality and tourism, law, and engineering, but students are not necessarily expected to find careers in these sectors. Instead, academies aim to expose students to an array of careers while preparing them to graduate from high school and seek postsecondary education. By showing students the relevance of what they are learning in schools to their futures and by giving them experiences that underscore those connections, academies seek to improve engagement in school. Academy students take classes together, remain with the same group of teachers over time, and follow a curriculum that includes both rigorous, college preparatory courses and a sequence of career-technical courses. Teachers of core subjects and teachers of career-technical courses are expected to collaborate in an effort to integrate their content and to emphasize the relevance of what they are teaching in these classes to their students' future careers. Finally, students participate in work-based learning activities, such as summer internships, to reinforce those connections and to afford them the opportunity to learn skills for success both in the workplace and in postsecondary education.

The academy model is one of the oldest and most stable of high school reform models in the United States. Unlike most reform models, the career academy model not only is durable but also has gained ground in the four decades since the first few opened their doors. A number of factors help explain the lasting appeal of career academies. Especially in recent years, academies focus on preparing students for *both* college and career, not one or the other, by offering not only a rigorous college preparatory curriculum but also career-technical education. Academy advocates reject the "false dichotomy" that students need to prepare for college *or* career, arguing that the skills needed to succeed in either arena are the same — or at least overlapping. Second, academies attract and are well suited to serve a broad cross-section of high school students, from those who are at high risk of dropping out to those who are on track to

[4]ECCO can be adapted to fit other educational settings, such as small thematic schools, community colleges, extended learning, and youth development programs.

[5]Stern, Dayton, and Raby (2010); Harvard University Graduate School of Education (2011).

enroll in four-year universities. Finally, the career academy model has been the subject of much research and evaluation, some of which has generated rigorous evidence of the model's effectiveness and much of which has shaped the evolution of the model over the past few decades.[6]

MDRC's pivotal study of career academies — started in the mid-1990s — was one of the most rigorous evaluations of any high school intervention conducted at that time.[7] The study used random assignment to construct a program group and a control group of about 1,800 students and then tracked them through and beyond high school for 12 years after their scheduled graduation. The study found strong and sustained positive impacts from participation in career academies on students' labor market experiences — notably, higher earnings. These impacts occurred without any detrimental effects on educational outcomes, such as graduation from high school or postsecondary enrollment.[8]

The Challenges of Offering Work-Based Learning Experiences

Work-based learning is a core component of the academy model, and although there is little rigorous evidence of its effectiveness as a stand-alone activity, it is widely viewed as a likely driver of the positive effects of the career academy model.[9] Unfortunately, however, many of today's academies struggle to create and sustain work-based experiences for their students. Their efforts to do so have been undermined by two federal policy developments. The School to Work Opportunities (STWO) Act, enacted in 1994, provided funding to school districts to support in-school and out-of-school career preparation curricula and activities, such as job shadows, internships, and school-based enterprises. But STWO "sunsetted" in the late 1990s, and funding for career-technical programs was also cut. Federal funding for summer job programs for low-income youth — often used by districts to help pay for work-based learning programs — was also drastically reduced in the 1990s. As a result, many school districts had to scale back their support of academies and similar programs.

At the same time, the No Child Left Behind Act of 2001 drove schools to invest more time and resources in building students' academic skills than their career-technical and work-

[6]Stern, Dayton, and Raby (2010).

[7]Kemple (2008).

[8]More recently, a study used state records data in California to describe the characteristics of students enrolled in California Partnership Academies (CPAs) and compare them with those of students who were not enrolled in academies. The study also looked at differences in graduation rates and test scores. Although the study found that academy students graduated at a higher rate, the design did not permit controlling for students' characteristics. But the study also compared the scores of academy and nonacademy students on the state's standardized tests, controlling for both school and demographics. No significant differences were detected. See Dayton, Hester, and Stern (2011); Stern, Saroyan, and Hester (2012).

[9]Stern and Stearns (2008); Page (2012).

place skills. With economic downturns in the past decade, resources for schools began to dry up, forcing them to cut electives and other nonacademic offerings. The result is that academies consistently report that they struggle to incorporate work-based learning and college exploration activities into their programs, despite a strong desire to do so. For example, a national network of several hundred academies reports that as many as half of them failed to meet the standards set by the organization for a work-based learning program.[10]

It is this need that ECCO was designed to address: to increase the capacity of academies and similar programs to build (or, in some cases, rebuild) a program of in-school and out-of-school learning experiences to ensure that career and college awareness and exploration activities become a central part of every academy student's experience. This report presents findings from a three-year pilot of ECCO, a capacity-building program. During the pilot, 18 career academies in six school districts agreed to implement the program. By intention, the first 4 of these 18 sites (referred to as the "pilot academies" in this report) received significantly more resources and support to implement ECCO than the other academies did. This was done so that the experiences of academies in implementing ECCO with varying degrees of support could be documented, in order to better understand what it takes to implement, sustain, and scale up the program in authentic settings. In addition, student-level data were collected during the two years in which the pilot phase occurred, to assess the potential of ECCO to lead to increased participation in college and career exploration activities and other outcomes that ECCO was designed to affect. The next section describes these outcomes in the context of the program's theory of change.

A Theory of Change

ECCO teaches students about the workplace and postsecondary options through a series of one-hour in-class lessons, visits to local work sites and to college campuses, and a six-week internship offered to all students in the summer before or during their senior year. The curriculum includes guidance for educators on how to arrange and manage students' out-of-school experiences and guides for partnering employers. To ensure solid program implementation, ECCO includes a professional development and technical assistance component.

ECCO has two overall goals:

- To build the capacity of career academies and similar programs to make a continuum of work-based learning and college exploration experiences a central part of the experience of all academy students

[10]This estimate is based on annual self-assessments provided by the academies in 2010 and 2011.

- To increase participation in college and career awareness activities so as to improve students' awareness and knowledge of their career and postsecondary options while helping them acquire the skills that they need to succeed in both

A premise of ECCO is that academies can rarely implement and sustain a continuum of high-quality work-based learning awareness, exploration and preparation learning experiences that are available to all students — not just a few — without resources and assistance. As illustrated by the theory of change depicted in Figure 1.1, such resources include release time or some form of compensation for an academy-level coordinator; district support; training and coaching; and materials, including curricula, tools, and guides.

As shown in Figure 1.1, ECCO has four core components:[11]

1. A series of one-hour lessons that are taught in class by one or more academy teachers and that cover a range of topics geared to teaching students about the workplace and their postsecondary options
2. Annual half-day career exploration visits to local work sites related to the academy's general career theme
3. Annual full-day visits to a range of postsecondary institutions
4. An internship program with a concurrent weekly seminar

Academy activities begin in the fall semester of the first year and continue until the students graduate. The thinking behind ECCO is that, as a result of the academy's strengthened capacity to *offer* these activities, more students will *participate* in them. Increased participation in these exploration activities is expected to heighten students' awareness of the range of postsecondary options available and what is needed to prepare for and succeed in both college and career. In turn, seeing the relevance of education to their future careers will encourage students to become more engaged in school. As one ECCO student said in response to the question "What are you doing to prepare for the future?": "I am staying in school."

A Note on "21st-Century Skills"

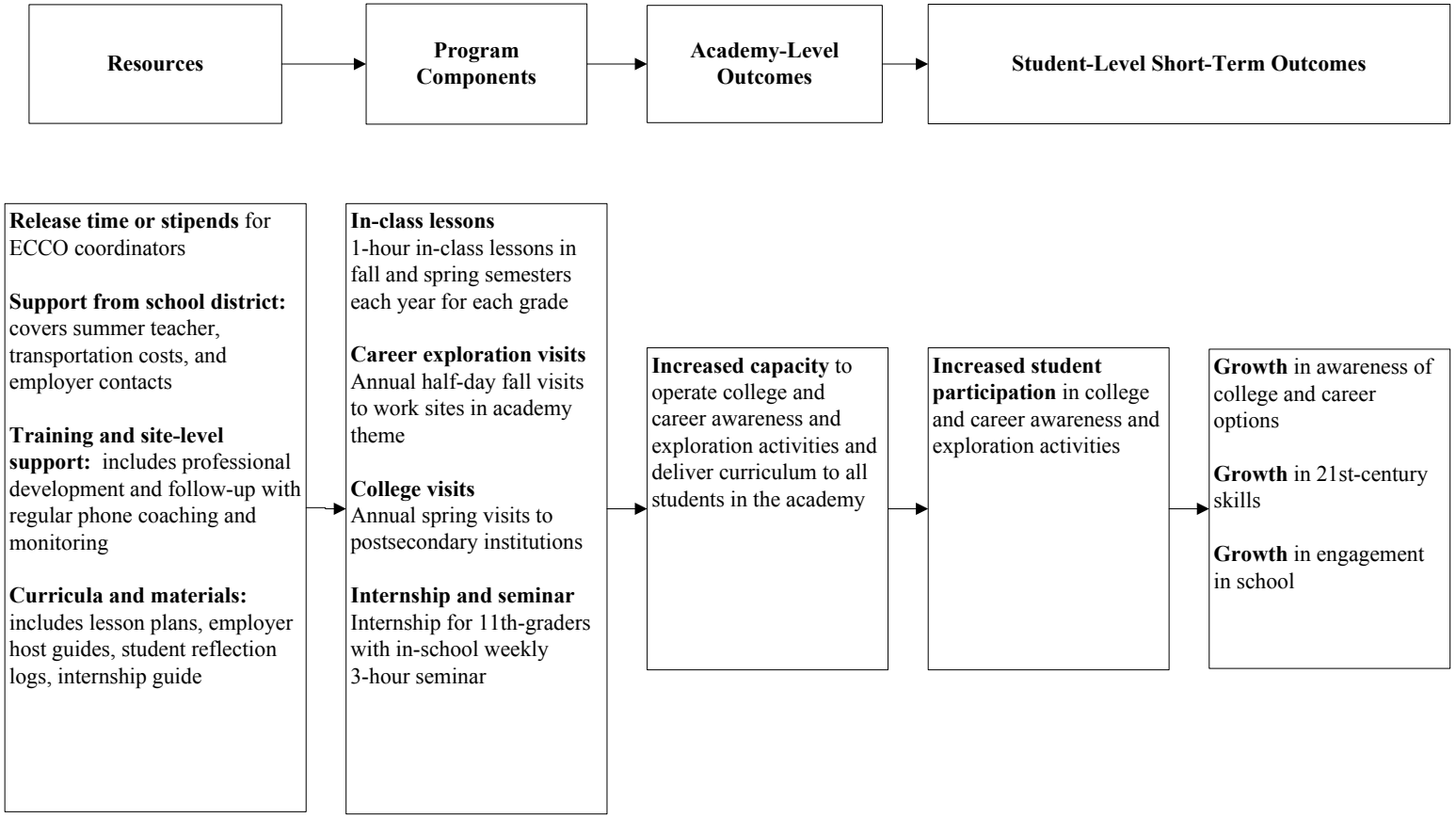
One of the goals of ECCO was to provide high school students with an awareness of and more opportunities to learn noncognitive, transferable skills — referred to in this report as "21st-century skills" and as "Skills for Success" or "Transferable Skills" in the ECCO materials. For

[11]Chapter 2 presents details about the content, sequencing, and structuring of the ECCO components.

The Career Academies Project

Figure 1.1

ECCO: A Theory of Change



ECCO, a set of 19 skills grouped into five categories was selected and adapted for high school students from several sources, including the Partnership for 21st Century Skills (P21) and the Secretary's Commission on Achieving Necessary Skills (SCANS) of the U.S. Department of Labor. These skills are shown in Box 1.1.

Box 1.1

"Skills for Success" in the ECCO Program

Creative and Critical Thinking
Solve problems and make decisions
Think creatively
Learn through research
Reflect and evaluate

Communication
Write clearly
Speak distinctly
Listen carefully and ask good questions
Observe effectively

Collaboration and Teamwork
Cooperate with others
Give and receive feedback
Negotiate challenges and resolve conflicts
Plan and prioritize to reach a goal

Media and Technology
Use new and emerging technology
Use responsible behavior regarding technology

Personal Qualities
Manage time effectively
Demonstrate appropriate behavior and attire
Recognize and respond appropriately to workplace challenges
Show initiative and work independently
Be reliable and dependable

NOTE: This set of noncognitive skills is adapted from skills defined in the Partnership for 21st Century Skills (P21) framework (Web site: http://www.p21.org/).

One influential early book on this subject was published in 1996: *Teaching the New Basic Skills,* by Richard Murnane and Frank Levy. It named four "soft skills" needed in the workplace: the ability to solve semi-structured problems, whereby hypotheses must be formed and tested; the ability to work in groups with persons of various backgrounds; the ability to communicate effectively; and the ability to use technology.[12] A few years later, a group of federal agencies, major companies, and other organizations initiated the Partnership for 21st Century Skills. Included among the skills that P21 names as essential for students to learn are critical thinking, problem solving, creativity, communication, and collaborative skills.[13] A key goal of ECCO was to give students opportunities to improve such skills and to teach them that the skills are needed in order to be productive and successful, no matter which path they choose after high school.

What This Study Can — and Cannot — Conclude About the Promise of ECCO to Affect Student Outcomes

The primary purpose of this project was to develop and pilot a new program and then to document how it was implemented in career academies. Research was conducted to assess the extent to which the program was, in fact, implemented as designed — at least in a small number of schools. A second goal was to assess whether participation in ECCO holds promise for improving the student outcomes that the program is expected to affect.

The most direct outcomes of interest, therefore, are whether ECCO, a capacity-building program, did increase the capacity of career academies to offer career and college exploration opportunities to their students and whether students participated in these activities at higher rates. The second question addressed by the project is whether there is any evidence that increased participation led to growth in the student-level short-term outcomes listed in the model (Figure 1.1).

Note that the research was not designed to demonstrate whether there is — or is not — a causal link between the program and changes in student outcomes, for two reasons. First, testing such an inference would require a different design — such as a randomized controlled trial — to ensure that the students who received program services had the same characteristics before enrolling in ECCO as students who did not receive its services. Only through such a design can one isolate the effects of the program on outcomes. Second, by the time the project was over, most of the academies in the study had implemented the program for two years or

[12]Murnane and Levy (1996).

[13]For a summary of additional contributions to the call for including noncognitive skills in educational settings, see Darche and Stam (draft of June 2012).

less, and it may not have reached a high enough level of maturation or stability to warrant a rigorous impact evaluation.

For these reasons, the goal in analyzing participation and short-term student outcomes is more modest. While an attempt is made to compare outcomes before and after the academies implemented ECCO, differences in those levels might have come about for a variety of reasons — ECCO being just one of them.

A Project in Three Phases

This project unfolded in three overlapping phases:

- The first phase lasted one year (from 2009 to 2010) and focused on developing the curriculum, other materials, and a professional development model. The materials were tested in two academies and then were modified several times, based on feedback from the students, teachers, and employers who had used them.[14]

- A two-year pilot phase (from 2010 to 2012) followed, in which four academies (two of which also served as development sites in the first phase), implemented the nearly finalized curriculum and during which student-level data were collected to measure participation and learning outcomes. Two of these four academies started implementation a year after the other two academies.

- A final, one-year scale-up phase (from 2011 to 2012) included three school districts, each of which implemented ECCO in several academies simultaneously. These are referred to in this report as the "scale-up academies." The report focuses only on the pilot and the scale-up phases, encompassing the 18 academies that participated in the project.[15]

The Pilot Phase: Goals and Sites

The primary goals of the pilot phase were to assess the feasibility of implementing the fully developed program in a small number of authentic settings and to document both the extent to which the academies increased their capacity to offer college and career exploration activities and the extent to which the rate of student participation in such activities increased. A before-and-after design was used to assess whether participation and learning outcomes changed in a manner that is consistent with the theory of change.

[14]The curriculum developer and trainer for the project is Bloom Associates, Inc.

[15]As noted above, 19 academies volunteered to participate, but one withdrew before the program began.

As mentioned above, four academies served as pilot sites. All four volunteered to participate and were selected after being screened according to several criteria, including:

- The main components of the career academy — with the exception of work-based learning — were reasonably well implemented and stable.
- Academy leadership and teachers were eager to adopt the program and recognized their need to build capacity in order to offer a work-based learning program to their students.
- The host district was supportive of academies' participating in the program, although direct district involvement was not required.
- The academy admitted students without regard to prior academic performance, and the racial/ethnic makeup of academy students was not greatly different from that of the host high school.

Table 1.1 presents selected characteristics of the four pilot academies and their districts. All four are located in large, comprehensive public high schools in urban school districts, as is typical of career academies. Two offered a media arts career theme; one offered a hospitality and tourism theme; and the fourth centered on culinary arts. The academies ranged in size from small to large; in spring 2010, the smallest (the Culinary Operations Academy) enrolled 68 students, and the largest (the Academy of Art and Technology) enrolled 250. Three of the four academies were members of a state or national network of academies.

As shown in Table 1.2, the pilot academies enrolled mostly underserved minority students, many of whom were academically at risk: About one-third had received a D or an F in English or math, and about one-fourth had been held back a grade. The racial/ethnic makeup of the students, however, was different across the academies, reflecting the demographics of the host high schools. For example, the participating students at the Center for Hospitality, Tourism, and Management are overwhelmingly African-American, and those at the Academy of Art and Technology are mostly Hispanic — as was the case at their respective high schools (Frederick Douglass High School in Los Angeles and Grover Cleveland High School in Atlanta).

Academy-level characteristics are shown in Appendix Table A.5. The percentage of male students varied across the academies; The highest percentage of males was at the Culinary Operations Academy (60 percent), and the lowest percentage was at the Center for Hospitality, Tourism, and Marketing (36 percent). The Academy of Art and Technology had

The Career Academies Project

Table 1.1

Selected Characteristics of the Pilot Academies

	Academy of Art and Technology	Culinary Operations Academy	Digital Safari Academy	Center for Hospitality, Tourism, and Marketing
District	Los Angeles Unified School District	Hillsborough County Public Schools	Mount Diablo Unified School District	Atlanta Public Schools
Location	Los Angeles, CA	Tampa, FL	Concord, CA	Atlanta, GA
Career theme	Media arts	Culinary arts	Media arts	Hospitality
Year established	2004	2002	1996	2003
Grades served	9-12	9-12	10-12	9-12
Total enrollment	250	68	153	167
Minority students at host high school (%)	84.7	60.6	81.8	99.5
Minority students at academy[a] (%)	89.2	48.5	88.2	100.0
Male students (%)	50.2	64.7	49.0	35.3
Cohorting[b]	Full	Partial	Full	Partial
Network membership	CPA[c] NAF[d]	None	CPA[c]	NAF[d]

SOURCES: Information was obtained from the 2009-2010 Common Core of Data and class rosters collected in spring 2010.

NOTES: All four pilot academies are located within comprehensive high schools. Enrollment and demographic information are based on ninth- to twelfth-grade students enrolled in the academies in spring 2010.

[a]This includes students who are black, Hispanic, Asian, or "Other" race/ethnicity.

[b]Cohorting refers to the co-enrollment of the same group of students in two or more classes. Academies strive to cohort all students in the same grade in at least one of their classes, but full, or "pure," cohorting is rare. Most academies manage to cohort students in at least the career-technical class and in one academic class, such as English.

[c]California Partnership Academies.

[d]National Academy Foundation.

The Career Academies Project

Table 1.2

Selected Characteristics of Enrolled Students and Survey Respondents, Pilot Academies

Characteristic (%)	Spring 2010		Spring 2011	
	Enrolled Students	Survey Respondents	Enrolled Students	Survey Respondents
Racial/ethnic minority[a]	87.3	87.4	91.6	91.2
Male	48.3	47.3	45.4	45.4
Ever held back a grade	NA	22.6	NA	23.8
Mother's educational attainment				
Less than high school	NA	43.8	NA	44.9
High school diploma or GED certificate	NA	31.1	NA	32.4
Postsecondary credential	NA	24.9	NA	22.2
Received a D or below in English or math in the previous school year	NA	33.0	NA	34.5
Grade level				
Grade 10	39.9	38.4	37.2	37.1
Grade 11	29.9	30.1	33.6	34.4
Grade 12	30.2	31.5	29.1	28.6
Academy				
Academy of Art and Technology	37.7	38.9	36.2	37.8
Center for Hospitality, Tourism, and Marketing	28.9	26.3	31.5	27.2
Culinary Operations Academy	10.4	10.7	8.9	9.7
Digital Safari Academy	23.0	24.1	23.4	25.3
Total number of students[b]	695	635	666	588

SOURCE: MDRC calculations are from the ECCO spring student surveys.

NOTES: Values in the "Enrolled Students" columns are the characteristics of students in the spring academy rosters. Values in the "Survey Respondents" columns are the characteristics of students who responded to the student survey. Rounding may cause slight discrepancies in sums and differences.

[a]This includes students who are black, Hispanic, Asian, or "Other" race/ethnicity.

[b]Due to missing values on some survey items and characteristics from the rosters, the number of students included in the analysis varies by characteristic. The total number of students reported here is for the full sample of students enrolled in the academies or who responded to the survey.

NA = Data are not available.

the highest percentage of students whose mothers who did not complete high school (61 percent) as well as the highest percentage of students who were academically at risk, as measured by low grades (45 percent).

The Scale-Up Phase: Goals and Sites

The goal of the scale-up phase was to assess the feasibility of scaling up ECCO in more than one academy at a time and with fewer resources than were used in the pilot phase. The scale-up phase began with site recruitment in spring 2011, with implementation beginning in fall 2011 and ending just before the following fall. Because the focus of the scale-up phase was on the ability of the districts and academies to implement the same program and not on the promise of the program for improving student-level outcomes, no student-level data were collected. Instead, academies were asked to complete a form each semester indicating their progress in implementation and their perceptions of how the program improved their capacity to offer career and college exploration opportunities to their students, compared with prior years.

School districts were selected on the basis of their interest in and capacity for devoting time and resources to the project and on the availability of at least five academies with interest and capacity to adopt the program. The districts that were selected represented three different contextual settings that were expected to influence implementation. Miami-Dade County Public Schools is home to several dozen academies, the majority of which belong to the National Academy Foundation (NAF), a national network of about 400 academies. A NAF employee was assigned to partner with the district to support the academies in implementation instead. Hillsborough County Public Schools chose to participate because of the positive experience of one of the pilot sites that was located there (the Culinary Operations Academy) and because the program was aligned well with district strategic priorities. Finally, Oakland Unified School District was selected because this district was part of the statewide Linked Learning initiative in California. The goals of Linked Learning were also closely aligned with those of ECCO, making it a logical next step for the district to take. As a Linked Learning district, Oakland Unified School District received support in the form of three paid "career technical specialists" to help the academies adopt the core components of the Linked Learning model.

Table 1.3 shows that the three districts each served a large city, one in California and two in Florida. Five academies participated in the ECCO program in two districts (Oakland Unified School District and Miami-Dade County Public Schools). Only four academies participated in Hillsborough County Public Schools, since one academy dropped out before implementation began. Miami-Dade was the largest district in the study, with 86 high schools and a total enrollment of nearly 100,000 students. Over 90 percent of the students who were served in Oakland and Miami-Dade districts belonged to a racial/ethnic minority group, and the majority of students in these two districts qualified for free or reduced-price lunch.

The Career Academies Project

Table 1.3

Characteristics of the Three Scale-Up Districts

Characteristic	Oakland Unified School District	Hillsborough County Public Schools	Miami-Dade County Public Schools
Number of ECCO academies	5	4	5
Location	Oakland, CA	Tampa, FL	Miami, FL
Number of high schools in district	31	40	86
Total enrollment at high schools	11,104	53,410	99,654
Minority students in district[a] (%)	91.1	51.4	90.4
Free/reduced-price lunch (%)	69.4	44.0	60.8

SOURCE: Information was obtained from the 2009-2010 Common Core of Data.

NOTE: [a]This includes students who are black, Hispanic, Asian, or "Other" race/ethnicity.

Data Sources

A variety of data was collected, including student surveys, employer surveys, class roster data, interview data, and direct observations. (See Appendix A.) Program implementation was documented throughout the three-year project. More-detailed data were collected for the four pilot academies as well as student-level information to document participation in college and career exploration activities and to assess the learning outcomes of students with varying number of semesters in ECCO. It is especially important to note that two academies (the Digital Safari Academy and the Culinary Operations Academy) started implementation a full year before the other two academies (the Academy of Art and Technology and the Center for Hospitality, Tourism, and Marketing).

Overview of the Report

The remainder of the report is divided into five chapters:

- Chapter 2 explains the ECCO model and its components in detail. Addressing the question of what the program would look like if it were implemented with high fidelity, the chapter provides a context for Chapter 3.

- Chapter 3 describes in detail what the actual implementation of ECCO looked like in the four pilot academies.
- Chapter 4 describes the experiences of the scale-up academies and their respective districts in implementing the program with significantly less support than the pilot sites received, relying instead on a train-the-trainer model to empower districts to support implementation of ECCO.
- Chapter 5 presents findings based on student-level data collected from the pilot academies to assess the potential of ECCO to improve participation in career and college exploration activities and to promote growth in short-term outcomes — such as college and career awareness — predicted by the program model's theory of change.
- Chapter 6 concludes the report with some reflections on the implications of this study for educators and policies affecting schools' efforts to prepare students for career and college.

Chapter 2

The ECCO Model

Chapter 2 describes in detail the model and key components of the Exploring College and Career Opportunities (ECCO) program. The purpose is to convey what ECCO *should* look like — when fully implemented — in order to provide a context for understanding how the program was *actually implemented* during the pilot and scale-up phases.

Overview of the ECCO Program

As depicted in the theory of change (Chapter 1, Figure 1.1), the ECCO model comprises a sequenced set of developmentally appropriate lessons that are taught during academy classes, a set of off-campus experiences in workplaces and college campuses, and a six-week internship. Designed specifically for career academies, the ECCO model can be implemented across all grades at the high school level, but the focus is on tenth, eleventh, and twelfth grades.

The ECCO model consists of four components: (1) a series of one-hour lessons on topics that are designed to expand students' awareness of and preparation for career and college; (2) structured, half-day career exploration visits to local work sites related to the academy's general career theme; (3) structured, full-day visits to a range of local postsecondary educational institutions; and (4) an internship program with a concurrent weekly seminar. Each component is described in detail below.

One teacher in each academy — typically, the lead teacher (sometimes called the "academy director") or the career-technical teacher — serves as the ECCO coordinator. The coordinator is charged with overseeing the implementation of all four program components. Key responsibilities include identifying employer hosts for the career exploration visits and internships, arranging off-campus visits to workplaces and colleges, teaching the in-class lessons or overseeing other teachers who teach them, and working with the school district to coordinate logistics and resources. A premise of ECCO is that teachers need some form of compensation for the extra hours that it takes to build such a program; the compensation can be one period of release time or a stipend of a few thousand dollars.

The coordinator is supported by training and ongoing support provided by the program developer or another qualified provider. A key premise of the ECCO project is that academies are rarely able to implement career and college exploration programs without support. To facilitate and support the operation of the program, ECCO also provides a framework, ready-to-deliver curricula, and guides for employers. Ideally, academies would have the resources to pay for training, followed by regular coaching and customized technical assistance. Because

most academies do not have these resources, a professional development component is built into ECCO that is meant to be both realistic and sufficient to ensure successful implementation. It includes:

- At least two half-day trainings provided by a qualified professional development provider or by trained school district staff
- During the first year, monthly contact by telephone or site visits with a provider or trained district staff
- During the second year, at least one contact per semester with the provider or the district employee

ECCO can be adopted by a single academy or by a school district in which several academies adopt the program at the same time. Some efficiency can be achieved when several academies in the same district implement the program simultaneously. For example, academies can be brought together for training. Such an approach may be more "sustainable" as well as more scalable than the more intensive, one-academy-at-a-time approach. Both models of implementation were piloted in this study and are covered in this report, in order to compare the implementation experiences of academies that had less access to the program developer and fewer resources than academies that received customized support and more financial resources. Academies that operated the program in a train-the-trainer framework were almost as successful as academies that received the more intensive, one-on-one support.

A Closer Look at the ECCO Program Components

Table 2.1 presents an overview of when the four components of the ECCO program occur for each grade level in an ECCO academy. As can be seen, students who spend tenth, eleventh, and twelfth grades in an ECCO academy would experience — by the time of graduation — up to 44 lessons taught in their regular career-technical or academic classes. They would have gone on two visits to local work sites and two visits to college campuses. In the summer between eleventh and twelfth grades, they would have had a six-week internship in a local work site and would have attended a weekly, half-day seminar covering a variety of topics that are conducive to success in the internship, college, and career.

The In-Class Lessons

The in-class lessons of the ECCO program are taught by one or more academy teachers as part of their regular courses and teaching responsibilities. The lessons are designed to take up one class period of about 50 minutes. They can be taught exclusively in the career-technical course sequence or can be spread out among other courses, such as English, history, and math.

The Career Academies Project

Table 2.1

ECCO Components, by Grade Level

Semester	ECCO Component	10th-Graders	11th-Graders	12th-Graders	Total
Fall	Career exploration lessons	5	5		10 lessons
	Career exploration visits	1	1		2 visits
Fall and/or spring	Career development lessons	7	7	5	19 lessons
Spring	College readiness lessons	5	6	4	15 lessons
	College visits	1	1		2 visits
Summer between 11th and 12th grades	Internship and seminar			1	1 internship

NOTE: The number of lessons listed in the Total column is the maximum number of lessons available. Some lessons are considered optional.

Since career-technical courses are often where students in career academies are exposed to career exploration activities as a cohort, it is in these courses that the ECCO curriculum is the most natural fit. Teaching students about their postsecondary options and the connections between high school, postsecondary education, and the workplace should be a shared responsibility, and so academic teachers are encouraged to teach some of these lessons.

The lessons fall into three clusters: career exploration activities are geared to the workplace visits; college exploration activities are geared to the college visits; and career development activities prepare students for the internships and, more generally, for careers. Table 2.2 lists the topics of each lesson in the three clusters. As mentioned above, if all the lessons are taught, students can participate in up to 40 lessons by the time they graduate from high school.

The *career exploration lessons* are taught in the fall. Three lessons are taught before the workplace visits, and two are taught after them. These lessons have three learning objectives:

- To prepare students for the *career exploration visit*, including researching information about the company
- To develop the skills to interact comfortably and confidently with working adults
- To gain an awareness of the academic, technical, and personal skills required to succeed in the workforce

The Career Academies Project

Table 2.2

ECCO Topic Lessons, by Grade Level

Grade	Career Exploration Activities (Fall Semester)	Career Development Activities (Fall and Spring Semester)	College Exploration Activities (Spring Semester)
10[a]	**Lessons before the activity** 1. Career explorations: What? Where? Why? 2. Skills for Success 3. Making a professional first impression **Lessons after the activity** 4. What does the activity mean to me? 5. Expressing appreciation (optional)	1. The endless job list 2. Taking a stand on beliefs about work (optional) 3. The big picture (optional) 4. Guest speaker (optional) 5. Planning a résumé 6. Writing a résumé 7. Portfolios: what and why	**Lessons before the visit** 1. What is college: myths and facts 2. Researching a college and planning a visit **Lessons after the visit** 3. Reflections on the visit 4. Planning for college 5. Introduction to College Board resources (optional)
11	**Same as above**	1. The endless job list 2. Planning a résumé 3. Writing a résumé 4. Creating and using business cards 5. Why do an internship, anyway? 6. The winning interview 7. Portfolios: what and why	**Lessons before the visit** 1. What is college: myths and facts 2. Researching a college and planning a visit **Lessons after the visit** 3. Reflections on the visit 4. Choosing the right college 5. Guest speaker: college entrance exams 6. Preparing for your own college visit
12	**Same as above**	1. Choosing a path that's right for you 2. Career academy Skills for Success revisited 3. Writing a winning cover letter (optional) 4. Individual job shadows 5. Your exit portfolio	**Lessons before the individual visit** 1. Planning ahead for college 2. Applying to college 3. Financial aid: guest speaker **Lesson after the individual visit** 4. Finish strong: making a smooth transition

NOTE: [a]The tenth-grade lessons can be adapted for the ninth grade.

The *college exploration lessons* are taught in the spring. Two lessons are taught before the campus visit, and three are taught after it. These lessons have four learning objectives:

- To examine career and life goals and to articulate clearly how college helps achieve those goals
- To understand the opportunities and challenges of college as a next option
- To be able to discuss the barriers to attending college and to brainstorm strategies and solutions for overcoming them, based on firsthand testimonies
- To learn key terms for college planning

The *career development lessons* are spread out across the three grades and can be taught in the fall or spring semester. The lessons follow a prescribed curriculum and have many hands-on experiences to engage the students. There are six learning objectives:

- To expand awareness of the many jobs and careers available in the career academy's theme area
- To explore the relationships between interpersonal skills, good work habits, and success in the world of work
- To learn and practice literacy skills (speaking, listening, reading, writing)
- To address skills for success needed in school and at work, such as creative thinking, critical thinking, communication, collaboration and teamwork, understanding new and emerging technology, reflection, self-assessment, and time management
- To develop and refine a résumé
- To assemble a "Career and College Portfolio"[1]

The Career Exploration Visit

The career exploration visit is a half-day, off-campus experience whereby all the students in tenth and eleventh grades visit a work site that performs work related to the broad theme of the career academy. For example, students in a Health Sciences Academy could visit a pharmaceutical lab or a local hospital. Students in a Hospitality and Tourism Academy could visit a hotel or a tourist attraction. Students in a Green Academy might visit a recycling facility. The purpose of these highly structured events is to offer students an opportunity to learn

[1]The portfolio, assembled by students, should contain examples of the student's best work, including a résumé, a cover letter, writing samples, and pictures or descriptions of products or projects completed at school or in the internships.

firsthand about the workplace and to interact directly with people who work in their chosen career theme area. The ECCO model requires that participating academies take their students on at least one visit for tenth-graders and another for eleventh-graders each year.

The career exploration visit has four learning objectives:

- To expand students' awareness of careers and work environments
- To make connections between what is learned at school and what is expected in the workplace
- To observe how employees apply job-specific skills, how transferable skills are used in a variety of jobs, and how technology is used in the workplace
- To practice the skills needed to interact comfortably and confidently with working adults

In contrast to more typical field trips or traditional job shadows, students and employers are well prepared for career exploration visits, and there are explicit activities to be included in each visit, such as a hands-on activity, lunch with employees, and small-group discussions. Employer hosts are provided a written guide ahead of time to help them plan for the academy's visit. Conversely, as part of the lessons described above, students conduct prior research on the host organization, prepare questions to ask employees, and practice behaviors appropriate for interacting with adults in the workplace.

The College Visits

The ECCO program includes at least two group visits to colleges each year, one visit for tenth-graders and another for eleventh-graders. While many high schools organize campus tours for some of their students, the expectation for an ECCO academy is that *all* students visit colleges. Other defining differences in the ECCO model are that the college visits are customized to align with the career theme of the academy and that students have some direct experiences with college classes and students. Finally, ECCO students visit a *variety* of college campuses — including community colleges, proprietary schools, and four-year universities — to expand their awareness of all their options, including those that may initially be viewed as "out of reach."

The college visits have six learning objectives:

- To reinforce the idea that college is a viable option for all students
- To provide firsthand exposure to college environments — classes, living arrangements, student services, admissions, clubs, campus facilities, and so on

- To introduce students to a range of postsecondary institutions — two-year and four-year, residential and commuter, larger and smaller, urban and campus, and so on
- To help dispel myths or misconceptions that students may have about college
- To prepare students for additional college visits that they will make
- To make face-to-face connections with individuals and campus personnel for future follow-up by students

The Internship Program

The internship and seminar component is considered to be the capstone of ECCO; the lessons and the career and college exploration visits are meant to prepare students to succeed in their internship.

The goals of the internship program are to give students the following opportunities:

- To connect what is learned in school with how it is applied in the workplace
- To become more excited about career opportunities and related postsecondary options
- To increase students' confidence by working and networking with local professionals
- To become familiar with and practice 21st-century skills (Chapter 1), such as teamwork, time management, creative thinking, and problem-solving
- To become familiar with workplace such issues as diversity, leadership, and stress management

All students who are available and interested must be offered an internship. As subsequent chapters show, many students opt out of summer internship programs due to competing demands on their time, such as mandatory credit recovery programs or jobs that they have already lined up. On average, however, about half of all juniors opted into the internship program. The internship takes place in the summer between the junior and senior years, although academies are encouraged to offer internships during the senior year if students are not available in the preceding summer. Internships last approximately six weeks, and students are expected to work a minimum of 20 hours per week. Academies are strongly encouraged to offer paid internships but are not required to do so. All students who complete the program must be awarded at least one academic credit.

The ECCO internship model is designed to make the experience as rich a learning experience as possible for the student, while at the same time creating a product or service that has concrete value to the employer. In fact, employers and interns alike are instructed that the internship is not a job but, rather, a learning experience for the student. To reinforce classroom learning with the learning in the workplace, the internship should be relevant to the student's skills and interests and should fit the career theme of the academy. ECCO coordinators attempt to match students with specific placements, and students who are identified as potential candidates are required to interview for the internship. Coordinators are expected to visit each internship site at least twice a summer, to ensure that the learning objectives are being met and that students as well as their supervisors and coworkers are having a positive experience.

To help determine whether an employer or organization would be able to provide good learning opportunities for students, ECCO coordinators are given a tool consisting of a series of questions that can be used both to structure the initial conversation when meeting with prospective hosts and to develop a suitable project for the student to work on. In addition, employers or organizations that are selected to be internship hosts are given a guide that outlines the roles and responsibilities of both ECCO interns and internship hosts and that provides tips and ideas to help hosts create the best possible learning environment for each intern.

Working with their supervisor, with coworkers, and sometimes with other interns from the same academy, students take on a long-term project or a series of tasks that, when completed, yield a tangible product, such as brochure, a video, or a document. Students bring these products of their internship to a summer-ending celebration and public presentation to which their supervisors, parents, and teachers are invited.

Students who are in the internship program also attend a concurrent seminar that is conducted one day per week for all six weeks. The seminar is a key mechanism whereby students can maximize their work-based learning by engaging in reflection and research. Taught by one of the academy teachers at the school or at another location that is convenient for the students, the seminar covers six of the following eight topics: first week in the internship, time management, managing stress, diversity in the world of work, customer service, job satisfaction, leadership roles, and moving forward. Each seminar follows the same format, including a check-in with the students about how the week is going, a time when students can report out on the research assignments they received the week before, engagement with a set of activities covering the topic of the week, and concluding with a research assignment. Each intern maintains a "Research and Reflection Log" that links the topic of the weekly seminar to the work that they are doing in their internship.

Chapter 3

The Implementation Experiences of the Four Pilot Academies

Introduction

Chapter 3 describes how four pilot academies implemented the Exploring Career and College Options (ECCO) program model described in Chapters 1 and 2. It addresses the question of whether the pilot academies — given the support, training, and resources that they received — were able to implement ECCO and the extent to which the program enhanced their capacity to offer career and college exploration opportunities to their students. The chapter also describes the challenges and accomplishments of operating the program in the ever-changing and unpredictable context of high schools.

The chapter draws on data collected during the three-year pilot phase of ECCO — from 2009 through 2012 — including annual student surveys, class rosters, site visits, interviews, records kept by the site coordinators, and surveys of student interns and their employer supervisors. (Appendix A describes the quantitative and qualitative data sources used in Chapters 3, 4, and 5.)

Key Findings

- Overall, the pilot academies implemented the core components of ECCO with a high degree of fidelity.
- ECCO resulted in an increase in both the quantity and the quality of college and career exploration activities for students in the pilot academies.
- Teachers and students in the pilot academies were enthusiastic about the ECCO program — particularly, the off-campus work-based learning experiences and the visits to college campuses.
- The internship program was the most challenging ECCO component to implement, but the pilot academies still managed to greatly improve the reach and quality of their internships. Surprisingly, most of the academies found more employer hosts than there were available students who could accept an internship.

Overview of the Pilot Academies

As explained in Chapter 1, four academies were selected to participate in the pilot phase of ECCO: the Culinary Operations Academy in Tampa, Florida; the Digital Safari Academy in Concord, California; the Academy of Art and Technology in Los Angeles; and the Center for Hospitality, Tourism, and Marketing in Atlanta, Georgia. These four academies varied in size, career theme, and the demographic characteristics of their students. (See Table 1.1 in Chapter 1.) What the pilot academies had in common when they were recruited for this project was a need for and strong interest in strengthening programming for career and college readiness and exploration activities — particularly, internships. All four were eager to get help to do what they knew already they should be doing as academies: provide work-based learning experiences to most if not all students. Brief profiles of each academy follow.

The Culinary Operations Academy (COA)

The Culinary Operations Academy (COA) at Chamberlain High School in Tampa, Florida, was founded in 2002. Serving approximately 68 students in grades 9 through 12 (as of spring 2012), the academy offered a rigorous curriculum focused on the food service and hospitality industries. The curriculum addressed both state career and technical education standards and the standards set by ProStart, a program of the National Restaurant Association. Participation in ProStart helps this academy's programs meet industry standards and offers students the opportunity to receive certifications recognized by the industry. At the time that the academy joined the project, it had several employer partnerships, the strongest of which was with Outback Steakhouse. Outback had even built a scaled-down version of one of its restaurants in the high school, complete with a kitchen, which provided a real-world learning environment for the students. The academy had not offered an internship program in the past, and both the school district and the academy viewed ECCO as an opportunity to do so.

The Digital Safari Academy (DSA)

The Digital Safari Academy (DSA) at Mt. Diablo High School in Concord, California, offered an interdisciplinary approach to learning through a focus on multimedia arts and computer science. As of spring 2010, the Digital Safari Academy served approximately 153 students in grades 10 through 12. Founded in 1996, it is one of the oldest academies in the California Partnership Academies state initiative.[1] The academy curriculum emphasized project-based learning and offered students various opportunities to tackle real-world problems,

[1]State legislation launched the California Partnership Academies (CPAs) initiative in 1984. By 2010, approximately 300 CPAs were operating in California public high schools. See the initiative's profile on the California Department of Education Web site: http://www.cde.ca.gov/ci/gs/hs/cpareport09.asp.

including an annual Innovation Fair for which student teams formed virtual companies, created new technology products, and developed business plans. Academy leaders were assisted in implementing ECCO by a longtime volunteer from the community who was a small business consultant and former employer. The academy welcomed the opportunity to develop an internship program, stating that it had not had one for many years and that it considered this to be a top priority for its programming.

The Academy of Art and Technology (AOAT)

The Academy of Art and Technology (AOAT) at Grover Cleveland High School in Los Angeles, California, was founded in 2004 and, as of 2010, served approximately 250 students in grades 9 through 12. Focused on the visual arts, this academy offered a thematic, project-based curriculum for students that incorporated technology at all levels. It emphasized rigor and college preparation; every student enrolled in an advanced placement class during the senior year. The academy's work-based learning program before ECCO was minimal. It had organized a few field trips to local employers but had never operated an internship program.

The Center for Hospitality, Tourism, and Marketing (HTM)

The Center for Hospitality, Tourism, and Marketing (HTM) at Frederick Douglass High School in Atlanta, Georgia, was founded in 2003 and, as of spring 2010, served 167 students in grades 9 through 12. As a member of the National Academy Foundation, this academy offered a curriculum including marketing, finance, and key principles of customer service, and it strove to provide a rigorous and relevant curriculum to assist students in meeting the demands of the industry and postsecondary institutions. The academy was eager to launch ECCO and, like the other pilot academies, saw this as an opportunity to build its capacity to offer internships. Before ECCO, few, if any, if its students had participated in an internship.

The Implementation of ECCO's Core Components

Although ECCO offers lessons and activities for students in grades 10 through 12, because the plan for each pilot academy was to phase in activities over two years, each of these academies focused on the lessons and activities for tenth- and eleventh-graders in the first year, and they added lessons and activities for twelfth-graders in the second and third years of the pilot.

The In-Class Lessons

As described in Chapter 2, ECCO contains a series of one-hour lessons that are taught

in one or more of the academy courses for each grade throughout the year.[2] Some lessons in the pilot were clustered around the career exploration visits or around the college visits; some lessons (the "career development lessons") were freestanding and could be scheduled whenever convenient for the school. Teachers who were assigned to deliver the lessons were expected to fit them into existing curricula. All four pilot academies taught the lessons and sequenced them as intended, although some teachers found it difficult to find time for this, particularly in the program's first year.

The pilot academies generally taught the career development lessons and conducted the career exploration visits and their accompanying lessons in the fall. In the spring, they typically taught the college visits and their accompanying lessons. The in-class lessons were taught during the school day — usually in the career-technical class — but, by the second year of implementation, three of the four academies began using subject-matter teachers in the academy to teach some of the lessons, easing the burden on the career-technical teacher. In the second or third year of implementation, all the ECCO coordinators found it easier to fit the ECCO lessons into their regular curriculum. In one academy, however, the students were not "cohorted" — meaning that there was no single class in which all the students in that grade were enrolled — the teacher struggled to deliver the lessons to the students for whom they were designed. Of the 54 eleventh-graders in that academy, only 27 were gathered in one class at the same time, and so only these cohorted students were taught the ECCO lessons. As a result, some eleventh-graders were not eligible to participate in the off-campus activities.

All four of the ECCO coordinators reported that their students appeared to be engaged in the lessons. One teacher said: "After teaching about the professional handshake in 'The Winning Interview,' I now greet my students at the door to welcome them and shake their hands, so they get the practice." Another teacher wrote: "Just having the curriculum is useful. It is extremely useful. It makes me go on up and beyond what I would normally do." Several of the coordinators stated that the ECCO lessons provided a more coordinated approach to teaching about college and career awareness than what they had done previously.

The Career Exploration Visit

> Having a job involving multimedia is way different than just having class. Now I know that it's a lot harder because things are for real life. The projects they do for other people have to be perfect and precise.
>
> — An ECCO student

[2]ECCO lessons and activities that are designed for tenth-graders can also be offered to ninth-graders. The Culinary Operations Academy included ninth-graders in ECCO beginning in its second year of implementation; the other three pilot academies either did not enroll ninth-graders or chose not to include them in ECCO.

A *career exploration visit* is a structured half-day visit to a local employer that exposes students to careers and professionals working in the broad occupational area relating to the academy's theme. Before going on the visit, students learn about how to interact with the employees, prepare questions, and conduct research on the organization. The two lessons that are scheduled after the visit help students reflect on their experiences and learning. In the ECCO model, all tenth- and eleventh-graders (and, in some cases, ninth-graders) participate in at least one career exploration visit every year.

This component of ECCO was implemented with very high fidelity among the pilot academies and was often identified by the coordinators and students as the most engaging of all the ECCO activities. As was planned, all four of the academies conducted annual career exploration visits for tenth- and eleventh-graders each year. These visits were generally well attended; typically, 80 percent to 100 percent of students in the targeted grades participated.

Although all four of the pilot academies had conducted a few field trips to work sites before ECCO, none had attempted to implement visits as consistently or in as structured a manner as was required by the program. Employer hosts were asked to provide a very different type of learning experience for the students — not just a formal tour, but an opportunity to see firsthand employees at work and to talk with them about the education and training that they needed and how they felt about their work. ECCO provided a "Guide for Employer Hosts," which coordinators reported was a valuable tool; they used it to approach prospective employer hosts, to introduce their academy, and to talk about the desired learning outcomes for the career exploration visit. The employer hosts praised this guide for so clearly outlining the expectations for the visit.

The structure of career exploration visits was prescribed, and most of the visits were conducted as planned. All included time for students to tour facilities or to meet employees individually or in small groups. The ECCO model includes a hands-on experience or — in workplaces where this was impossible — a small-group discussion in which students could interact directly with employees while observing them working. In a Thank You letter written after the visit, one student reflected on what she had learned from interacting with employees: "I now have a better understanding of how everyone in the business works together and depends on one another to get the job done and please the client. . . . I truly appreciated the honest opinions you gave us and the encouragement to go to college and make a future for ourselves."

In interviews, all four of the ECCO coordinators said that the career exploration visits were successful in achieving their goals (listed in Chapter 2). Additionally, three of the four said that the visits were of "much higher quality" than any work-based learning experiences that had been offered in the years before ECCO. The preparation and reflection lessons seemed to be a

key factor in that success; several employer hosts noted how well prepared the students were when they arrived for the visits.

The marketing director of a high-profile public relations agency that hosted a career exploration visit said:

> We thoroughly enjoyed having the students visit our facility. They were amazingly well prepared, well behaved, and seemed to be interested in the jobs and processes we perform. Tour guides and hosts of various departments were very impressed with the quantity and quality of questions from the students.

Box 3.1 describes a typical career exploration visit as experienced by students at one of the pilot academies.

The College Visits

> The college visit has . . . encouraged me to not just try to survive through high school by passing my classes but to thrive through high school by trying much more challenging courses and to learn valuable skills while I am still in high school.
>
> — An ECCO student

The ECCO model (Chapter 1, Figure 1.1) includes visits to colleges or universities that are structured much like the career exploration visits, including opportunities to interact with college students, to observe classes, to visualize themselves in college, and to understand the breadth of their postsecondary options. In addition to meeting with college admissions staff, some college visits included such activities as touring a department related to the career academy's theme, lunching with academy alumni on campus, or observing a class in the same theme area as their academy. As with the career exploration visits, students are well prepared by three one-hour lessons before a college visit; after the visit, they receive two additional lessons to help them reflect on what they learned. (Chapter 2, Table 2.2, lists the topics of these lessons.)

To ensure that students' experiences went well beyond a typical group tour of college and thus to comply with the ECCO model, coordinators reported working hard to arrange the college visits. This component was implemented with very high fidelity across the pilot academies. All four of them taught the lessons in the correct sequence and conducted college visits with tenth- and eleventh-graders; some conducted additional visits for ninth- or twelfth-graders. The college visits were a significant addition to the pilot academies' programming; few had conducted such visits before implementing ECCO. All four coordinators reported in interviews that this ECCO component increased the number of students who had an opportunity to visit one or more colleges. Through planning the visits and teaching the lessons, several of the academies increased their involvement and interaction with the college counseling services provided at the

Box 3.1

A Typical Career Exploration Visit: The Culinary Operations Academy's Visit to Outback Steakhouse

Outback Steakhouse's corporate offices had supported the Culinary Operations Academy for several years by donating funds for a model restaurant set up at the academy. So this was a logical business to approach about hosting a career exploration visit, and it eagerly took on the role. On the morning of the visit, students, teachers, and chaperones drove in private cars to the nearby restaurant. Upon arriving, the group of approximately 25 participants was seated in the restaurant, where the manager welcomed them. He provided each student with a copy of the employee manual that is given to all new hires. The manager then addressed the key values of the Outback Corporation. The students were excited to note how well aligned they were with the Skills for Success that had been taught in the ECCO lessons.

After the introductory session with the manager, the class was split into smaller groups for a detailed tour that included every department: the hostess stand, bar, food preparation areas, grill, and so on. Following the tour, each student was assigned to work side-by-side with a designated employee in one area of the restaurant. One small group accompanied the manager on his rounds; they tasted every item for a last-minute quality-control test. Some students cooked steaks on the line at the beginning of the meal-time rush. The students found this hands-on experience almost overwhelming, as the pace and volume far exceeded anything that they had experienced before.

Students were enthusiastic about their experiences. Outback Steakhouse employees were impressed as well. Following the visit, the restaurant took on several Culinary Operations Academy students as summer interns.

host high school. As a result, academy coordinators and teachers developed an increased sense of responsibility and expanded their capacity to help students understand college options.

For many students, this was the first time that they had visited a college campus. As one student put it: "I got to see what a real college is like, and I also got the chance to see how people act and what's expected of them." In the students' written reflections, they expressed the importance of the experience in their lives, summed up as follows: "If I really want to become someone in life, I have to be determined and not give up. . . . I will meet my goals and prove to everyone [that] I am capable of anything."

Box 3.2 describes a typical college visit as experienced by students at one of the pilot academies.

Box 3.2

A Typical College Visit: The Academy of Art and Technology's Visit to Cal State, Northridge

On a warm April morning, Academy of Art and Technology's junior class boarded buses to visit California State University's Northridge campus. Although the campus is less than five miles from the academy, only a handful of the students had ever been there. They were greeted by a former student of the academy who was now attending the university and who took them on an in-depth tour of the art department. They stopped to talk with a printmaking professor and a member of the photography faculty. They then dropped in at studios, offices, and classrooms. Throughout the tour, their host told them about the classes that she had taken and the projects that she had completed with the support of her instructors. She also told them that their education at the Academy of Art and Technology was preparing them well for Cal State, Northridge.

Following the tour of the art department, the students split up into small groups for a full-campus tour led by three student guides from the admissions office. They visited the library, the gymnasium, and the cafeteria. Then they gathered in the lecture hall for a frank talk with a current student; she gave them tips on admission and financial aid and talked about her experiences adjusting to college. She shared some mistakes that she had made and outlined what she was doing to succeed. Following the tours, the students headed off in small groups to eat lunch and explore the campus on their own.

Returning to the academy, the students voiced a newfound understanding and appreciation for what it meant to find the right college — and to plan ahead. Their teachers were impressed with the students' new awareness and motivation. "Most of our students think of the local community college as their only option. We wanted this to be a reality check: The university has resources and can offer a level of opportunity that the community college cannot. We want them to know that they can aim higher — and now they do."

The Internship Program and Seminars

> I would recommend the internship program because it really helps you improve your skills. It could also be the path to your future college and future career.
>
> — An ECCO intern

The ECCO model includes the expectation that an internship will be offered to all students during the summer following their junior year or during their senior year. This was an intentionally ambitious goal, set high to learn what it takes to realize this key component of the academy model. As Chapter 1 notes, creating internships for high school students has been historically difficult. And when schools do operate such programs, sometimes only the best-behaved or most academically advanced students are invited to participate. Creating internships

that not only are available to any student who wants one but also are focused on learning outcomes adds to the challenge.

As described in Chapter 2, the ECCO internship emphasizes student learning that enhances both technical and 21st-century skills while helping students see the connections between what they are learning in school and what is needed to succeed in the workplace and in their futures. These outcomes are achieved through specific components of the internship experience: student projects, a student research and reflection log, and a weekly seminar taught by the ECCO coordinator or other academy instructor during the internship. Overall, the four academies in the pilot phase greatly increased their capacity to offer internships to more students than they had previously served, and many of the placements met or exceeded the standards for an ECCO internship, as described in detail below.

Establishing the Internship Program: Finding Hosts and Placing Interns

The ECCO coordinators spent several months preparing for the summer internship program. Following a daylong training led by the program developer early in the year, the coordinators began by conducting outreach to parents and employers to inform them about the internship opportunity. School districts helped out when they could by providing lists of potential employer hosts in the academy's career area. Academies consulted their advisory boards (if they had them) for leads, sent postcards and e-mails, and made cold calls to organizations that they found online.[3] Seeking hosts for internships, coordinators approached a wide variety of types of companies and organizations, including both locally and nationally based businesses, nonprofit organizations, and government agencies. Several coordinators found success in unlikely places by "thinking outside the box." For example, the coordinator at the Digital Safari Academy found that there were not enough multimedia companies nearby to host all of its interns but that many local nonprofits were desperate for workers who had multimedia skills; so the coordinator placed many of the interns with these nonprofit employers, explaining: "We were able to help the students with any technical questions, and working in a nonprofit gave them the kind of work experience and mentoring we wanted them to receive."

As shown in Table 3.1, in three of the four pilot academies, ECCO coordinators contacted between 28 and 38 employers, and one academy reached out to as many as 180 employers. When an employer expressed interest in participating, the coordinator arranged an in-person

[3]Many career academies set up advisory boards of local employers and sometimes postsecondary institutions, and this is, in fact, required for academies in the National Academy Foundation and the California Partnership Academies. The boards were used sometimes to help with identifying employers, but the academies typically found that the leads that the boards provided were not sufficient to generate enough suitable placements.

The Career Academies Project

Table 3.1

Internship Program Development, from Initial Contacts with Employers to Internship Placement, Pilot Academies

	Academy of Art and Technology	Center for Hospitality, Tourism, and Marketing	Culinary Operations Academy	Digital Safari Academy	Average
Number of initial contacts with employers	38	31	28	180	69
Number of contacted employers who hosted career exploration visits, internships, or both	21	11	23	41	24
Number of internships developed	26	9	21	66	31
Contacts that developed into internships (%)	68	29	75	37	44

SOURCE: MDRC calculations are from ECCO coordinators' annual reports from 2010 and 2011.

NOTE: A few employers hosted more than one student intern.

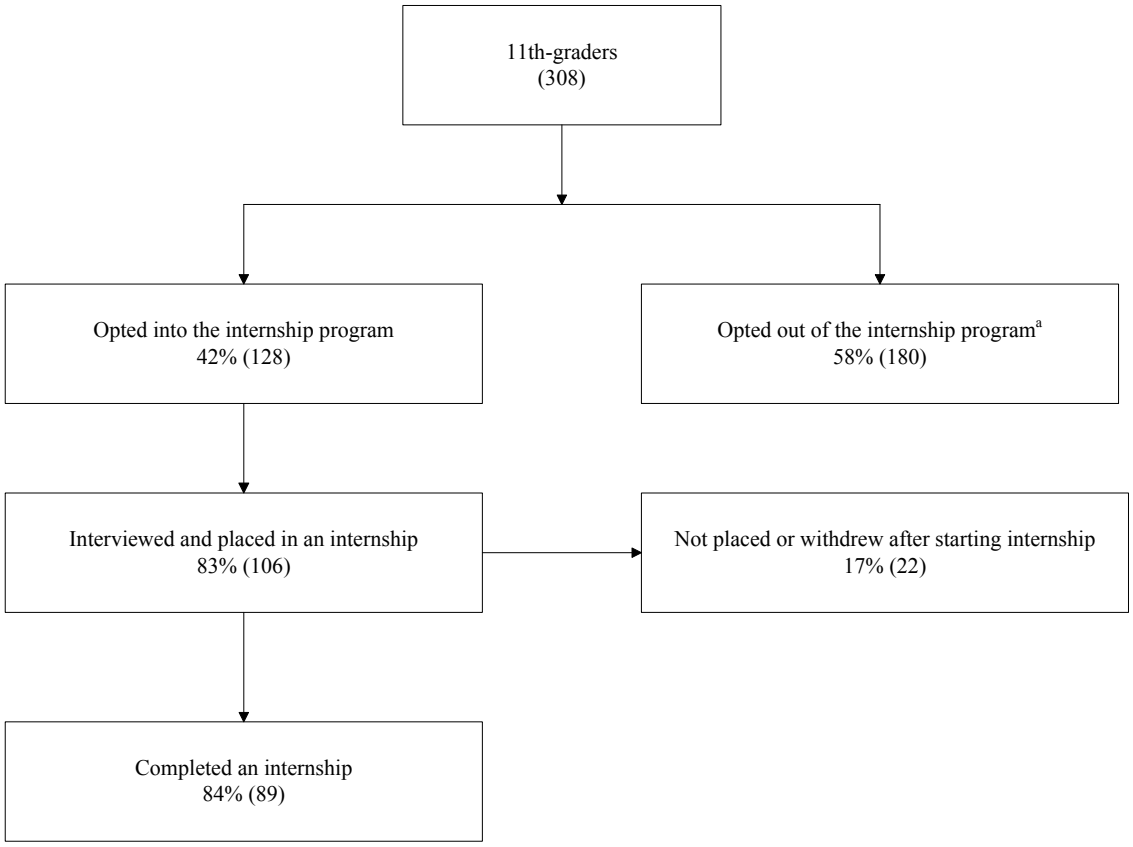
meeting to answer questions and explain what was expected of the employer. These conversations were often guided by an ECCO protocol to gauge the suitability of the site for a learning-focused internship and to help develop the student intern's project. The coordinators reported that the protocol was helpful but, in some cases, was too time-consuming and detailed. Several coordinators adapted it so that the interview would take less time but would still help them convey the principles of an ECCO internship to the employer.

Once a pool of employers agreed to host interns, coordinators then set about matching individual students to employers. This process involved aligning students' needs, interests, personalities, and abilities with the specific needs and capabilities of each internship host. Students were then referred for interviews and were placed only if both the employer and the prospective intern agreed that the placement was a good match.

Figure 3.1 shows the intake, participation, and completion rates for student interns across the four pilot academies. According to the spring class rosters from 2010 and 2011, there were 308 eleventh-graders enrolled in the four academies in the spring semesters. Of those, about half were available and interested in participating in an internship. (Reasons for opting out of internships are discussed below.) Of the 128 students who opted into the internship program,

Figure 3.1

Student Intake and Participation in the Internship Program: Pilot Academies, 2010 and 2011 Combined



SOURCES: The number in the first box, "11th-graders," was calculated from the class roster data and combines 2010 and 2011 data. The numbers in the subsequent boxes were calculated from records kept by ECCO coordinators and collected in both 2010 and 2011.

NOTE: [a]This includes all reasons that a student did not participate, including the need to attend credit recovery programs, earn money in summer jobs, and transportation costs.

106 (83 percent) were interviewed and were placed; of those, 84 percent (89 students) completed the program.[4] One academy experienced considerably more difficulty than the other three with recruiting and placing students in the internships, bringing the average placement rate down. As shown in Appendix Table B.1, this academy placed only 41 percent of the 22 students who were interested and available; the other three placed much higher percentages of their available eleventh-graders, ranging from 80 percent to 92 percent.

These participation rates pertain to the internship programs that were operated in the summers of 2010 and 2011. All four pilot academies ran the program a third summer, but fewer data were collected to document the experience. Even so, the data are sufficient to suggest that the pattern of participation is similar to the pattern for the first two years. The placement rate is somewhat lower. Based on interviews conducted shortly before the project ended late that summer, approximately 60 of the 163 eleventh-graders in the four academies were available and interested in participating, and, of those, 57 were placed. Close to 88 percent of those who were placed completed their internships.

Challenges in placing students in internships are often attributed to a failure to find enough employers to host interns rather than to students (or their parents) opting out. This study points to a more complex set of reasons why more students did not participate. Across all four pilot academies, only half the juniors *wanted to or could participate in* the program. In fact, in some cases, there were more employers willing to host a student than there were interested and available students. Interviews and survey data point to several reasons why some eleventh-graders chose not to participate. Table 3.2 shows results of a survey that was administered a few weeks before the internship programs were scheduled to begin; students were asked about their interest in participating, what they expected to get out of the experience, and their reasons for not planning to participate if that was their choice. Nearly all (97 percent) of the eleventh-graders surveyed said they were interested in having an internship, and 74 percent of them said that they would still be interested even if they were not paid.[5] About one-third (31 percent) said that they would not participate because their family needed them at home, and 26 percent said that they would not participate because they already had a job lined up for the summer. When asked why students opted out of the program, some coordinators said that many students had to enroll in credit recovery or remedial programs in summer school.

[4]The rate of students opting into the internship program was slightly higher at the Culinary Operations Academy and the Digital Safari Academy (approximately 50 percent) than at the Academy of Art and Technology and the Center for Hospitality, Tourism, and Marketing (approximately 33 percent).

[5]All the internship programs offered academic credit. Academies varied on their policy for offering monetary compensation. In one academy, all but a handful of placements were paid internships. In another, only unpaid internships were offered. The remaining two offered a mix of paid and unpaid internships. In place of wages, one academy was able to provide some one-time stipends to students, ranging from $400 to $500.

The Career Academies Project

Table 3.2

Students' Plans for Participating in Summer Internships, Pilot Academies

Indicator (%)	2010 11th-Graders	2011 11th-Graders	All Students[a]
Student is interested in having an internship in future	97.4	97.3	97.3
Student would want to do an internship even without pay	71.6	75.4	74.3
Parents would probably want student to do an internship	82.4	88.2	86.6
Student might not be able to do internship because family needs student at home	28.0	31.8	30.7
Student cannot do internship this summer because a job is aready lined up	20.0	29.0	26.3
Total number of students[b]	79	202	281

SOURCE: MDRC calculations are from the ECCO spring student surveys.

NOTES: [a]Responses are averaged across summer 2010 and summer 2011. Two academies (Academy of Art and Technology and Center for Hospitality, Tourism, and Marketing) started offering summer internships in summer 2011, so these academies have a smaller weight in the averages.

[b]Due to missing values on some survey items, the number of students included in the analysis varies by measure. The total number of students reported in the table are the number of eleventh-graders who responded to the surveys.

Given the main reasons why students opted out of the internship program, it is not surprising that the characteristics of those who opted in and were placed and who completed it were different from the characteristics of those who did not apply — even though coordinators were instructed not to intentionally screen students for the program. Table 3.3 confirms that their characteristics differed. For example, students who opted into and completed the program were more likely to be female and were less likely to have been held back a grade, and their mothers tended to have higher educational attainment. The successes of the internship program that are described in the next section may be due at least in part to the types of students who participated.

Experiences in Implementing the Internship Program and Seminars

The ECCO internship model is designed to ensure that the internship is well structured and that the intern receives appropriate tasks and guidance, works on a long-term project, and has opportunities to reflect on and learn from the work experience — both in terms of technical

The Career Academies Project

Table 3.3

Characteristics of Students Participating in Summer Internships (Among Survey Respondents), Pilot Academies

Characteristic (%)	11th-Graders	Applied to Internship	Placed in Internship	Completed Internship
Racial/ethnic minority[a]	89.2	90.4	88.6	88.5
Male	49.3	39.2	41.0	35.6
Mother's educational attainment				
Less than high school	44.1	38.3	33.3	30.7
High school diploma or GED certificate	31.7	35.5	35.6	36.0
Postsecondary credential	24.2	26.2	31.1	33.3
Ever held back a grade	22.2	14.5	11.5	9.3
Received a D or below in English or math in the previous school year	28.1	26.3	24.1	24.7
Academy				
Academy of Art and Technology	27.0	23.8	23.6	26.1
Center for Hospitality, Tourism, and Marketing	21.0	15.9	8.5	6.8
Culinary Operations Academy	14.2	16.7	18.9	20.5
Digital Safari Academy	37.7	43.7	49.1	46.6
Total number of students[b]	281	126	106	88

SOURCE: MDRC calculations are from the ECCO spring student surveys.

NOTES: Values in the "11th-Graders" column are the characteristics of eleventh-grade students in spring 2010 or 2011. Values in the "Applied to Internship Program" column are the characteristics of students who applied to participate in a summer internship in summer 2010 or 2011. Values in the "Placed in Internship" column are the characteristics of students who were placed in internships in summer 2010 or 2011. Values in the "Completed Internship" column are the characteristics of students who completed their internship in summer 2010 or 2011, so these academies have a smaller weight in the averages.

[a]This includes students who are black, Hispanic, Asian, or "Other" race/ethnicity.

[b]Due to missing values on some survey items and characteristics from the rosters, the number of students included in the analysis varies by characteristic. The total number of students reported here are the numbers of students who responded to the surveys.

skills and the less tangible but equally important 21st-century skills. **(**Chapter 1, Box 1.1, lists the "Skills for Success" that ECCO emphasized.) In their responses to a survey administered at the end of the internship, both interns and their supervisors indicated that, for the most part, these aspects of the ECCO internship model were implemented well. As one employer put it:

> This is my second year hosting . . . interns. This year's experience was better than last year's. The program helped us understand the skill set that [the academy] is developing. I have a sense that the experiences and opportunities that we provided were beneficial to the interns in terms of their understanding of local government and the importance of a client's communication needs.

A key feature of the ECCO internship model is the *student project,* which is supposed to involve a service or product that brings value to the host employer while providing a meaningful work experience to the student. (Box 3.3 presents some examples of the types of projects that interns worked on.) All ECCO interns were assigned projects or a series of related tasks — some developed by the coordinator and the employer, some designed by the employer, and several involving student input. Some students had to balance daily tasks with the ongoing project, while others worked almost exclusively on one large project or several smaller projects for the duration of the internships. Many students cited the project experience in particular as a highlight of their internship, and most completed the internship with tangible evidence of their work — such as sample text, menus, videos, or brochures — which was showcased at a public presentation at the end of the summer. An employer noted how the interns gained both technical skills and some of the 21st-century skills emphasized in the ECCO project-centered internship: "The interns provided extremely valuable foundational research and graphics for the launch of this new project. They are talented and motivated. It was pleasure to see them grow their confidence and skills."

Another key element of the ECCO internship model is *structured interactions between interns and supervisors* in a manner that supports student learning and increases the intern's chances of success during the internship. For example, the program required employer supervisors to meet the interns early in the placement to explain what was expected of them. Employers were also instructed to check in regularly with interns, just as a typical supervisor does normally to answer questions, monitor progress, and help solve problems. Table 3.4 presents survey responses from both interns and supervisors, who agreed that these meetings occurred and were a valuable resource to help maximize student learning. In fact, several supervisors indicated that they wished that the programs for their college-age interns had included the same approach to learning and performance. One employer said: "We had full support with a professional working environment, excellent equipment, immediate troubleshooting, and dialogue about ideas if we asked for it."

A few employers said that more information about the skills that students brought to the placement would have helped them better prepare more appropriate tasks and projects for the interns to work on. As one said: "It would be helpful for the proprietor to have a fuller understanding of the school curriculum and the classes that the students have completed. For instance, what fundamental skills would each student possess at the first, second, and third year in the program so that we could gauge and prepare our training to complement it."

The ECCO internship model includes the expectation that the coordinators would visit the work sites regularly throughout the summer. The monitoring visits allowed coordinators to offer encouragement and support to interns and their supervisors, to assist in resolving problems before they became serious, or to facilitate additional learning. Coordinators visited each work

Box 3.3

A Sample of Internships and Student Projects

Georgia Lighthouse Foundation
The intern designed and created an exhibit for a display space in the foundation's new building. This "Wall of Fame" was developed to honor the volunteer doctors who served the foundation; it included photos and biographical sketches of the doctors as well as testimonials from clients.

Boys and Girls Clubs
The intern interviewed past and present participants of boys and girls clubs to learn about their programs and activities and then used the information to create public service announcements, local newspaper articles, and photo essays.

Sabine Harte Architects
The intern assisted in all phases of the design of a monument, from meeting with the donor who commissioned the monument to drafting it in software programs. He presented various drafts to a review board of his colleagues and received feedback. At the end of the summer, the design was accepted by the client, who praised the intern for his "passion and sensitivity."

Doorstep Farmers
The intern completed several multimedia design projects for this new, youth-based business promoting organic food. The intern designed a business card for the president of the organization, a pocket-size brochure with advice about eating organic food, a Web page, and a coupon that brought in new customers.

Pittsburg Art and Community Foundation
The intern created both a Web-based and a print brochure for a self-guided public art walk in the town. The task included taking and cropping photos, laying out the map, and writing explanatory text and instructions. The intern also created a video to promote the foundation's storytelling program; the video was used in a grant application.

GrillSmith
The intern analyzed the time spent when using weights rather than volume measurements in recipes. She tested sample recipes, documented her findings, and presented her recommendation for using weight measurements. The intern then assisted in converting the recipes, and the new method was put into operation at all six GrillSmith locations.

The Career Academies Project

Table 3.4

Implementation of Internship Program Practices as Reported by Interns and Supervisors, Pilot Academies

Item	Percentage
Interns' reports	
Interns reported that supervisor:	
Interviewed intern before internship began	88.8
Oriented intern at start of internship	89.9
Met regularly with intern to discuss work	77.5
Assisted intern in completing assignments for seminar	75.3
Attended or planned to attend intern's closing ceremony	69.7
Coordinator visited work site:	
Not at all	13.3
1-2 times	47.0
3-4 times	20.5
5 times or more	19.3
Number of coordinator visits was:	
Too few	25.0
Too many	3.6
Just about right	71.4
Total number of interns[a]	90
Supervisors' reports	
Employers reported that they:	
Met with coordinator to plan intern tasks and project	64.2
Interviewed intern before internship began	88.7
Oriented intern at start of internship	98.1
Met regularly with intern to discuss work	92.5
Assisted intern in completing assignments for seminar	77.4
Attended or planned to attend intern's closing ceremony	66.0
Coordinator visited work site:	
Not at all	3.8
1-2 times	34.6
3-4 times	46.2
5 times or more	15.4
The number of coordinator visits was:	
Too few	2.0
Too many	2.0
Just about right	96.0
Total number of supervisors[a]	53

SOURCES: MDRC calculations are from the intern and employer surveys.

NOTES: Responses are averaged across summer 2010 and summer 2011. The Academy of Art and Technology and the Center for Hospitality, Tourism, and Marketing started offering summer internships in summer 2011, so these academies have a smaller weight in the averages.

[a]Due to missing values on some survey items, the number of students and supervisors included in the analysis varies by measure. The total number of interns and supervisors reported in the table are the number of students or supervisors who responded to the surveys. Approximately 50 percent of all supervisors responded to the survey.

site an average of two or three times, although visits were more sporadic at one academy. The coordinators generally found the visits to be very helpful, and most interns and supervisors reported that they found the number of visits "about right."

The Internship Seminar

A critical feature of the ECCO internship is the *concurrent, three-hour, weekly seminar,* which was usually taught at the school. This gave student interns an opportunity to meet as a group with their teacher to learn strategies and skills to succeed in the workplace and to discuss the accomplishments and challenges that they were experiencing in their internships. According to interviews conducted with the program developers and the coordinators, the seminar lessons were delivered as planned and were well received by the students. As shown in Table 3.5, almost all of the students who responded to a question on the survey described the seminars as either "somewhat useful" or "very useful." The coordinators who taught the seminars reported that students seemed to benefit from them in several ways. For example, students were encouraged to bring up the challenges that they were facing in the workplace before a situation became overwhelming, so that the teacher and other students could suggest solutions. As one coordinator explained: "We used the time in two ways. We let them talk through problems or concerns they had with their supervisors and coworkers; we also answered any technical questions they had, because in some cases their supervisors didn't have the time or the technical expertise."

Interns, coordinators, and supervisors were typically highly satisfied with the internship program. For example, interns and supervisors almost unanimously reported in surveys that the work performed by the intern was beneficial both to the intern and to the organization. Across the four pilot academies, 92.9 percent of students liked their internship; 89.3 percent reported that they learned a lot; and (as is discussed in Chapter 5) 87 percent felt that their 21st-century skills improved as a result of the experience (Table 3.5). Nearly all the supervisors (92.5 percent) would consider hosting another intern. In their reflections on the internship experience, students expressed greater self-confidence, increased motivation for school, and renewed hope about their future. As one student said: "It's an eye-opening experience and shows you that all your courses in school are relevant." Another said: "It was good to be able to get in real-world workplaces and learn how it feels to basically be an adult. We got to be in an internship that could open our opportunities for the future with connections, skills, and experiences. This program is one of the best experiences in school." Some were able to see the connections between high school, work, and college: "It is a great experience and teaches you the work environment and a taste of the real world. It is also great for college and your résumé."

Nearly all the internship supervisors praised the quality of students' work, with several commenting that students had completed tasks at the level expected of some of their regular

The Career Academies Project

Table 3.5

Perceptions of Internship Program Quality as Reported by Interns and Supervisors, Pilot Academies

Item	Percentage
Interns' perceptions	
Which of the following statements is true?	
You had a challenging job and enough work to do	75.0
You had a good relationship with your supervisor	95.3
You learned a lot	89.3
Overall, you liked your internship	92.9
Did the work you do benefit the organization?	
No, not at all	4.8
Yes, a little	16.7
Yes, some	23.8
Yes, a lot	54.8
How do you rate the internship seminars?	
Not useful	1.2
Somewhat useful	39.5
Very useful	59.3
The work in the seminars was:	
Too difficult	0.0
About right	90.0
Too easy	10.0
Total number of interns[a]	90
Supervisors' perceptions	
Did the work performed by the intern benefit the organization?	
No, not at all	0.0
Yes, a little	5.8
Yes, some	26.9
Yes, a lot	67.3
Was the internship beneficial to the intern?	
No, not at all	0.0
Yes, a little	0.0
Yes, some	17.3
Yes, a lot	82.7
Would you consider sponsoring another intern in the future?	92.5
Total number of supervisors[a]	53

SOURCES: MDRC calculations are from the intern and employer surveys.

NOTES: Responses are averaged across summer 2010 and summer 2011. The Academy of Art and Technology and the Center for Hospitality, Tourism, and Marketing started offering summer internships in summer 2011, so these academies have a smaller weight in the averages.

[a]Due to missing values on some survey items, the number of students and supervisors included in the analysis varies by measure. The total number of interns and supervisors reported in the table are the number of students or supervisors who responded to the surveys. Approximately 50 percent of all supervisors responded to the survey.

employees. In many instances, supervisors commented on the students' growth in maturity and confidence. The opportunity to mentor a student was noted as a morale booster for employees. One reported that he and his coworkers had "renewed enthusiasm" after working with their intern for the summer.

Box 3.4 describes a typical internship placement as experienced by students at one of the pilot academies.

Resources: A Critical Factor in High-Fidelity Implementation

The four academies that implemented the ECCO program during the pilot phase of the project did so with high fidelity to the model, resulting in an increased capacity to offer college and career exploration activities to more of their students. However, it is important to view this outcome in the context of the resources that were invested in program implementation. Of specific significance was the time spent by academy coordinators in planning and conducting ECCO activities.

In its initial year of program implementation, each pilot academy received a sizable grant. In subsequent years, financial support was reduced but was nonetheless sufficient to compensate ECCO coordinators either through release time or a stipend. Coordinators invested significant time in organizing and managing ECCO. The most time-consuming activities related to participation in the training and technical support that was provided by the developer and to planning for and monitoring the internships. (Appendix Table B.2 presents detailed information about the number of hours per week and per semester that ECCO coordinators spent on various tasks in the pilot academies.)

Also an important factor in the successful implementation of the program was the support provided by the school districts. Each academy had a contact person — typically from the district office — who was responsible for career and technical education and on whom they relied for support. Sometimes they wanted assistance with negotiating district finances and policies; sometimes they needed help arranging for transportation to work sites and college campuses; and sometimes they sought expertise handling legal or administrative matters, such as arranging for credit for the internship seminar or for liability insurance and workers' compensation insurance for the interns. Importantly, all four districts in the pilot study found funding to pay the seminar teachers.

Looking Ahead

At the end of school year 2011-2012, all four pilot academies expressed the desire to continue implementing the ECCO program. The academies had all integrated the explicit college and

Box 3.4

A Typical Internship: The Digital Safari Academy Interns at John Muir Health Center

Although the Digital Safari Academy is a multimedia company, the ECCO academy coordinators included in their search for internship hosts nonprofit organizations and other organizations that had small media departments and/or had media projects that were under way. This allowed interns to practice media skills in a context that interested them. Two students were placed at a local health care facility: One, with an interest in photography, worked as an assistant to the facility's media specialist; the other was placed as an assistant in the media education department.

The student who was assisting the media specialist learned to manage the online message boards for the doctors and helped create marketing materials for the hospital. Her tasks varied from day to day and included photography and photo editing — even a photo session during surgery. The student was proud that she had learned by observing and asking questions (even when she felt shy) and that, by the end of her internship, her supervisor could count on her to accomplish new assignments, even when he was out of the office.

The student who was in the education department created logos and launch pages for the online workers' training portal on a variety of topics, including latex safety, fire in the operating room, and phlebotomy. In addition, she edited photographs for the institution's archives. The student was proud of her role in educating the health center's workers on safety protocols, and she felt that she had gained valuable practice in managing time and prioritizing tasks. She was also grateful for the professional mentoring that she had received from the education department's three staff members, who supported her in improving her technical skills, gave feedback about her work, and talked with her at length about her plans for the future. Summing up the internship experience, she said: "As each day passed, I was learning more than I expected. I was able to learn new programs and was able to expand my creativity, but most of all I learned how to communicate, ask questions, and develop not only a professional relationship but a personal bond." She added that her supervisors were "so appreciative and never hesitated to thank me for all the work I did. It made me really happy, knowing I was doing a good job."

career preparation focus of ECCO into their academy programming; three of the academies had revised their Web sites and recruitment materials to incorporate language about the ECCO program and about the academy's focus on preparing students for college and careers. As one coordinator stated:

> ECCO really changed what we do for the better. We are making more connections between our curriculum and college, between our curriculum and career,

> and between college and career. It's more integrated. The students see it, and they are more motivated.

Another coordinator said:

> We've been successful with ECCO because we [the teachers] are a cohesive team and we all understand the importance of ECCO and the impact it has. So we are all sharing in the teaching of workshops and are all willing to chaperone the career exploration and college visits. We are building this into the culture of our academy.

Toward the end of the project, two of the pilot academies received recognition for excellence, deriving in part from their participation in ECCO and their increased capacity to offer career and college exploration activities to their students. The Culinary Operations Academy was designated as a Model Academy by the National Career Academy Coalition, and the Academy of Art and Technology was named a Lighthouse Academy by the California State Department of Education's California Partnership Academies initiative.

Nonetheless, all four pilot academy leaders expressed concern about the extent to which they could continue the ECCO program once the grant period was over. While they believed that they could continue to teach the program's lessons and could arrange career exploration visits and college visits, they were unsure about whether the school districts would cover transportation costs and find funding to compensate the ECCO coordinators during the summer internship program.

The question of whether ECCO could be implemented equally well in academies with less support than that received by these four pilot academies spurred the expansion of the program into districts that were interested in implementing ECCO in several academies at the same time. This "scale-up phase" is described in Chapter 4. Then Chapter 5 returns to the pilot academies to examine student-level data, with the purpose of describing increases in participation in the college and career exploration activities, greater awareness of college and career and the connections between them, and enhanced engagement in school.

Chapter 4

The Implementation Experiences of the Scale-Up Districts and Academies

Overview of the Scale-Up Phase

As described in Chapter 3, four pilot academies implemented the Exploring Career and College Options (ECCO) program with a high degree of fidelity to its design, given significant financial assistance, training, and ongoing support from the curriculum developer. The extent to which the pilot academies' success hinged on this support is an important question. If successful program implementation depends on significant financial and other resources, then the scalability and sustainability of a capacity-building intervention of this kind comes into question.

The scale-up phase occurred during the third and final year of this project, in the 2011-2012 school year. Its primary goal was to assess the feasibility of scaling up ECCO in several academies within the same school district at the same time but with reduced support. If successful, this scale-up phase could inform the question of whether ECCO — or a program like it — is scalable and under what conditions. Three districts were chosen to implement the scale-up ECCO model in five career academies each: Oakland Unified School District (Oakland, California), Hillsborough County Public Schools (Tampa, Florida), and Miami-Dade County Public Schools (Miami, Florida).

These districts provided three distinct settings, which helped to reveal more clearly the factors that promoted or impeded implementation of ECCO with reduced support. Oakland Unified School District was selected because it was participating in a statewide pathway initiative that emphasized work-based learning. Hillsborough County Public Schools was selected because it was home to one of the four pilot academies (the Culinary Operations Academy) and because district staff were interested in using the experience of this academy to support replication of the model in other academies. And Miami-Dade County Public Schools was selected because of the district's commitment to supporting academies in general and work-based learning in particular; the district also had close ties with the National Academy Foundation (NAF), which assigned one of its employees in the Florida region to the role of supporting the academies that were chosen to implement ECCO.[1]

[1]This employee was contracted to work for only the academic year and, therefore, was not present during the internship program in the summer. The district played the lead role in supporting the academies during this phase of implementation.

While the ECCO model that was used by the scale-up academies was the same as the one implemented by the pilot academies, the level of support and the way that the support was delivered were modified. (Chapter 1, Figure 1.1, illustrates the ECCO model and theory of change.) Table 4.1 outlines the key differences in the types and levels of support given to the pilot and scale-up sites. First, the scale-up academies received smaller site payments from which to compensate the coordinators than the pilot academies received. Second, the technical assistance that had been provided directly to the four pilot academies by the program developers was provided instead by a district employee or employees and, in the case of Miami-Dade, in partnership between the district and the NAF employee. A "train-the-trainer" approach was used, whereby the program developer, Bloom Associates, trained the district staff (called "district facilitators"), who, in turn, provided direct assistance to the academies with support from Bloom Associates. The shift from a primarily developer-led operation to one that was primarily district-led with support from the program developer was less intensive and, therefore, potentially more scalable. Because the responsibility lay in the hands of the districts rather than the program developer, it was thought also that the model would be more sustainable. This chapter reports on the experiences of the scale-up academies in implementing ECCO under these conditions.

In comparison with the pilot phase, data collection during the scale-up phase was also different. No student-level data were collected. Instead — in order to learn how the ECCO model was being implemented at the scale-up sites and to address the question of the feasibility of scaling up ECCO with less support — a combination of field visits, telephone interviews, and regular written reports ("implementation status reports") was collected for each academy, and monthly field notes from the program developer were also reviewed. This information was assembled starting in summer 2011 and continuing through the end of summer 2012. (Appendix A describes all the quantitative and qualitative data sources used in this report.)

The main finding from the scale-up phase of the project is that the academies were able to implement the core components of the ECCO program with reasonable fidelity and with less financial support and less technical assistance than the pilot sites received. With the exception of the three scale-up academies that withdrew from the project over the course of the year, all the others were able to implement the four ECCO components and their required activities (described in Chapter 2), including the internship program — which served almost the same proportion of the junior class as the pilot academies did. Whereas the pilot academies were able to teach all the required in-class lessons, the scale-up academies taught, on average, about 80 percent of them. The scale-up academies also provided all the required off-campus visits to work sites and college campuses, with the single exception of one academy that did not conduct one of the two college visits.

The Career Academies Project

Table 4.1

Training, Support, and Site Payments in the Pilot and Scale-Up Sites

	Pilot Sites			Scale-Up Sites
Training Activity	Year 1	Year 2	Year 3[a]	Year 1
Phone check-ins	Weekly with program developer	Monthly with program developer	1 per semester with program developer	Monthly with district facilitator and occasionally with program developer
Site visits with program developer	1 per semester	1 per semester	1 per year	0-1 per semester
In-person training	2 per year	None	None	2 per year
Site payments[b] ($)				4,000 per academy
Academy of Art and Technology	NA	35,000	20,000	
Center for Hospitality, Tourism, and Marketing	NA	35,000	20,000	
Culinary Operations Academy	35,000	35,000	10,000	
Digital Safari Academy	35,000	35,000	10,000	

NOTES: [a]Only Digital Safari Academy and Culinary Operations Academy operated ECCO for a third year.
[b]Site payments were used primarily to pay for ECCO coordinators' release time or stipends.

The Scale-Up Academies: Recruitment and Attrition

Recruitment of the scale-up academies took place in two phases. First, each district identified a group of academies that had either weak or nonexistent work-based learning programs. These academies were invited to participate in an early summer informational session provided by the program developer in partnership with the district. Of those that then volunteered to participate in the project, five academies were selected by each of the participating districts. Visits by the program developer or the district facilitators to each of the 15 academies began shortly thereafter, to schedule the lessons and off-campus visits for the fall.

As mentioned above, three academies withdrew from the project over the course of the year of the scale-up phase. One withdrew before implementation began. The other two withdrew several months later, well into implementation. Their reasons varied, but all three cited lack of time to carry out the activities and lessons as well as scheduling conflicts for their students. For the academy that withdrew before implementation began, no data were collected beyond the observations of the summer planning visits; this reduced from 15 to 14 the number of scale-up academies for which data were collected and are discussed below.

The Implementation of ECCO's Core Components

The In-Class Lessons

Participating academies at the scale-up sites were charged with implementing between 13 and 18 ECCO lessons throughout the academic year, separately for the tenth- and eleventh-graders. Specifically, each academy was asked to teach:[2]

- Four to five career exploration lessons for the tenth and eleventh grades in fall 2011
- Four to seven career development lessons for the tenth grade and seven career development lessons for the eleventh grade in fall 2011 and/or spring 2012
- Four to five college exploration lessons for the tenth grade and six college exploration lessons for the eleventh grade in spring 2012

As was the case for the pilot academies, the scale-up sites were not asked to teach the twelfth-grade curriculum during the first year of ECCO participation.

[2]The numbers of lessons are given as ranges because some lessons were optional.

On average, the 14 participating scale-up academies taught approximately 80 percent of the ECCO tenth- and eleventh-grade lessons during the school year.[3] Many academies found that fitting the lessons into the school schedule and course curriculum was challenging. About half the coordinators reported that they shortened some of the lessons to ease the pressure. The pilot academies also modified lessons to shorten them. In most academies, all the students in the tenth and eleventh grades who attended school on the days that the lessons were taught participated in the lessons. This did not occur in a few academies where the entire grade was not grouped together in at least one class (called "cohorting"). In these academies, only a subset of students participated in the lessons, and only those who were prepared in this way were allowed to participate in the career exploration and college visits. One of these academies eventually dropped out of the program because of this scheduling issue, underscoring how important cohorting is for full implementation of the program.

As was the case for the pilot academies, the biggest challenge that ECCO coordinators in scale-up academies faced in teaching the lessons was finding the time to teach them. One coordinator who taught in a school where a state improvement program was under way said that the strict pacing requirements that the school was charged with implementing made it extremely difficult to find time to teach the ECCO curriculum:

> We are held to different mandates. We have state and district coming in to observe teachers on a weekly basis and an instructional review on a quarterly basis. Those are some things that make this challenging overall. [ECCO] provides an excellent curriculum, but when we're held by pacing guides, preassessment data, and end-of-course exams, all of that assessment data (pre, mid, end) — it makes it very challenging to be flexible about incorporating other curricula.

Despite the scheduling challenges, as mentioned above, most of the scale-up academies taught most of the lessons, and the ECCO coordinators and district facilitators reported that the lessons significantly enhanced the learning that occurred on the career exploration visits and college visits. Table 4.2 shows that, during the fall telephone interviews, 100 percent of ECCO coordinators indicated that the ECCO lessons were "somewhat engaging" or "very engaging" for their students. As one coordinator put it:

> What I and the students liked is the workshops [lessons]. We've been on the career exploration visits, but with this curriculum there was a focus from beginning to end. Other than the lessons, I also really liked the questions they had to prepare, the research they had to do before the visit, and the reflection. Those three components made a huge difference.

[3] Although coordinators were interviewed near the end of each semester to capture the bulk of activities that were implemented, it is possible that a few lessons were implemented after the collection of these reports and are not reflected in the data.

The Career Academies Project

Table 4.2

ECCO Coordinators' Views on Lessons and Career Exploration Visits, Scale-Up Academies

Item	Number	Percentage
Views about lessons		
How challenging was fitting your lessons into your regular curriculum this semester?		
Not at all challenging	1	7.1
Somewhat challenging	7	50.0
Very challenging	5	35.7
Missing	1	7.1
Have you significantly modified any of the lessons?		
No	6	42.9
Yes	7	50.0
No response	1	7.1
How engaging were the ECCO lessons for your students?		
Not at all engaging	0	0.0
Somewhat engaging	10	71.4
Very engaging	4	28.6
Views about career exploration visits		
Were the visits successful in achieving their goals?		
Not at all successful	0	0.0
Somewhat successful	2	14.3
Very successful	12	85.7
Are you providing more work-based learning opportunities to more of your students than last year?		
Fewer students than last year	2	14.3
About the same number of students	3	21.4
More students than last year	9	64.3
Are the work-based learning opportunities of higher quality than similar experiences you may have offered last year?		
Poorer quality	2	14.3
Somewhat better quality	3	21.4
Much better quality	7	50.0
Did not offer similar experience last year	0	0.0
Total number of coordinators	14	

SOURCE: MDRC calculations are based on fall 2011 phone interviews with ECCO site coordinators. All 14 coordinators responded to the questions.

Similarly, one of the district facilitators indicated that,

> I think the prep lessons ahead of time, and the lessons after, provided a tremendous amount of structure and scaffolding and accessibility to the experience that teachers had not provided prior to the [ECCO] curriculum.

The Career Exploration Visit

As described in Chapter 2, the ECCO career exploration visit is a half-day, off-site visit to a company or organization whose work is aligned with the academy's career theme. The purpose of the visit is to provide students with an opportunity to learn more about the workplace and to interact with people who work in their career theme area.

Scale-up academies were required to conduct one visit for the tenth-graders and one for the eleventh-graders each fall. If the number of students exceeded 30 or so, the coordinators had to arrange several visits on the same or different dates to accommodate all the students while maintaining the personal feel and hands-on character of the experience. By the end of the year, all the scale-up academies conducted all the required visits. Moreover, of the 14 coordinators, 10 reported that students learned more from these visits than they had on previous field trips to work sites, before ECCO. One coordinator noted: "Students really were engaged in seeing adults working and thinking about their own careers."

Several factors played into the successful implementation of the career exploration visits in academies with fewer resources and coaching than the pilot academies had. First, employer hosts were generally well prepared for the visit. While not all coordinators were able to have an in-depth conversation with the employer host ahead of time — usually due to time constraints — those who did felt that they were able to provide a better experience for their students. A guide for employer hosts, developed for the ECCO program, was perceived as a useful way to communicate with hosts — even when the coordinator did not have time to do so in person, as was the case for coordinators at many scale-up academies. As one coordinator said about the guide: "It gave [employer hosts] an idea of what our purpose was and what we wanted the kids to learn. That's where it really made a difference."

All the ECCO coordinators who participated in the 2011 telephone interviews indicated that the work site visits were "somewhat successful" or "very successful" in achieving their goals (Table 4.2).[4] More than half the coordinators indicated that more students participated in

[4]The goals of the career exploration visits are to (1) expand students' awareness of careers and work environments; (2) make connections between what is learned at school and what is expected in the workplace; (3) observe how employees apply job-specific skills, how transferable skills are used in a variety of jobs, and how technology is used in the workplace; and (4) develop the skills to interact comfortably and confidently with working adults.

visits to workplaces than before the ECCO program, and 10 of the 14 felt that the experiences were of "somewhat better" or "much better" quality than any that had been provided previously.

The College Visits

As described in Chapter 2, the ECCO model includes at least two college visits each year — one for tenth-graders and another for eleventh-graders. Across the three scale-up school districts, 13 of the 14 academies conducted all the college visits as planned.

Compared with the visits to work sites, the college visits appear to have been easier to implement for some ECCO coordinators in the scale-up academies because many of them already had connections to a postsecondary institution. As was the case for the pilot sites, when the scale-up sites did experience challenges, it was typically because the college visits were postponed until late spring, rather than being scheduled earlier in the year as recommended by the program developer.

The Internship Program

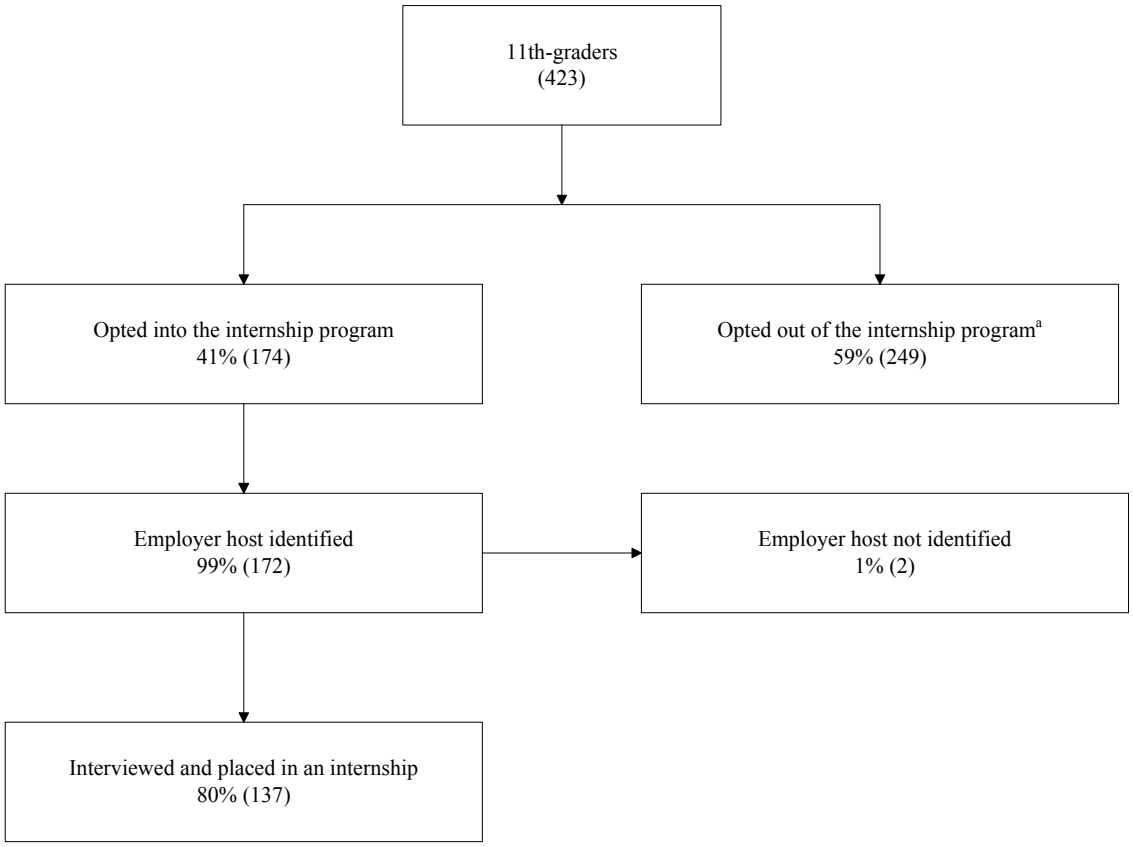
The scale-up academies and school districts viewed the ECCO internship and seminar component as the capstone experience for their students. As Chapter 3 describes, the four pilot academies were successful in creating internships that followed the ECCO model for most if not all of their interested and available students. Surprisingly, however, many students were not available to participate due to competing demands on their time, such as summer school or summer jobs.

The experience of the scale-up sites was similar to that of the pilot academies. Figure 4.1 shows the intake and participation rates for student interns across the scale-up districts. ECCO coordinators in the 10 academies that provided data identified 423 eleventh-graders who had participated in enough of the ECCO activities to be prepared for an internship. Of those, 174 (41 percent) were available to participate in an internship and opted in. Two students were not placed due to lack of an employer host, and, of the remaining 172 students, 137 (80 percent) were placed in an internship. The scale-up academies varied considerably in the percentage of students who participated in an internship.

The coordinators reported that the main reason why students were not available for internships was not a lack of employer hosts. As was the case for the pilot academies, only a handful of students in scale-up sites were not placed for that reason; in fact, several coordinators reported that they had more employer hosts than they had students available to participate. Nor was there a lack of student interest in internships. Many students could not participate because they were behind in their course credits and were required to attend credit-recovery programs in

Figure 4.1

Student Intake and Participation in the Internship Program: Scale-Up Districts, 2012



SOURCES: MDRC calculations are based on ECCO summer implementation status reports and validated by the program developers.

NOTE: [a]This includes all reasons that a student did not participate, including the need to attend credit recovery programs, earn money in summer jobs, and transportation costs.

summer school. Others already had jobs lined up. Transportation was another barrier; some students either could not afford the bus fare to commute to their internship sites or to the school where the seminar was held or had parents who were reluctant to let them use public transportation.

The academies in all three scale-up districts taught the six-week internship seminar, although a few had to reduce the number of lessons that they taught because they ran out of time. Interestingly, in one district, none of the five coordinators taught the seminar — a modification of the model, which calls for the seminar to be taught by an academy coordinator who knows the students. Instead, the district hired other teachers to teach it, primarily because none of the coordinators were available to work in the summer.

Also like the pilot academies, the scale-up academies reported positive experiences for the students who participated in the internships and attributed these to the high level of preparation of both the students and the employers. In response to a question about what made the internship program work as well as it did, one coordinator said:

> Having the confidence that the kids were really ready for a work site experience. I think it built up kids' confidence; it impressed employers. It was being able to sell to host sites that if they took an [ECCO] intern, it was an intern that was coming with a supervisor, that knew about 21st-century skills, and that they were prepped ahead of time in a systematic and sequenced way.

Another coordinator highlighted the reactions of her students:

> [Students] were very engaged. They were really excited about their final presentations. A lot of them weren't expecting that they would get all that they got out from the internships — that they would interact with adults, be able to perform well; everything that they've learned over the past three years, that they would actually be able to put that into practice.

Training and Support

As mentioned above, the academies that implemented ECCO during the scale-up phase were supported with a *train-the-trainer model,* which involved much less direct contact with the program developer than was the case for the pilot academies. As designed, the train-the-trainer model called for the program developer to model each step of the process while the district facilitator observed. Next, the district facilitator took the lead, and the program developer

observed and provided support as needed. Subsequent meetings were led by the district facilitator alone.[5]

All the ECCO coordinators and a few additional academy teachers in the scale-up sites participated in the two trainings provided by the developer over the course of the year. While coordinators and facilitators generally found the in-person trainings to be helpful, some said that a half day rather than a full day would have been adequate to learn the material.

Coordinators also found the monthly telephone meetings with the program developer and/or the district facilitator to be adequate. As one coordinator put it: "The monthly phone calls are great and keeps us on our game. It keeps us pointed in the right direction." Similarly, a coordinator said: "Just keeping me on task, the professional development [monthly calls] we have once a month, the e-mail reminders keep us really focused and carry their weight in gold. They've been the stabilizer."

Some coordinators attributed much of their success in implementing the program to the support of their district facilitators. "Having a direct contact from the district was really helpful . . . they really motivated me, sent me reminder e-mails. That, along with the materials with templates, was really helpful. Doing it all on our own would've been impossible."

Conclusions

After only one year — and with substantially fewer resources and less support from the program developer and more from the school district than the pilot academies received — the academies in all three scale-up districts succeeded in implementing the ECCO program. They offered their tenth- and-eleventh graders a set of well-implemented career and college curriculum and exploration activities, along with an internship program that, according to them, exceeded what they had offered in the past in terms of both quality and the number of students served. Compared with the achievements of the pilot academies, the scale-up academies fell only slightly short of accomplishing full implementation. A few of them did not teach the full set of lessons, and a few did not include all the students in the college visits and workplace visits. But all the career exploration visits took place as planned, as did all but one of the college visits. The percentage of interested and available students who were placed in internships is comparable to the result in the pilot academies. The study identified several factors that appear to have facilitated implementation of ECCO at scale.

[5]While program implementation in the scale-up sites generally followed this procedure, in practice, the district facilitators sometimes needed more support from the program developers than anticipated. In these cases, the program developer worked directly with the academies more often.

First, as with many district-led initiatives, it helped to have strong, well-respected district employees who could promote, protect, and support the program. Of particular value was district assistance in locating potential employer hosts for the career exploration visits and internships. Whether it was a list of employers organized by industry, a career fair attended by employers and students, or an offer to make the first contacts with potential employer partners, some academies depended on help from the district.

Second, alignment of the program's goals with those of other district initiatives and priorities — particularly, work-based learning programs — promoted smoother implementation. In Oakland Unified School District, the broad support from the mayor for rolling out internships throughout the district paved the way for ECCO to help the scale-up academies meet these objectives. In Miami-Dade County Schools, where the district had operated an internship program for many years, ECCO was viewed as a valuable enhancement of an already-strong work-based learning program for some students. While differences between the ECCO internship program and the district's internship program initially caused some confusion among students and internship hosts, this was quickly addressed and resolved.

Third, it was essential to have sufficient commitment at the academy level to take on the work of implementing the program. Three scale-up academies withdrew from the project, in large part because they were not ready or not fully committed to invest the time and effort in the program. Academies appeared to be more motivated when their participation was truly voluntary and when they viewed ECCO as a clear benefit for their students rather than just one more project that the district was promoting.

Fourth, some form of compensation for the ECCO coordinators appears to be needed as an acknowledgement of the extra time required to implement the program. While the pilot academies generally used their grants to buy release time for the coordinators, the scale-up sites received a smaller amount and generally paid it to the coordinators in the form of a stipend. Although the stipend was not enough to be considered compensation for the number of hours that they put into the project, it seems to have helped motivate the coordinators to spend their afternoons and evenings contacting employers.

Chapter 5

Exploring the Potential of ECCO for Improving Short-Term Student Outcomes

Introduction

The purposes of this project were, first, to develop and pilot a new program — complete with curricula and guides — that high school career academies and similar programs can adopt to build career and college exploration programs and, second, to assess the promise of that program in improving the short-term outcomes predicted by its theory of change (Chapter 1, Figure 1.1). The most direct outcome of interest was whether Exploring Career and College Options (ECCO), a capacity-building program, actually resulted in increased capacity of career academies to *offer* career and college exploration opportunities to their students and to improve the quality of those experiences.

The preceding two chapters offer evidence based on mostly qualitative data to support the conclusion that, on the whole, both the pilot academies (Chapter 3) and the scale-up academies (Chapter 4) were able to offer their students a range of career and college exploration experiences that they previously had not offered and that, according to their teachers, students seemed to learn more from them than in the past. This chapter explores that theme further using quantitative data: Are there indications that students participated in college and career exploration activities at higher rates, and — possibly as a result of increased exposure to these experiences — are there any signs of changes in such short-term outcomes as students' awareness of postsecondary options and improved 21st-century skills?

The results reported here are not intended to demonstrate whether there is — or is not — a causal link between the ECCO program and changes in student outcomes. That inference would require a more rigorous design, such as a randomized controlled trial, that ensures that the students who received the program services had the same characteristics before the program as the students who did not receive the services. Only through such a design can one isolate the effect of the program on student outcomes.

Research Questions and Methods

ECCO was designed to build the capacity of career academies to offer activities and experiences to their students that would expand their awareness of college and career options, help them see the connection between school and their futures, improve their 21st-century skills, and deepen their engagement in school. While improvements in these short-term outcomes might,

after high school, lead to such outcomes as increased enrollment in college, a successful transition to the workplace, and higher earnings, these longer-term outcomes were not studied as part of this project. Instead, the focus is on the shorter-term outcomes, that is, those that may come about during or soon after participation in the ECCO activities. Appendix Table C.1 lists the constructs underlying the short-term outcomes measured for this study, along with their definitions and the survey items that were used to create scales measuring growth.

This chapter assesses changes in four short-term student outcomes:

- Did students in academies that offered ECCO *participate* in more college and career exploration activities and have more opportunities to learn 21st-century skills than they would have without the ECCO program?
- Did students in academies that offered ECCO *show more growth* in their awareness of career and college options and in 21st-century skills than they would have without the ECCO program?
- Did students in academies that offered ECCO *have a better understanding of the connection*s between what they were learning in high school and their futures than they would have without the ECCO program?
- Were students in academies that offered ECCO *more engaged* in school than they would have been without the ECCO program?

The analyses use a before-and-after (pre-post) design to assess ECCO's potential for improving student outcomes. Outcomes for consecutive grade cohorts are compared for different levels of exposure to the program. For example, to measure whether ECCO is associated with stronger awareness of the connection between high school and the student's future, the percentage of tenth-graders who reported understanding that connection *in the year before* their academy implemented ECCO is compared with the percentage of tenth-graders who reported understanding that connection *a year later*, after their academy had adopted the program.

To assess changes in outcomes, three comparisons are made, each corresponding to different numbers of semesters of "exposure" to the ECCO program. Differences in outcomes for grade cohorts are compared at:

- Zero and two semesters of exposure (change between no participation and one year of participation)
- Two and four semesters of exposure (change between one year and two years of participation)

- Zero and four semesters of exposure (change between no participation and two years of participation)

A Note About the Comparisons

Because the four pilot academies began ECCO implementation at two different points in time, the three comparisons above are measured for different academies. The first comparison (between no exposure and two semesters of exposure) uses data on the students who were enrolled in the Academy of Arts and Technology and in the Center for Hospitality, Tourism, and Marketing. The second and third comparisons use data on the students who were enrolled in the Digital Safari Academy and in the Culinary Operations Academy. The first pair of academies is referred to in this chapter as "first-year academies," and the second pair is referred to as "second-year academies." Box 5.1 further explains the terminology used throughout this chapter.

Comparing grade cohorts (for example, a cohort of tenth-graders with zero semesters of participation and the next year's cohort of tenth-graders with two semesters of participation) is by itself not sufficient to conclude that ECCO contributed to any observed growth. For example, growth could be due to preexisting differences in the characteristics of the cohorts being compared. For this reason, individual-level change is also assessed, when possible, and is reported in Appendix C. In this approach, change in outcomes is compared for the *same students at two points in time,* corresponding to different levels of exposure to the program. If change is observed at the individual level in addition to change at the cohort level, confidence increases that the change can be attributed at least partly to ECCO.

A Note About Attrition

Some students who were in an academy when ECCO was first implemented were no longer enrolled in the academy a year later. As Figure 5.1 shows, a large percentage (about one-third) of the tenth-graders in 2010 were no longer enrolled in the academy a year later. Coordinators were asked why each student left, and the results are shown in the pie chart at the bottom of the figure. For the 109 students who left the academies before graduation and for whom coordinators knew the reason for leaving, nearly half (45 percent) did so because they left the high school in which the academy was located, either dropping out altogether or moving to another high school. Another 29 percent stayed in the high school but withdrew from the academy. A small number of students left the academy because they were no longer interested in the academy theme (4 percent), because of academic reasons (7 percent), or because of discipline issues (3 percent).

It is likely that students who left the academy differed from students who stayed in the academy. How this affects the results reported in this chapter is unknown, but it is reasonable to assume that students who left were more tenuously connected with the academy or the high

Box 5.1

A Strategy for Assessing the Promise of ECCO to Improve Student Outcomes

The following questions and answers ("Q&A") are offered to clarify the text discussion. For the technical aspects of the approach used to assess changes in student outcomes, see Appendix C.

Which pilot academies are "first year" and which are "second year," and what is the difference? The Academy of Arts and Technology and the Center for Hospitality, Tourism, and Marketing began implementing ECCO one full year *after* the Culinary Operations Academy and the Digital Safari Academy. Students in the former two academies thus participated in ECCO for a shorter time than students in the latter two. For this reason, the first two are referred to as the "first-year academies," and the second two are referred to as the "second-year academies."

At what points were student outcomes measured? Most outcomes were measured using a student survey that was administered twice: in April 2010 and in April 2011. All students who were in school on the day of the survey in all four pilot academies were asked to fill out a questionnaire. The survey included questions that were later used to calculate the percentages of students who had participated in various college and career exploration activities, as well as their scores on the four scales (career awareness, college awareness, 21st-century skills, and engagement).

Was there a baseline? At the time of the first survey (April 2010), the first-year academies had not yet implemented the ECCO program — they would do so in the fall of that year. The survey in these academies, therefore, provided true "baseline" measures for the outcomes. The second-year academies had already operated ECCO for two semesters (fall 2009 and spring 2010) at the time of the first survey, so that the survey provided measures of outcomes after two semesters of exposure. At the time of the second survey (April 2011), the first-year academy students had had two semesters of exposure to the program, and the second-year academy students had had four semesters.

Which grades received the ECCO program and for how long?

First-year academies. Students in both tenth and eleventh grade at the time of the April 2010 survey had not yet participated in ECCO. These students had been exposed to ECCO for two semesters by the time of the April 2011 survey. A twelfth-grader at the time of the first survey had *no* exposure to ECCO at either the first or the second survey.

Second-year academies. Students in both tenth and eleventh grade at the time of the April 2010 survey had two semesters of exposure to ECCO and had four semesters by the time of the second survey. A twelfth-grader had *no* exposure to ECCO by the first survey, because the initial year of implementation did not include twelfth grade, but twelfth-graders in these academies at the time of the second survey had four semesters of ECCO.

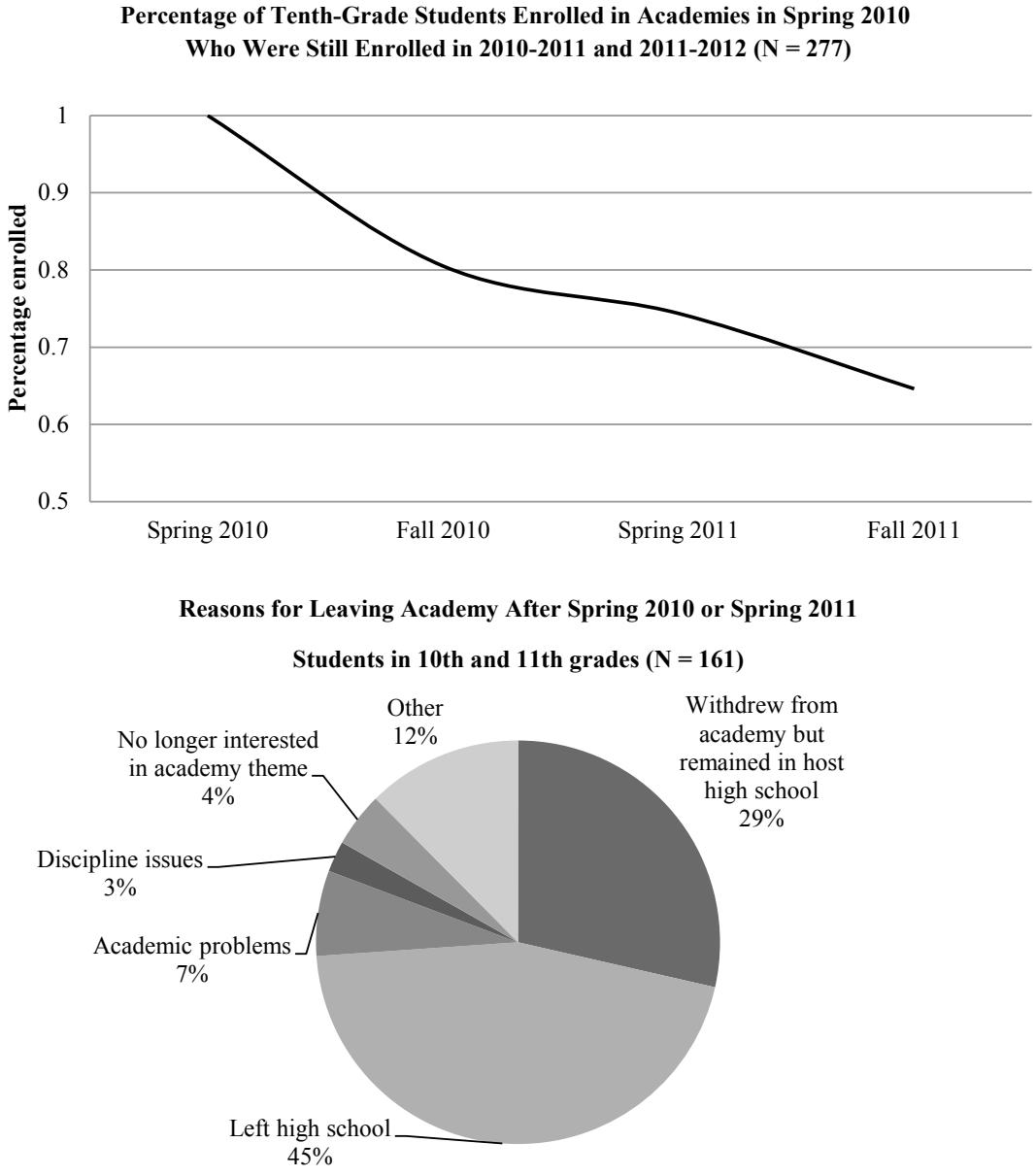
What do the exhibits show? The exhibits in Chapter 5 generally make one of three comparisons, each capturing changes in outcomes over time. The first comparison below relies on the first-year academies, and the second and third comparisons rely on the second-year academies:

1. Outcomes measured at zero and two semesters of participation in ECCO
2. Outcomes measured at two and four semesters of participation in ECCO
3. Outcomes measured at zero and four semesters of participation in ECCO

The Career Academies Project

Figure 5.1

Retention Rates and Reasons for Leaving Career Academies



SOURCES: MDRC calculations are based on the student withdrawal tracking sheet and academy class rosters.

school. In terms of observable characteristics, students who were present in the academies in spring 2011 to take the survey but not in 2010 were similar. (See Appendix Table C.3.)

Findings

Changes in Rates of Participation in Career Exploration Activities and in College Exploration Activities

This section presents findings from analyses using survey data to discover whether students' participation in a sample of career and college exploration activities and experiences increased as a result of the increased capacity of the pilot academies to offer these activities. The goal is to determine whether any growth in participation in such activities can plausibly be attributed to ECCO and whether growth in the first year was sustained into the second year of the program.

Career Exploration Activities

Figure 5.2 shows the percentages of students in the tenth and eleventh grades who reported having participated in exploration activities with *no* semesters of ECCO (the light bars) compared with tenth- and eleventh-graders with *two* semesters of ECCO (the dark bars). Asterisks indicate whether the differences are statistically significant. The figure shows significant growth in participation rates for all indicators but one: whether the student reported having had opportunities to practice or learn 21st-century skills.

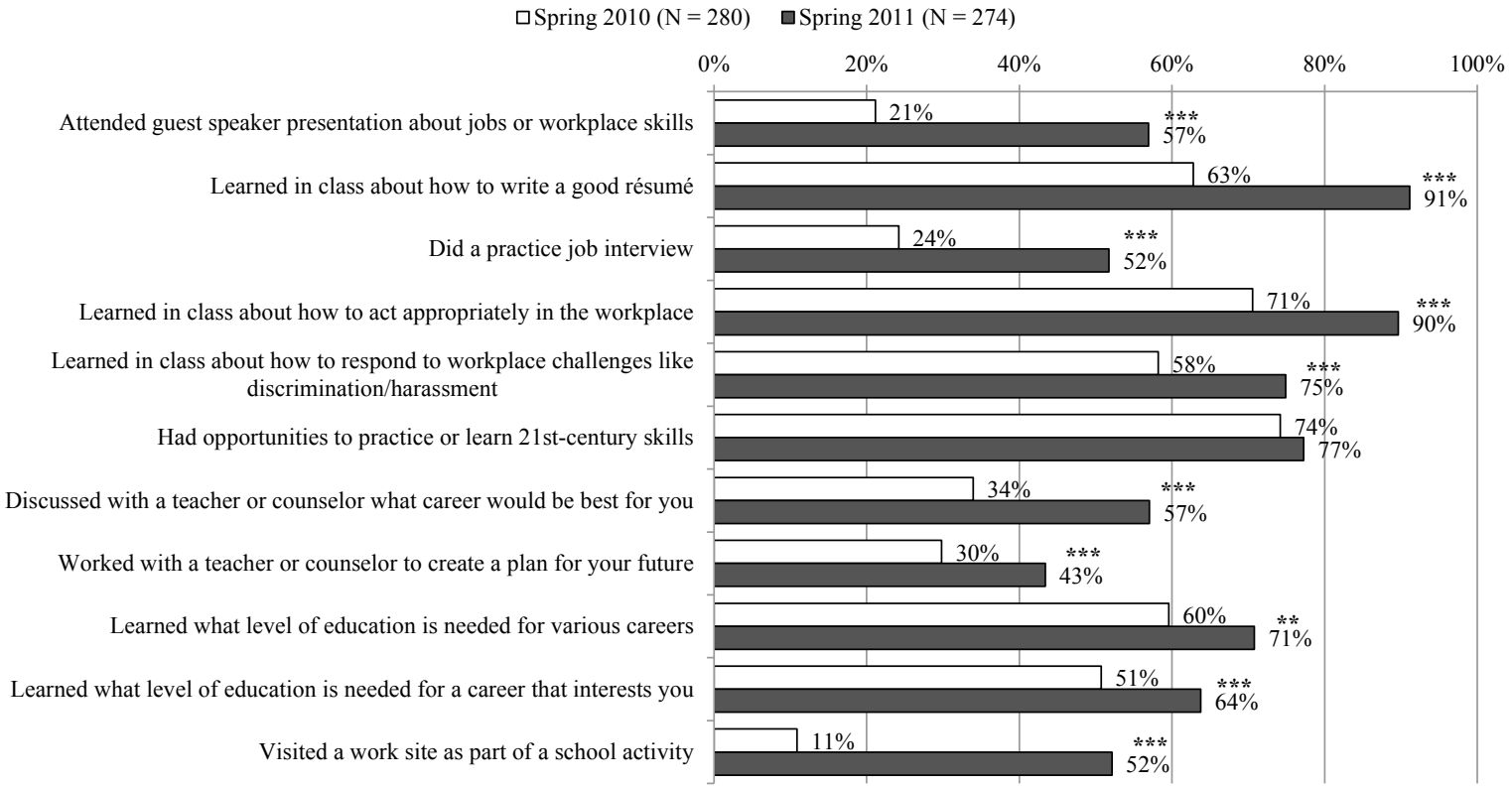
For many indicators, the before-and-after differences in participation rates are substantial as well as statistically significant. For example, the percentage of the students who reported having done a practice job interview doubled, growing to 52 percent after two semesters of ECCO. The largest gain was in the percentage of students who reported having visited a work site. Just 11 percent of the pre-ECCO students said they had done so in the 2010 survey, compared with 52 percent in the 2011 survey. This pattern of results is consistent with an analysis of change in participation rates for the *same* students over time, strengthening the evidence that ECCO was a cause of increased participation in these activities (Appendix Table C.4).[1]

[1]The one exception is the indicator of whether students had learned "what level of education is needed for various careers." As shown in Appendix Table C.4, there was no corresponding difference in the analysis of individual-level growth in this activity, casting some doubt on the possibility that the cohort-level growth seen in Figure 5.2 can be attributed to ECCO.

The Career Academies Project

Figure 5.2

Participation in Career Exploration Activities During the School Year: Comparison of Tenth- and Eleventh-Grade Cohorts Combined, with Zero and Two Semesters of ECCO, First-Year Academies (AOAT and HTM)



(continued)

Figure 5.2 (continued)

SOURCE: MDRC calculations are from the ECCO spring student surveys.

NOTES: This analysis is based on survey respondents enrolled in a given grade in spring 2010 and spring 2011. The white bars are the regression-adjusted outcomes of students who responded to the spring 2010 student survey. The dark bars are the regression-adjusted outcomes of students who responded to the spring 2011 survey.

Outcomes are adjusted for the following student characteristics: academy fixed effects, grade fixed effects, whether a student belonged to a racial or ethnic minority, gender, mother's educational attainment, whether a student was ever held back, whether the student received a D or below in English or math in the previous school year, and missing indicators for each of these characteristics.

A two-tailed t-test is used for all statistical tests presented in this figure. Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

Due to missing values on some survey items, the number of students included in the analysis varies by activity. The numbers of students reported in the figure are the number of students who responded to the survey.

AOAT = Academy of Art and Technology; HTM = Center for Hospitalty, Tourism, and Marketing.

Students with two semesters of exposure to ECCO activities were no more likely to report that they had opportunities to learn about 21st-century skills than students with no semesters of ECCO. On the other hand, a large percentage of students (70 percent to 80 percent) reported having had such opportunities both before and after their academies implemented the program, so room for improvement was limited.

The participation story is a bit different when comparing grade cohorts who had *two* semesters of ECCO with those who had *four* semesters of ECCO.[2] As Appendix Figure C.1 shows, the rate of participation in these activities was already high for most activities by the end of spring 2010. In fact, the participation rate for most activities was higher than it was for the other two academies after the same number of semesters. There was little difference in the participation rates between two and four semesters of ECCO. That is, for the most part, about the same percentage of grade cohorts reported participating in these activities each year, suggesting that the program was implemented with about the same degree of fidelity in both years and that having a second year of exposure to the program did not increase participation rates. This conclusion is generally supported by the analysis of change in participation for the same individuals over time (Appendix Tables C.5 and C.6).

Finally, Appendix Figure C.2 compares the participation rates for the twelfth-grade cohort with no semesters of ECCO and the twelfth-grade cohort with four semesters of ECCO. The most striking difference is the percentage of the students who reported having had an internship. The percentage increased from 19 percent in 2010 to 47 percent in 2011. Participation increased for several other indicators, including visiting a work site, learning about what level of education is needed for various careers, doing practice interviews, and preparing a résumé. For most of the activities, however, there was no statistically significant growth in participation.

College Exploration Activities

Figure 5.3 shows that the rates of participation in activities designed to increase college awareness are substantially and significantly higher for the grade cohort with two semesters of ECCO than for the same-grade cohort before ECCO was implemented. Significant growth is seen in the percentage of students who reported having participated in college exploration activities, such as talking with a teacher or other adult at school about college, visiting college campuses, looking up information about colleges, and attending college fairs. Analysis of change in participation rates in college exploration activities for the same individuals over time

[2]Only the exhibits showing comparisons in the participation rates between students with zero and two semesters of ECCO are included in this chapter. Appendix C presents results for all other comparisons (that is, between two and four semesters of participation and between zero and four semesters of participation). Findings are summarized in the chapter.

supports the interpretation that ECCO was a cause of this growth, at least in part (Appendix Tables C.7 and C.8). Appendix Figure C.3 shows that — like the participation rates in career exploration activities — the participation rates in college exploration activities are roughly equal for the grade cohorts with two and four semesters of ECCO. Appendix Figure C.4 shows, however, that the twelfth-grade cohort with four semesters of ECCO reported higher rates of participation than the twelfth-grade cohort with no semesters of ECCO, for several college exploration activities. The students with two years of ECCO were substantially and significantly more likely to attend a college fair, attend a presentation with college representatives, and visit a four-year campus than the earlier cohort of students with no semesters of ECCO. A similar pattern is evident in the analysis of participation for the same group of students over two semesters, strengthening confidence in the evidence that ECCO was at least one of the reasons for this growth (Appendix Table C.9).

The overall trend is consistent with the implementation study reported in Chapter 3: The academies were successful in implementing the career and college lessons and visits, and so students were more likely to participate in these activities.

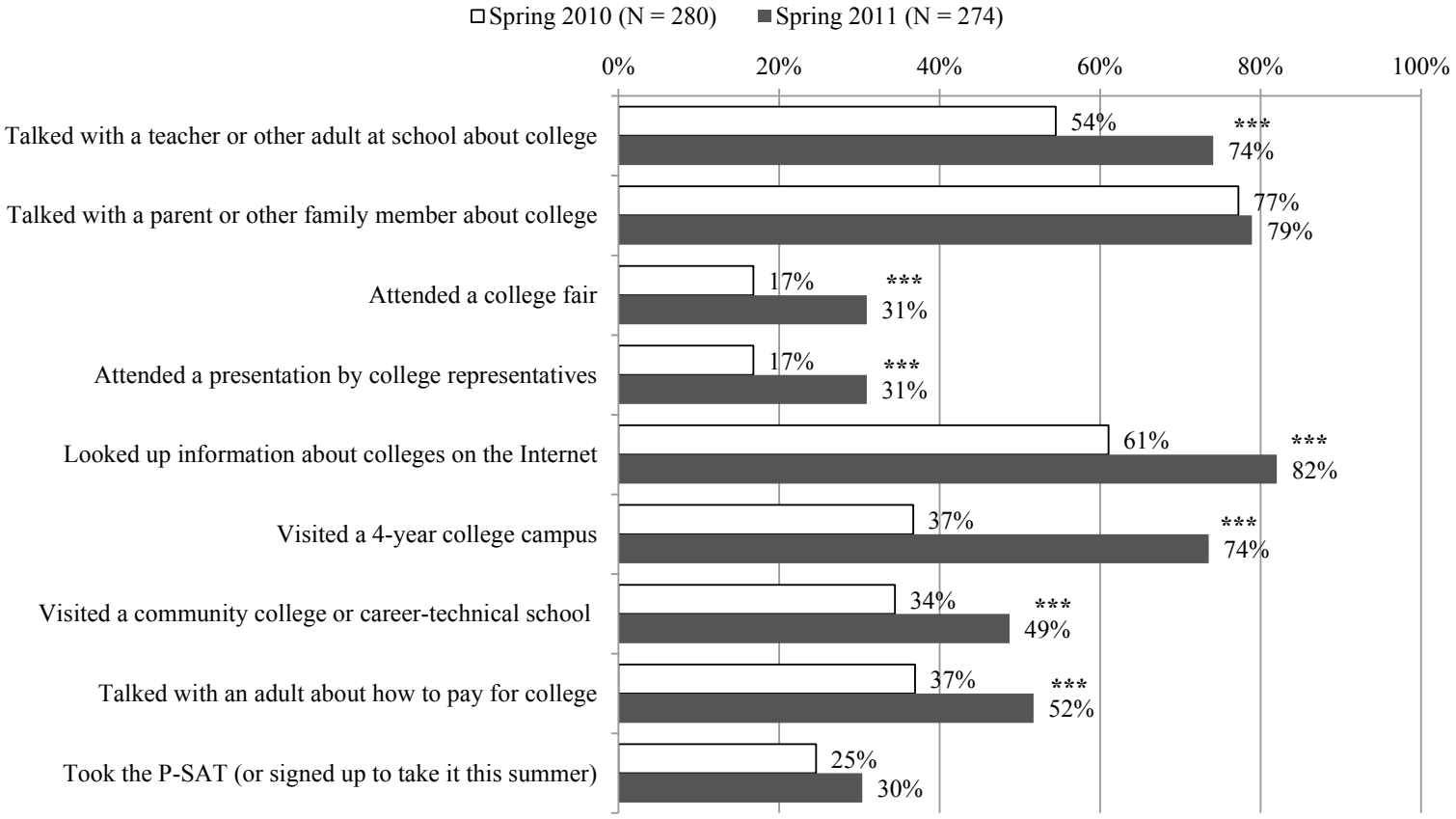
Changes in Short-Term Outcomes

Results of the analysis of short-term outcomes are presented next. As in the analysis of participation rates, the results are presented separately for the first-year academies and for the second-year academies. The analysis compares the outcomes of same-grade cohorts in order to measure growth between zero and two semesters, between two and four semesters, and between zero and four semesters of ECCO participation.

The Career Academies Project

Figure 5.3

Participation in College Exploration Activities During the School Year: Comparison of Tenth- and Eleventh-Grade Cohorts Combined, with Zero and Two Semesters of ECCO, First-Year Academies (AOAT and HTM)



(continued)

Figure 5.3 (continued)

SOURCE: MDRC calculations are from the ECCO spring student surveys.

NOTES: This analysis is based on survey respondents enrolled in a given grade in spring 2010 and spring 2011. The white bars are the regression-adjusted outcomes of students who responded to the spring 2010 student survey. The dark bars are the regression-adjusted outcomes of students who responded to the spring 2011 survey.

Outcomes are adjusted for the following student characteristics: academy fixed effects, grade fixed effects, whether a student belonged to a racial or ethnic minority, gender, mother's educational attainment, whether a student was ever held back, whether the student received a D or below in English or math in the previous school year, and missing indicators for each of these characteristics.

A two-tailed t-test is used for all statistical tests presented in this figure. Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

Due to missing values on some survey items, the number of students included in the analysis varies by activity. The numbers of students reported in the figure are the number of students who responded to the survey.

AOAT = Academy of Art and Technology; HTM = Center for Hospitalty, Tourism, and Marketing.

Table 5.1 presents changes in the outcomes measured at zero semesters and at two semesters of participation in ECCO. There are statistically significant differences between the scores for the same-grade cohorts with zero and two semesters of ECCO for both career awareness and college awareness. The pattern of change for the same individuals over time generally supports the finding that growth occurred at least in part due to ECCO, because statistically significant differences between scores at zero and two semesters are observed for both career awareness and college awareness (Appendix Table C.10). There is no comparable evidence that ECCO had an effect on either engagement or 21st-century skills.

The Career Academies Project

Table 5.1

Changes in Average Scores on Scales Measuring Short-Term Outcomes from Spring 2010 to Spring 2011, First-Year Academies (AOAT and HTM)

Outcome	Spring 2010	Spring 2011	Estimated Change	Effect Size	P-Value for Change	
10th and 11th grades						
Semesters in ECCO program	*0 semesters*	*2 semesters*				
Engagement	2.91	2.93	0.01	0.03	0.753	
Career awareness	2.94	3.09	0.16	0.20	0.022	**
College awareness	2.72	2.94	0.22	0.28	0.002	***
Self-assessed 21st-century skills	3.28	3.34	0.06	0.12	0.234	
Total number of students[a]	280	274				

SOURCE: MDRC calculations are from the ECCO spring student surveys.

NOTES: The student outcomes presented in this table are calculated by averaging across a student's responses to relevant survey items. These survey items (and the resulting outcomes) are on a 4-point scale (1 = not at all true; 2 = not very true; 3 = sort of true; 4 = very true). This analysis is based on students who responded to both the spring 2010 and 2011 student surveys. The "Spring 2010" column presents the outcomes for these students in spring 2010. The "Spring 2011" column presents the outcomes for these students in spring 2011. The "Estimated change" column is the change in outcomes for these students from spring 2010 to spring 2011. Hypothesis testing accounts for repeated observations of students across survey years.

A two-tailed t-test is used for all statistical tests presented in this table. Effect sizes are based on the standard deviation of an outcome for all survey respondents in spring 2010 and spring 2011. Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

Rounding may cause slight discrepancies in calculating sums and differences.

[a]Due to missing values on some survey items, the number of students included in the analysis varies by outcome. The total number of students reported in the table are the number of students who responded to the survey.

AOAT = Academy of Art and Technology; HTM = Center for Hospitality, Tourism, and Marketing.

Table 5.2 presents changes in the outcomes measured at zero and two semesters and at zero and four semesters of participation in ECCO. There are no significant differences in scores between same-grade cohorts with two and four semesters of ECCO. However, the change in outcomes measured at zero and four semesters is significant for career awareness and is close to statistical significance for college awareness.[3] No difference is evident for the other outcomes.

Finally, an analysis was conducted of students' responses to two statements that were intended to measure their beliefs about the connections between school and their future — a connection that ECCO was designed to promote. As shown in Table 5.3, the percentages of students who indicated that they believed that there is a connection between school and what they will do after high school are significantly greater for students with two semesters of ECCO than for the same-grade cohort a year earlier, before ECCO was implemented. Analysis of change in this outcome for the same students over time also suggests that ECCO was a likely influence on growth (Appendix Table C.12). However, no significant difference is seen in students' responses to the statement "What is learned in school is important for later in life." Nor, as Appendix Table C.2 shows, are there statistically significant differences for these two measures between the students with two and four semesters of ECCO or between the students with zero and four semesters.

To sum up the findings from this analysis of short-term outcomes, it seems plausible that ECCO may have led to growth in career awareness and college awareness during the first two semesters of participation, when students were in tenth and eleventh grades. For most indicators, however, there is insufficient evidence that a second year of exposure to ECCO resulted in growth above and beyond the growth that occurred in the first two semesters of exposure to the program. Yet this should not necessarily be interpreted as a failure of the program. In fact, as long as outcomes did not deteriorate after the first year, the lack of change could be considered a good outcome — because the comparison for these academies is not between *no* exposure and *some* exposure to the program but, rather, between *some* exposure and *more* exposure to it. As seen in the participation analysis above, participation between the first and second years did not increase as much as during the first year. Rather, for many of the indicators, participation rates were sustained into the second year at more or less the same rates that were achieved in the first year.[4]

---

[3] As shown in Appendix Table C.11, there is no corresponding difference in the analysis of individual-level growth in this outcome, casting some doubt on the possibility that the cohort-level growth that is shown in Appendix Figure C.2 can be attributed to ECCO.

[4] Although these results appear to suggest that ECCO had the most effect on outcomes in the first two semesters and that the effect was sustained in the second year, the results should be treated with caution. To draw such a conclusion assumes that the first-year academies and their students are similar to the second-year academies and their students. While the analyses controls for some observable differences, the unobserved differences related to the outcomes make direct comparisons between the outcomes for the students in the two pairs of academies difficult.

The Career Academies Project

Table 5.2

Changes in Average Scores on Scales Measuring Short-Term Outcomes from Spring 2010 to Spring 2011, Second-Year Academies (COA and DSA)

Outcome	Spring 2010	Spring 2011	Estimated Change	Effect Size	P-Value for Change	
10th and 11th grades						
Semesters in ECCO program	*2 semesters*	*4 semesters*				
Engagement	2.89	2.87	-0.01	-0.03	0.811	
Career awareness	3.03	2.95	-0.08	-0.10	0.414	
College awareness	2.97	2.85	-0.12	-0.15	0.192	
Self-assessed 21st-century skills	3.33	3.35	0.02	0.03	0.742	
Total number of students[a]	155	146				
12th grade						
Semesters in ECCO program	*0 semesters*	*4 semesters*				
Engagement	3.01	3.00	-0.02	-0.03	0.870	
Career awareness	2.85	3.21	0.36	0.46	0.016	**
College awareness	3.19	3.41	0.22	0.28	0.138	
Self-assessed 21st-century skills	3.34	3.39	0.05	0.10	0.506	
Total number of students[a]	66	60				

SOURCE: MDRC calculations are from the ECCO spring student surveys.

NOTES: The student outcomes presented in this table are calculated by averaging across a student's responses to relevant survey items. These survey items (and the resulting outcomes) are on a 4-point scale (1 = not at all true; 2 = not very true; 3 = sort of true; 4 = very true). This analysis is based on students who responded to both the spring 2010 and 2011 student surveys. The "Spring 2010" column presents the outcomes for these students in spring 2010. The "Spring 2011" column presents the outcomes for these students in spring 2011. The "Estimated change" column is the change in outcomes for these students from spring 2010 to spring 2011. Hypothesis testing accounts for repeated observations of students across survey years.

A two-tailed t-test is used for all statistical tests presented in this table. Effect sizes are based on the standard deviation of an outcome for all survey respondents in spring 2010 and spring 2011. Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

Rounding may cause slight discrepancies in calculating sums and differences.

[a]Due to missing values on some survey items, the number of students included in the analysis varies by outcome. The total number of students reported in the table are the number of students who responded to the survey.

COA = Culinary Operations Academy; DSA = Digital Safari Academy.

The Career Academies Project

Table 5.3

Beliefs About Connections Between School and Future: Changes Over Time Across Consecutive Cohorts of Students (Tenth and Eleventh Grades), First-Year Academies (AOAT and HTM)

Outcome (%)	Spring 2010	Spring 2011	Estimated Change	P-Value for Change
Participation in ECCO program	*0 semesters*	*2 semesters*		
There is a connection between school and what I will do when I finish school	51.6	59.5	7.9	0.074 *
What is learned in school is important for later in life	80.1	83.8	3.7	0.287
Total number of students[a]	280	274		

SOURCE: MDRC calculations are from the ECCO spring student surveys.

NOTES: The student outcomes presented in this table are calculated by averaging across a student's responses to relevant survey items. These survey items (and the resulting outcomes) are on a 4-point scale (1 = not at all true; 2 = not very true; 3 = sort of true; 4 = very true). This analysis is based on students who responded to both the spring 2010 and 2011 student surveys. The "Spring 2010" column presents the outcomes for these students in spring 2010. The "Spring 2011" column presents the outcomes for these students in spring 2011. The "Estimated change" column is the change in outcomes for these students from spring 2010 to spring 2011. Hypothesis testing accounts for repeated observations of students across survey years.

A two-tailed t-test is used for all statistical tests presented in this table. Effect sizes are based on the standard deviation of an outcome for all survey respondents in spring 2010 and spring 2011. Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

Rounding may cause slight discrepancies in calculating sums and differences.

[a]Due to missing values on some survey items, the number of students included in the analysis varies by outcome. The total number of students reported in the table are the number of students who responded to the survey.

AOAT = Academy of Art and Technology; HTM = Center for Hospitality, Tourism, and Marketing.

Interns' and Employers' Perceptions of Learning Outcomes from the Internship Program

The summer internship program was the "capstone" work-based learning experience in the ECCO program. Students prepared for the internship in many ways, including participating in the half-day career exploration visits while in the tenth and eleventh grades prior to the internship. While in the six-week internship, students attended a weekly, half-day seminar with their peers. As illustrated by the qualitative information in Chapter 3, many students, their teachers, and their supervisors reported that the internship was a powerful experience that taught

them valuable lessons ranging from what the "real world is like" to how to interact effectively with colleagues and supervisors and to make more informed choices about the future.

All interns — both those who completed an internship in 2010 and those who completed one in 2011 — were surveyed in the last week or two of the internship. Table 5.4 shows how they responded to a number of questions about the program and what they had learned. They were also asked whether they believed that their 21st-century skills had grown as a result of their internship experience. Within a week after the internship was over, supervisors were surveyed as well, and they were asked to rate the interns on the same set of skills. Table 5.5 shows how student interns and their supervisors assessed the growth in 21st-century skills.

The Career Academies Project

Table 5.4

Students' Perceptions of Learning Outcomes from Internship Program, Pilot Academies

Indicator	Percentage
Interns' reports	
Had opportunities to practice skills that were learned in school the year before	77.4
Learned or practiced skills that will help when returning to school in the fall	77.4
Internship has influenced thinking about education or career goals	81.9
Helped decide to pursue a career in that field	55.3
Helped realized that intern is not interested in pursuing a career in that field	18.8
Helped understand the education and training needed to succeed in that field	68.2
Would recommend the internshp program to a friend	100.0
Total number of interns[a]	90

SOURCES: MDRC calculations are from the intern and employer surveys.

NOTES: Responses are averaged across summer 2010 and summer 2011. The Academy of Art and Technology and the Center for Hospitality, Tourism, and Marketing started offering summer internships in Summer 2011, so these academies have a smaller weight in the average.

[a]Due to missing values on some survey items, the number of students included in the analysis varies by measure. The total number of interns reported in this table is the number of students who responded to the intern survey.

The Career Academies Project

Table 5.5

Percentages of Interns and Supervisors Who Reported Growth in Interns' 21st-Century Skills, Pilot Academies

Skill[a]	Percentage	
	Interns	Supervisors
Solve problems and make decisions	96.4	28.3
Think creatively	97.6	11.7
Learn through research	83.3	6.7
Ask appropriate questions	94.0	23.3
Observe carefully	96.4	10.0
Listen carefully	100.0	13.3
Speak distinctly	96.4	21.7
Write clearly	71.4	14.3
Use visuals appropriately and skillfully	95.2	11.9
Be precise and accurate	94.0	16.9
Cooperate with others	98.8	15.0
Persist when faced with a difficult task or situation	95.2	23.7
Give and receive feedback	96.4	18.3
Negotiate challenges and resolve conflicts	92.9	12.3
Plan and prioritize to reach a goal	95.2	18.6
Use new and emerging technology	88.1	3.6
Use responsible behavior regarding technology	94.0	1.8
Manage time effectively	97.6	11.7
Demonstrate appropriate behavior and attire	96.4	8.3
Recognize and respond to workplace challenges	97.6	8.8
Show initiative and work independently	100.0	22.0
Be reliable and dependable	98.8	4.9
Understand the career field in which student interned	97.6	21.3
Number of interns and supervisors[b]	90	65

(continued)

Table 5.5 (continued)

SOURCES: MDRC calculations are from the intern and employer surveys.

NOTES: Responses are averaged across summer 2010 and summer 2011. The Academy of Art and Technology and the Center for Hospitality, Tourism, and Marketing started offering summer internships in summer 2011, so these academies have a smaller weight in the average.

[a]These measures are calculated based on a student's and supervisor's responses to items asking them to what extent the intern's skills improved over the course of the summer. Interns' responses are on a 4-point scale (none; a little; some; a lot). Interns are classified as having perceived growth in their skills if their response to an item is "a little," "some," or "a lot." Supervisors are classified as having perceived growth in interns' skills if their response to an item is "yes."

[b]Due to missing values on some survey items, the number of interns and supervisors included in the analysis vary by measure. The total number of interns reported in this table is the number of students who responded to the intern survey. The total number of supervisors reported in this table is the number of interns for whom a supervisor responded to the employer survey. In cases where an intern was rated by more than one supervisor, one rating was chosen at random.

In general, the student interns reported learning much from the experience, reinforcing the conclusions in Chapters 3 and 4. While supervisors reported growth as well in many of the 21st-century skills, their assessments are considerably less positive than the interns' assessments of their own growth. This points to the value of using supervisors' assessments of interns in addition to self-assessments as an indicator of the attainment of intended learning outcomes from internships. Highlights from Tables 5.4 and 5.5 include the following:

- 82 percent of the interns reported that the internship experience had helped them think about their education and career goals, although fewer — 68 percent — said that it had helped them understand what training is needed to succeed in that field.
- 77 percent of the interns reported that they had learned or practiced skills that would help them succeed in school.
- 68 percent of the interns indicated that the internship had helped them understand the education and training needed to pursue a career in the same field as the internship.
- Nearly all the interns reported at least some growth in the 21st-century skills listed in Table 5.5. In fact, the only skills for which *less* than 90 percent of the interns reported growth are how to "learn through research," "write clearly," and "use new and emerging technology."
- Supervisors were considerably less likely than the interns to indicate that interns had shown growth in 21st-century skills. Skills for which at least one in five interns had grown according to their supervisors include "solve problems and make decisions," "ask appropriate questions," "speak distinctly,"

"persist when faced with a difficult task or situation," "show initiative and work independently," and "understand the career field in which the student interned." The percentages of supervisors who reported intern growth in the remaining skills range from 2 percent to 19 percent.

Interpreting the Findings

The analysis of participation in the ECCO program and student outcomes that is presented above is exploratory only, due to the lack of a strong comparison group and small sample sizes for some of the analyses. This limits the conclusions that can be drawn. Nonetheless, the results of the analysis with respect to whether ECCO increased participation rates in college exploration activities and in career exploration activities point firmly to the plausibility that it was program participation that can account for these increases. Further, these results are consistent with the findings presented in Chapter 3 that the academies were able to put into place a set of college and career exploration activities that either did not exist earlier or did not touch very many students. This chapter presents reasonably strong evidence that students in the ECCO program participated in these activities at higher rates — and, for some activities, such as internships and visits to college campuses, at dramatically higher rates. The results also suggest that most growth in participation in these activities occurred during the first year of ECCO implementation, with growth tapering off in the second year.

Evidence of the plausibility of the program's effects on growth in career awareness and college awareness, engagement, 21st-century skills, and belief in the connection between school and future careers is mixed. Students showed growth in college and career awareness and were more likely to see the connection between school and their futures during the first year of ECCO. But there was no significant change in either engagement or 21st-century skills. With the exception of college awareness, little change in any of these outcomes (beyond what came about in the first year) seems to have occurred in the second year of program participation. This may mean that ECCO may have contributed to students' experiencing these types of activities and learning from them a year or two earlier than they might have otherwise. Most would agree that raising college and career awareness early in high school rather than waiting until the senior year can be beneficial, because students can take steps earlier to prepare for their futures. For example, if students learn that a four-year degree is necessary to achieve their career goals, then they might be more motivated to do well in their academic classes in tenth grade rather than trying to catch up with college preparatory courses in twelfth grade.

Again, given the limitations of the data, it is difficult to know whether any of the observed growth is due to ECCO or results from students' simply maturing, preexisting differences in individual students or cohorts, student participation in other programs, or other factors. While some results are consistent with the theory that ECCO can account for at least some of the growth, this cannot be confirmed without a more rigorous study.

Chapter 6

Conclusions

As noted in Chapter 1, career academies are an enduring and effective high school reform model that has widespread and growing appeal among educators. Combining a more personalized learning environment with a career theme, a sequence of career-technical courses, interdisciplinary curricula, and work-based learning, career academies are uniquely positioned to prepare students for both postsecondary education and productive careers. They can be found in many high schools in most states, and they attract a wide range of students. Some school districts believe so strongly in career academies that they have moved to making them the rule rather than the exception, by encouraging large high schools to offer academies to all their students. A few states are following this lead and are introducing initiatives to encourage the scaling up of academies and similar programs.

While academies have the structural characteristics to facilitate preparation for college and career, they often lack the tools and resources to create the learning opportunities to make this happen. Arguably, the most difficult component of the academy model to implement fully is work-based learning. Whether the experience involves a one-day visit by students to a workplace, a visit from a local employer to talk with students about their profession, or the capstone six-week internship, academies have struggled to launch and maintain such activities at scale. These difficulties should not be surprising. With little or no funding to cover the extra time that teachers need to design and run these programs, with no training on how to design or operate them, and typically with no access to materials and curricula, it is little wonder that the work-based learning component is often neglected and that so few students, if any, receive internships. The recent downturns in the economy have not made the challenges easier, as employers may be reluctant to take on any more risks than they already face.

Academies also have not traditionally offered their students college awareness or exploration activities, over and beyond what the host high school offers. Usually, students have to take the initiative to sign up for college visits. Some high school counselors even view academy students as "career-bound" rather than "college-bound" and do not include them in college presentations or campus visits. Without training and curricula, academy teachers are ill-equipped to provide more than ad hoc counseling and advice to students about their postsecondary options and how to select and apply to a college.

The purpose of the project described in this report was to design and test an intervention — the Exploring College and Career Options (ECCO) program — that would systematically build the capacity of academies to create or restore career and college exploration activities for *all* their students *each* year that they are in the academy. The primary question that drove the

research is simply whether academies — if given the resources, materials, and support to do so — *can* launch and maintain a high-quality work-based learning program for all students.

Nineteen academies with nonexistent or weak work-based learning programs in six school districts were recruited to take on the challenge of implementing ECCO. Of those, one academy dropped out before program implementation began, and two withdrew several months into the project. Of the remaining 16 ECCO academies, all were able to significantly increase or improve the quality of career and college exploration activities, compared with any such activities that they might have offered before ECCO. More students experienced more activities. Most programs stabilized and improved over time. Many of the academies and the districts expressed interest in continuing the ECCO program, especially if funding were available to cover teachers' additional time.

That being said, the work of building career and college exploration programs was not without significant challenges, even when academies had access to generous resources, as was the case for the four pilot academies in this project (Chapter 3). Fitting new curricula into already-packed courses (whether it was a career-technical course or an academic course) was difficult. Scheduling off-campus visits to workplaces and college campuses confronted the academies with a set of logistical challenges. Finding suitable work sites where employers could offer structured learning opportunities to a group of young people took time, effort, and skill. The implementation of ECCO was not perfect. But the progress and accomplishments of the academies in implementing the program leave no doubt that it succeeded in increasing the capacity of academies to build career and college exploration programs that could reach all students, regardless of their academic records, whether they had ever thought about college, and their level of maturity. Rates of participation in career and college exploration activities and the learning that occurred as a result increased significantly after ECCO was implemented. This success is especially remarkable in the context of a fiscally challenging time for schools, districts, and employers.

While the study reported here clearly establishes the feasibility of building the capacity of academies to offer career and college exploration activities, the evidence is less clear about whether increased participation in those new programs made a difference in the short-term outcomes that were predicted by the theory of change (Chapter 1, Figure 1.1). In interviews and focus groups, teachers and students overwhelmingly reported positive experiences and cited many examples of the growth and learning that took place. The analysis of scores on scales measuring changes in career and college awareness points to some statistically significant and substantial differences for some indicators, especially in the first year of participation in ECCO. But the magnitude of these differences is modest, and no meaningful improvement occurred for two of the four outcomes: engagement in school and growth in 21st-century skills. Importantly, without a more rigorous design, it is difficult to know whether or not ECCO made a difference

in the short-term outcomes predicted by the theory of change. This finding, in combination with the result that the academies succeeded in implementing this program, leads to a number of implications for educators and researchers.

First, while it is feasible for academies to launch a cohesive program of college and career exploration curricula and activities, this is unlikely to happen without support. Teachers need resources, time, and training to make it happen. This is particularly true for developing work-based learning programs that directly involve employers.

Second, with resources and support, academies in this project were generally able to place about half of their juniors in internships. The percentage of juniors who were placed varied, but the number rarely exceeded 20. Although a handful of students were not placed because of a shortage of employer hosts, most of the juniors who opted out of internships did so because of competing demands on their time. Summer school, transportation costs, the need to earn money, and family obligations were the most common reasons for opting out. This implies that alternatives to the traditional internship model such as was used in ECCO — whereby one student is placed with one employer during the summer — should be considered. Many academies are already experimenting with such alternatives as "virtual internships," whereby students interact with employers either online or in person but without leaving the school campus; group internships, which place four or five students at a work site and they work as a team; employer mentoring programs that match a working adult with a single student; and school-based enterprises, such as a student-run business that gives students a work-based learning experience without leaving campus. Ideally, the traditional internship should be just one of several outcome-driven options that academies can offer to provide students with work-based learning experiences.

Third, college and career exploration activities should be tightly integrated with the totality of the academy experience. These activities are best not relegated to the career-technical teacher alone. English, history, and math teachers should be involved with teaching an in-class career and college exploration curriculum, and they should find ways to integrate this material with their subject curriculum, accompany students on visits to the workplace and to college campuses, and create and monitor internships. When this occurs, students are likely to better understand the connections between what they are learning in their math and English classes and their futures, leading to deeper engagement in school and better postsecondary outcomes.

Fourth, a program like ECCO could be adapted to build the capacity of other educational programs to mount, scale, and sustain career and college exploration activities and to assess their effects on key student outcomes. Preparing young people for success in the workplace and college is part of the mission of many programs serving young people, including regular high schools, extended learning programs, youth development programs, job training programs, community colleges, middle schools, after-school programs, and area vocational schools.

Learning what it takes to move beyond the rhetoric and make career and college readiness programs happen for low-income young people in a variety of settings would be an invaluable contribution to the field.

Fifth and finally, many questions remain about the effects that career and college exploration and preparation programs in high school have on long-term outcomes, such as enrollment in and completion of postsecondary education and participating in the labor market. To date, no rigorous impact studies have been conducted to test the impact of internships and other work-based learning experiences on these long-term outcomes. While such programs hold promise to make a difference in the lives of at-risk, low-income students, without more rigorous evidence than is presented in this report, their true potential remains unknown.

For more information about the ECCO program and how to access it, see www.connectedstudios.org/ecco.

Appendix A

Data Sources and Survey Response Analysis

The first two sections of Appendix A describe the quantitative and the qualitative data sources used in this report on the Exploring Career and College Options (ECCO) program, including their purpose, timing, target population, and response rates, when applicable. The third section of this appendix presents a response analysis for the student survey; this is detailed, since it is the main source of information for evaluating ECCO's potential for improving student participation and outcomes. The analysis includes survey response rates by year and by grade level, a comparison of the characteristics of respondents in each survey year, a comparison of survey respondents and nonrespondents, and the characteristics of survey respondents in each of the four pilot academies discussed in Chapter 3.

Quantitative Data Sources

Appendix Table A.1 summarizes the following quantitative data sources used in this report:

- **Class rosters.** Class rosters were collected to identify students who were enrolled in the pilot academies in spring 2010, fall 2010, spring 2011, and fall 2011. These rosters were also used to identify attrition patterns over time, to assess response rates for the spring student survey (discussed in the next section), and as a data source for students' background characteristics (including race/ethnicity, gender, and grade). ECCO coordinators provided the rosters at the end of each semester, along with a list of students who had left the academy between semesters and the reasons why they had left.

- **Student surveys.** ECCO was expected to affect outcomes that are typically not collected in school records, such as college and career awareness measures. Therefore, a survey was used to collect information on these outcomes as well as students' background characteristics. Specifically, the surveys collected information on parental education, prior academic achievement, participation in and level of college and career awareness and exploration, career or college exploration and preparation activities, curriculum, engagement, opportunities to practice 21st-century skills, and growth in those skills. All tenth- through twelfth-grade students who were enrolled in the pilot academies were surveyed in their classrooms in late April 2010 and 2011. Across all grades (10 through 12), 90 percent of students who were enrolled in the pilot academies responded to the survey, though the response rates differ across survey years. (See the next section of this appendix.)

- **Intern surveys and intern employer surveys.** Offering all juniors an opportunity to participate in an internship in the summer before their senior year or in their senior year is a core component of the ECCO model. Therefore, a

The Career Academies Project

Appendix Table A.1

Quantitative Data Sources for Student Characteristics and Outcomes, Pilot Academies

Data Source	Measure/Domain	Timing	Target Population
Academy class rosters	Race/ethnicity, gender, and grade	Spring 2010 and 2011	Students in grades 10-12
Student surveys	Demographic information (mother's education, grade retention, course marks in previous grades) Participation in career and college awareness activities Student outcomes (engagement, college and career awareness, self-assessment of skills)	Spring 2010 and 2011	Students in grades 10-12
Intern participation logs	Internship applicants, intern placement, and and completion status	Spring/summer 2010 and 2011	11th-graders (grade 11 in 2010 or 2011)
Intern surveys	Implementation of internship components Perceptions of internship quality and usefulness Self-assessment of growth in skills Self-assessment of growth in career/college awareness	Summer 2010 and 2011	Students placed in internships
Intern employer surveys	Implementation of internship components Perceptions of internship quality and usefulness Assessment of intern's growth in skills	Summer 2010 and 2011	Interns' supervisors
Student withdrawal forms	Reasons for leaving academy	Summer/fall 2010 and 2011	Students who left academy after spring 2010 or 2011

survey was administered to student interns and their employers in summer 2010 and in summer 2011 in the last week of their six-week internships. The survey included questions on the interns' experiences in the internship program, assessment of their growth in 21st-century skills, and knowledge of career and college options. The intern employer survey was administered to the employers who hosted these interns. Part I of the instrument asked employers to respond to questions about the program itself (for example, did they feel well prepared and supported, would they do it again, and so on), as a means of measuring program implementation. Part II of the form asked employers to rate the performance of each of their interns, particularly with respect to the strength of 21st-century skills. Of the 106 internship placements in summer 2010 and summer 2011, 90 students (85 percent) completed the intern survey, and employer ratings were received from about 53 supervisors (50 percent). Of the 106 students who participated in an internship, the skills of 65 interns (61 percent) were evaluated by their employers.

Qualitative Data Sources

The following qualitative data sources were used to describe the implementation experiences of the pilot academies (Chapter 3) and the scale-up academies (Chapter 4):

- **Observations of summer planning visits.** Summer planning visits served as the initial training sessions for district employees and ECCO coordinators. Observations of these planning sessions were conducted several times over the course of the project.
- **Telephone interviews.** Structured phone interviews with district facilitators and ECCO coordinators were conducted most semesters.
- **Site visits.** In-person site visits by the research team involved focus groups and interviews with school district and academy staff.
- **Implementation status reports.** During semesters when no site visits were planned, each academy was asked to complete an implementation status report to record which lessons and activities were implemented.
- **Program developer reports.** Monthly reports from the program developers summarized the technical assistance that was provided to the sites and their progress with implementation.

- **Interviews with program developers.** Interviews were conducted once a year with the program developers to obtain their perspectives and insights about ECCO implementation.

Response Analysis for the Student Survey

Chapter 5 evaluates ECCO's potential for improving student outcomes by looking at the changes over time in measures of student participation and outcomes that are derived from the student survey (that is, differences in outcomes between students who were surveyed in spring 2010 and those who were surveyed in spring 2011). Given this analytical strategy, it is important to examine whether response rates and respondents' characteristics are similar across the two survey years; if not, then differences in student outcomes across survey years could simply be due to differences in respondents' characteristics, rather than representing real differences in outcomes. This could compromise the "internal validity" of the findings reported in Chapter 5 as a source of information for evaluating ECCO's potential for improving student outcomes.

Appendix Table A.2 presents response rates for the student survey in the pilot academies, by grade level, for each year of the survey. These response rates are calculated by comparing the number of students who responded to the survey and the number of students in the class rosters. As seen in this table, the response rate is generally high, above 86 percent. However, there is a statistically significant difference in response rates across survey years: 91 percent in spring 2010, compared with 88 percent in spring 2011. This is due primarily to a between-year difference in response rates among twelfth-grade students.

This difference in the response rates raises the possibility that the *characteristics* of survey respondents also differ across survey years. Accordingly, Appendix Table A.3 compares selected characteristics of survey respondents in spring 2010 with those of respondents in spring 2011. As seen in this table, students do differ statistically with respect to several characteristics, such as race/ethnicity, though the magnitude of these differences in not large; for example, 87 percent of respondents in spring 2010 are from a racial/ethnic minority group, compared with 91 percent of respondents in spring 2011.

Two analytical strategies were used to correct for these differences in respondents' characteristics. First, a regression analysis was used to adjust the estimated changes in student outcomes for between-year differences in characteristics. (Appendix C presents the statistical model for cohort-level changes over time.) Of course, these regression adjustments may not completely resolve the problem: If respondents differ with respect to their *observed* characteristics, then they probably also differ with respect to their *unobserved* characteristics. Therefore, it remains possible that estimates of changes over time in student outcomes across consecutive cohorts of students, as presented in Chapter 5, could be due to differences in unobservable

The Career Academies Project

Appendix Table A.2

Student Survey Reponse Rates, by Year and Grade Level, Pilot Academies

Grade Level	Spring 2010	Spring 2011	Estimated Difference	P-Value for Change
All grades (10-12)				
Response rate (%)	91.4	88.3	-3.1	0.060 *
Number of students enrolled	695	666		
Grade 10				
Response rate (%)	88.1	87.9	-0.2	0.949
Number of students enrolled	277	248		
Grade 11				
Response rate (%)	91.8	90.2	-1.6	0.551
Number of students enrolled	208	224		
Grade 12				
Response rate (%)	95.2	86.6	-8.6	0.002 ***
Number of students enrolled	210	194		

SOURCES: MDRC calculatations are from the ECCO spring student surveys and academy class rosters.

NOTES: Values in the "Spring 2010" and "Spring 2011" columns show the percentage of students enrolled in the academies (based on spring rosters) who answered the student survey in the spring of each survey year. The "Estimated Difference" column is the difference in response rates between survey years.

A two-tailed t-test was used to test whether this difference is statistically significant. Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

Rounding may cause slight discrepancies in calculating sums and differences.

Hypothesis tests account for the fact some students are observed in both survey years.

characteristics of respondents rather than a real improvement in student outcomes. To resolve this problem, the plausibility of ECCO's effects was also evaluated using a second analytical approach, which looks at whether there are changes over time in outcomes for individual students who responded to both rounds of the survey. (See Appendix C for the statistical model for student-level changes over time.) Because the same students are compared in both time periods, estimates of individual-level changes over time are not confounded with differences in either observed or unobserved respondent characteristics. As discussed in Appendix C, the findings from this additional analysis generally corroborate the findings presented in Chapter 5.

Another important analytical issue is whether the survey findings are "externally valid," that is, whether the findings can be generalized to nonrespondents and, more broadly, to the target population of all enrolled students. Accordingly, Appendix Table A.4 compares selected

The Career Academies Project

Appendix Table A.3

Selected Characteristics of Survey Respondents, by Survey Year, Pilot Academies

Characteristic (%)	Spring 2010	Spring 2011	Estimated Difference	P-Value for Change	
Racial/ethnic minority[a]	87.4	91.2	3.8	0.031	**
Male	47.3	45.4	-1.9	0.512	
Mother's educational attainment				0.001	***
Less than high school	43.8	44.9	1.1		
High school diploma or GED certificate	31.1	32.4	1.3		
Postsecondary credential	24.9	22.2	-2.6		
Ever held back a grade	22.6	23.8	1.2	0.624	
Received a D or below in English or math in the previous school year	33.0	34.5	1.5	0.624	
Grade level				0.253	
Grade 10	38.4	37.1	-1.4		
Grade 11	30.1	34.4	4.3		
Grade 12	31.5	28.6	-2.9		
Academy				0.874	
Academy of Art and Technology	38.9	37.8	-1.1		
Center for Hospitality, Tourism, and Marketing	26.3	27.2	0.9		
Culinary Operations Academy	10.7	9.7	-1.0		
Digital Safari Academy	24.1	25.3	1.2		
Omnibus test (chi-squared = 26.7[b]				0.021	**
Total number of students[c]	635	588			

SOURCE: MDRC calculations are from the ECCO spring student surveys.

NOTES: Values in the "Spring 2010" column are the characteristics of students who responded to the spring 2010 student survey. Values in the "Spring 2011" column are the characteristics of students who responded to the spring 2011 survey. The "Estimated difference" column is the difference in characteristics between the two groups of students.

A two-tailed t-test was used to test whether these differences are statistically significant. Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

Rounding may cause slight discrepancies in calculating sums and differences.

Hypothesis tests account for the fact the some students are observed in both survey years.

[a]This includes students who are black, Hispanic, Asian, or "Other" race./ethnicity.

[b]A chi-squared test was used to determine whether there is a systematic difference between the two groups of students, across all characteristics included in this table as well as indicators of whether data were missing on each of these characteristics.

[c]Due to missing values on some survey items and characteristics from the rosters, the number of students included in the analysis varies by characteristic. The total number of students reported in the table are the number of students who responded to the survey.

The Career Academies Project

Appendix Table A.4

Selected Characteristics of Survey Respondents and Nonrespondents, Pilot Academies

Characteristic (%)	Survey Respondents	Non-Respondents	Estimated Difference	P-Value for Change	
Spring 2010					
Male	47.3	58.3	-11.0	0.103	
Racial/ethnic minority[a]	87.4	86.7	0.7	0.874	
Grade level				0.024	**
Grade 10	38.4	55.0	-16.6		
Grade 11	30.1	28.3	1.7		
Grade 12	31.5	16.7	14.8		
Academy				<0.001	***
Academy of Art and Technology	38.9	25.0	13.9		
Center for Hospitality, Tourism, and Marketing	26.3	56.7	-30.4		
Culinary Operations Academy	10.7	6.7	4.0		
Digital Safari Academy	24.1	11.7	12.4		
Omnibus test (chi-squared = 33.4[b]				<0.001	***
Total number of students[c]	635	60			
Spring 2011					
Male	45.4	45.3	0.1	0.986	
Racial/ethnic minority[a]	91.2	94.7	-3.4	0.312	
Grade level				0.512	
Grade 10	37.1	38.5	-1.4		
Grade 11	34.4	28.2	6.1		
Grade 12	28.6	33.3	-4.8		
Academy				<0.001	***
Academy of Art and Technology	37.8	24.4	13.4		
Center for Hospitality, Tourism, and Marketing	27.2	64.1	-36.9		
Culinary Operations Academy	9.7	2.6	7.1		
Digital Safari Academy	25.3	9.0	16.4		
Omnibus test (chi-squared = 39.5[b]				<0.001	***
Total number of students[c]	588	78			

(continued)

Appendix Table A.4 (continued)

SOURCES: MDRC Calculations are from the ECCO spring student surveys and academy class rosters.

NOTES: Values in the "Survey Respondents" column are the characteristics of students who responded to the student survey in a given survey year. Values in the "Nonrespondent" column are the characteristics of students who are enrolled in the academy (based on the spring rosters) but who did not respond to the student survey. The "Estimated difference" column is the difference in characteristics between the two groups of students.

A two-tailed t-test was used to test whether these differences are statistically significant. Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

Rounding may cause slight discrepancies in calculating sums and differences.

[a]This includes students who are black, Hispanic, Asian, or "Other" race/ethnicity.

[b]A chi-squared test was used to determine whether there is a systematic difference between the two groups of students, across all characteristics included in this table as well as indicators of whether data were missing on each of these characteristics.

[c]Due to missing values in the demographic characteristics reported in the rosters, the number of students included in the analysis varies by characteristic. The total numbers of students reported here are for the full sample of students enrolled in the academies or who responded to the survey.

characteristics of respondents and nonrespondents (that is, the students who were enrolled in the academies but who did not respond to the surveys). As seen in the table, respondents and nonrespondents are similar with respect to demographic characteristics (gender and race/ethnicity). The two groups differ, however, with respect to *grade level* (respondents were more likely than nonrespondents to be in twelfth grade and, therefore, were older) and with respect to *academy* (respondents were more likely than nonrespondents to be enrolled in certain academies rather than others).

Strictly speaking, this means, on the one hand, that the findings presented in this report — which are based on survey respondents — may not be generalizable to nonrespondents. On the other hand, because the percentage of nonrespondents is small, the distribution of respondents across grade levels and academies is, in fact, similar to that of *all enrolled students* (the target population); see Chapter 1, Table 1.2. Therefore, the findings in Chapter 5 are likely to be adequately generalizable to all the students enrolled at the academies.

Appendix Table A.5 presents selected characteristics of students served by each academy, based on the sample of survey respondents. As seen in this table, the characteristics of respondents varied substantially across academies. For example, the percentage of students from a racial/ethnic minority group ranges from 52 percent to 100 percent, while the percentage of students ever held back ranges from 7 percent to 33 percent.

The Career Academies Project

Appendix Table A.5

Selected Characteristics of Survey Respondents, by Academy, Pilot Academies

Characteristic (%)	Academy of Art and Technology	Culinary Operations Academy	Digital Safari Academy	Center for Hospitality, Tourism, and Marketing
Racial/ethnic minority[a]	90.6	52.0	90.7	100.0
Male	49.9	60.2	46.2	36.4
Mother's educational attainment				
Less than high school	61.3	26.2	36.4	35.0
High school diploma or GED certificate	24.3	37.4	30.0	42.1
Postsecondary credential	13.8	36.4	33.6	22.5
Ever held back a grade	26.4	27.0	6.7	32.7
Received a D or below in English or math in the previous school year	45.1	28.9	33.8	18.0
Grade level				
Grade 10	38.0	40.8	34.4	39.4
Grade 11	30.9	32.0	35.1	31.2
Grade 12	31.1	27.2	30.5	29.4
Total number of students[b]	469	125	302	327

SOURCE: MDRC calculations are from the ECCO spring student surveys.

NOTES: Values in the table are the characteristics of students who responded to the student survey in spring 2010 or spring 2011.

[a]This includes students who are black, Hispanic, Asian, or "Other" race/ethnicity.

[b]Due to missing values on some survey items and characteristics from the rosters, the number of students included in the analysis varies by characteristic. The total numbers of students reported here are the number of students who responded to the survey.

Appendix B

Additional Findings About Implementation

The Career Academies Project

Appendix Table B.1

Number of Students Who Participated in Summer Internships, by Academy, 2010 and 2011 Combined, Pilot Academies

	11th-Graders	Applied to Internship	Placed in Internship	Completed Internship
Summer 2010				
Culinary Operations Academy	28	15	14	13
Digital Safari Academy	56	28	26	20
Total	84	43	40	33
Summer 2011				
Academy of Art and Technology	81	30	25	23
Center for Hospitality, Tourism, and Marketing	74	22	9	7
Culinary Operations Academy	13	6	6	5
Digital Safari Academy	56	27	26	21
Total	224	85	66	56
Both summers				
Academy of Art and Technology	81	30	25	23
Center for Hospitality, Tourism, and Marketing	74	22	9	7
Culinary Operations Academy	41	21	20	18
Digital Safari Academy	112	55	52	41
Total	308	128	106	89

SOURCES: The MDRC calculation of the number of juniors is from academy rosters. Calculations of student participation, placement, and completion are from ECCO coordinators' annual reports on the internship program.

The Career Academies Project

Appendix Table B.2

Time Spent by ECCO Coordinators, Pilot Academies

Task	Hours per Week
ECCO coordinators' time, by task	
Participating in training or coaching	2.0
Planning to teach workshops	1.4
Planning for career exploration visits	1.4
Planning for college visits	1.0
Securing internship sites and projects	2.5
Visiting/monitoring internships	2.9
Planning internship seminars	1.3
Average across all tasks	1.8
ECCO coordinators' time, by semester	
Fall	10.5
Spring	14.1
Summer	13.2
Average across all semesters	12.6

SOURCE: MDRC calculations are from ECCO coordinators' time-use logs completed weekly for one year, from fall 2010 through fall 2011.

Appendix C

Additional Analyses of Student Outcomes and Methodological Explanations

Appendix C provides additional findings about ECCO's potential to improve student outcomes as well as some methodological explanations. The first section presents additional exhibits associated with the primary analyses in Chapter 5. The second section looks at the changes over time in student outcomes for *individual students* who responded to both rounds of the survey, as a way of bringing further evidence to bear on ECCO's potential for improving student outcomes. The third section of the appendix describes the statistical models used for all analyses presented in this report.

Supplementary Exhibits for Chapter 5

The Career Academies Project

Appendix Table C.1

Short-Term Student Outcomes: Constructs and Survey Items

Construct and Definition[a]	Survey Item
Career awareness Knowledge of career options, understanding of levels of educational attainment and skills needed for certain careers, and an understanding of steps needed to achieve career goals	-I have a good idea of what kind of career I want to have -I have a good idea of what level of education is required for the kind of career I want -I have a good idea of what experiences and skills are required for the kind of career I want -I have a plan for what I'm going to do get the career I want
College awareness Awareness of postsecondary options and knowledge of how to apply for and pay for college	-I have a good idea of what I need to do for college -I have a good idea of what I need to do to pay for college -I know which college I want to go to
21st-century skills Self-assessed strength in noncognitive, transferable skills	I am good at: -collecting, organizing, and interpreting information to answer a question -solving problems and making decisions -thinking creatively -cooperating with others -communicating information clearly -planning and prioritizing to reach a goal -working independently -managing my time and staying organized -reflecting upon and evaluating my own work
Engagement in school Level of in interest in and effort devoted to learning at school	-I feel bored during most of my classes (reversed)[b] -I pay attention in class -I work very hard on my schoolwork In school, we learn about things that I want to learn a lot more about
Awareness of connection between school and future Belief in the connection between knowledge, skills, and experiences gained in high school with preparing for college and career[c]	-There is a strong connection between what I am studying in school and what I want to do when I finish high school -I think the things I'm learning in school are going to be very important for my later life

NOTES: [a]Scores for career awareness, college awareness, 21st-century skills, and engagement in school are based on calculations of average responses to a set of survey items on a 4-point scale, ranging from 1(not true at all) to 4 (very true).

[b]In order to make this item consistent with the other survey items, this item was reverse coded. Reverse coding is used when a negative item is grouped with positive items. Therefore, the item "I feel bored during most of my classes" was coded so that a 1 rating meant "very true" and a 4 rating meant "not true at all."

[c]This is calculated as the percentage of students who responded "sort of true" or "very true."

The Career Academies Project

Appendix Table C.2

Beliefs About Connections Between School and Future: Changes Over Time Across Consecutive Cohorts of Students, Second-Year Academies (COA and DSA)

Outcome (%)	Spring 2010	Spring 2011	Estimated Change	P-Value for Change
10th and 11th grades				
Participation in ECCO program	*2 semesters*	*4 semesters*		
There is a connection between school and what I will do when I finish school	57.2	55.6	-1.7	0.781
What is learned in school is important for later in life	79.2	77.3	-1.9	0.692
Total number of students[a]	155	146		
12th grade				
Participation in ECCO program	*0 semesters*	*4 semesters*		
There is a connection between school and what I will do when I finish school	62.1	67.5	5.4	0.540
What is learned in school is important for later in life	81.8	85.1	3.3	0.612
Total number of students[a]	66	60		

SOURCE: MDRC calculations are from the ECCO spring student surveys.

NOTES: This analysis is based on survey respondents enrolled in a given grade in spring 2010 and spring 2011. The outcomes presented in this table are based on whether a student responded that the statement is either "sort of true" or "very true" (as opposed to "not at all true" or "not very true"). The "Spring 2010" column presents the regression-adjusted outcomes of students who responded to the spring 2010 student survey. The "Spring 2011" column presents the regression-adjusted outcomes of students who responded to the spring 2011 survey. The "Estimated change" column is the difference in outcomes between the two groups of students. This estimated difference is adjusted for the following student characteristics: academy fixed effects, whether a student is a racial/ethnic minority, gender, mother's educational attainment, whether a student was ever held back, whether the student received a D or below in English or math in the previous school year, and missing indicators for each of these characteristics.

A two-tailed t-test is used for all statistical tests presented in this table. Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

Rounding may cause slight discrepancies in calculating sums and differences.

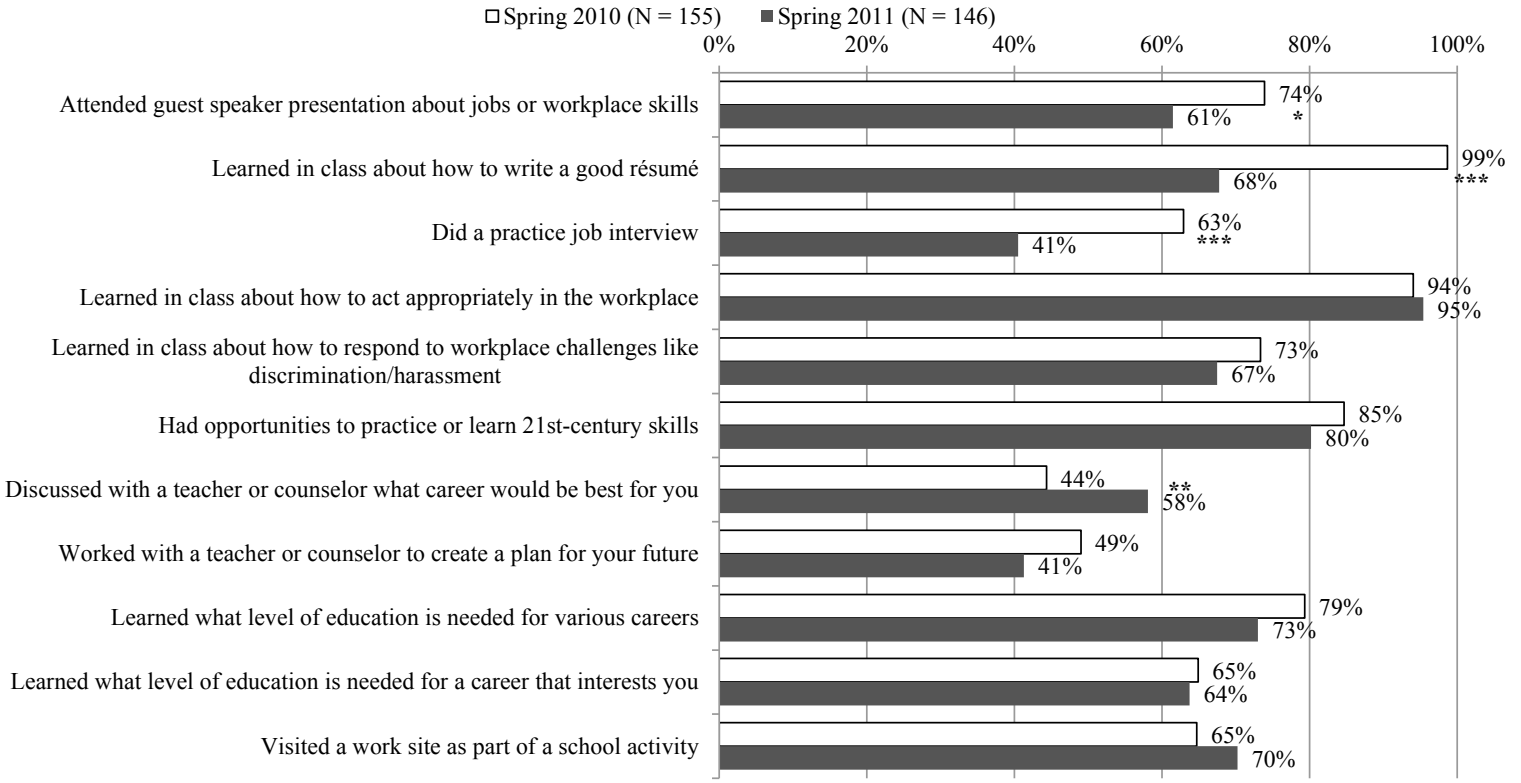
[a]Due to missing values on some survey items, the number of students included in the analysis varies by outcome. The total number of students reported in the table are the number of students who responded to the survey.

COA = Culinary Operations Academy; DSA = Digital Safari Academy.

The Career Academies Project

Appendix Figure C.1

Participation in Career Exploration Activities During the School Year: Comparison of Tenth- and Eleventh-Grade Cohorts Combined, with Two and Four Semesters of ECCO, Second-Year Academies (COA and DSA)



(continued)

Appendix Figure C.1 (continued)

SOURCE: MDRC calculations are from the ECCO spring student surveys.

NOTES: This analysis is based on survey respondents enrolled in a given grade in spring 2010 and spring 2011. The white bars are the regression-adjusted outcomes of students who responded to the spring 2010 student survey. The dark bars are the regression-adjusted outcomes of students who responded to the spring 2011 survey.

Outcomes are adjusted for the following student characteristics: academy fixed effects, grade fixed effects, whether a student belonged to a racial or ethnic minority, gender, mother's educational attainment, whether a student was ever held back, whether the student received a D or below in English or math in the previous school year, and missing indicators for each of these characteristics.

A two-tailed t-test is used for all statistical tests presented in this figure. Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

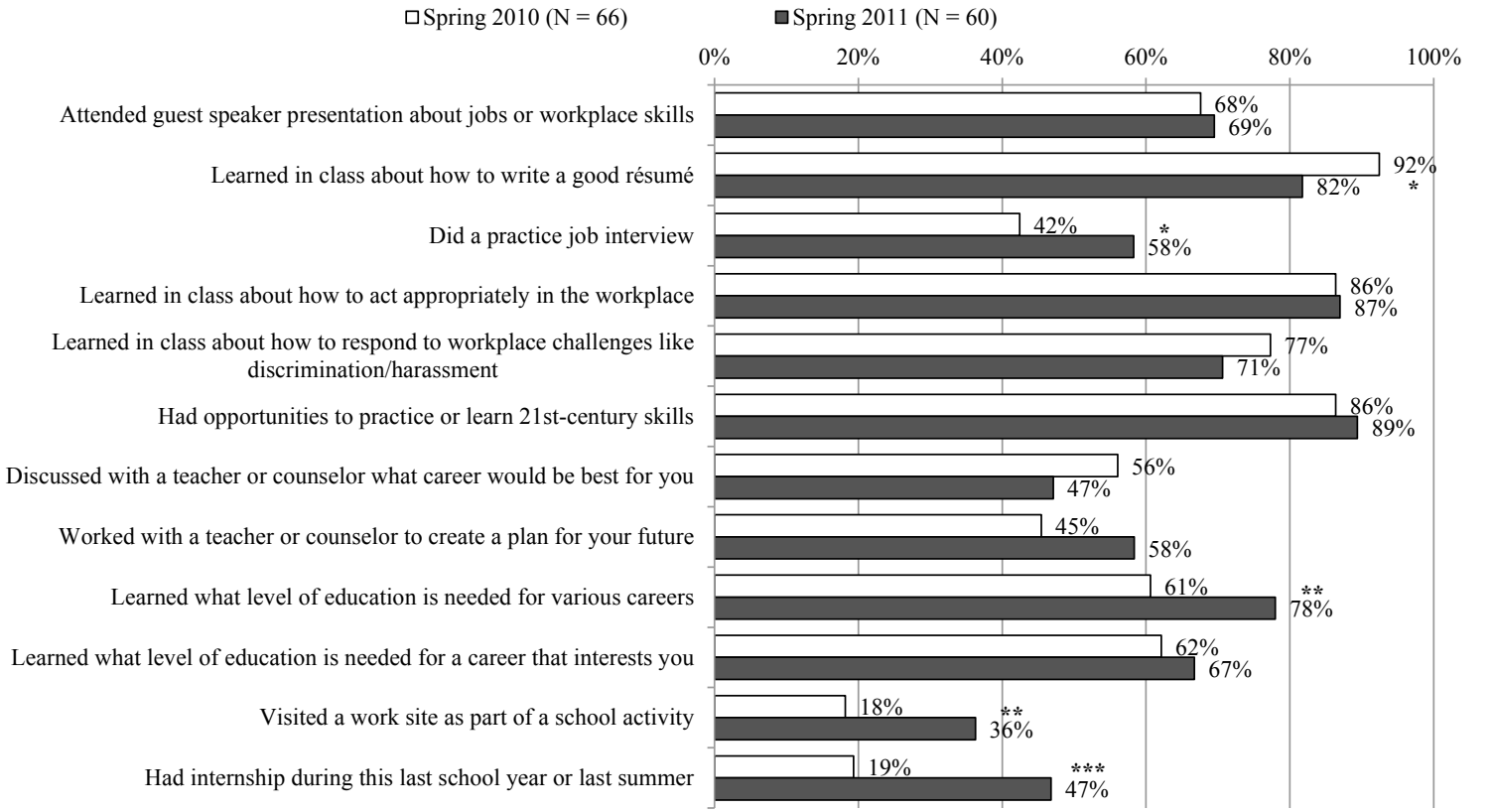
Due to missing values on some survey items, the number of students included in the analysis varies by activity. The numbers of students reported in the figure are the number of students who responded to the survey.

COA = Culinary Operations Academy; DSA = Digital Safari Academy.

The Career Academies Project

Appendix Figure C.2

Participation in Career Exploration Activities During the School Year: Comparison of Twelfth-Grade Cohorts with Zero and Four Semesters of ECCO, Second-Year Academies (COA and DSA)



(continued)

Appendix Figure C.2 (continued)

SOURCE: MDRC calculations are from the ECCO spring student surveys.

NOTES: This analysis is based on twelfth-grade survey respondents enrolled in the pilot academies in spring 2010 and spring 2011. Each spring, students were asked to reflect on their activities during the past school year. The white bars are the regression-adjusted outcomes of students who responded to the spring 2010 student survey. The dark bars are the regression-adjusted outcomes of students who responded to the spring 2011 survey.

Outcomes are adjusted for the following student characteristics: academy fixed effects, grade fixed effects, whether a student belonged to a racial or ethnic minority, gender, mother's educational attainment, whether a student was ever held back, whether the student received a D or below in English or math in the previous school year, and missing indicators for each of these characteristics.

A two-tailed t-test is used for all statistical tests presented in this figure. Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

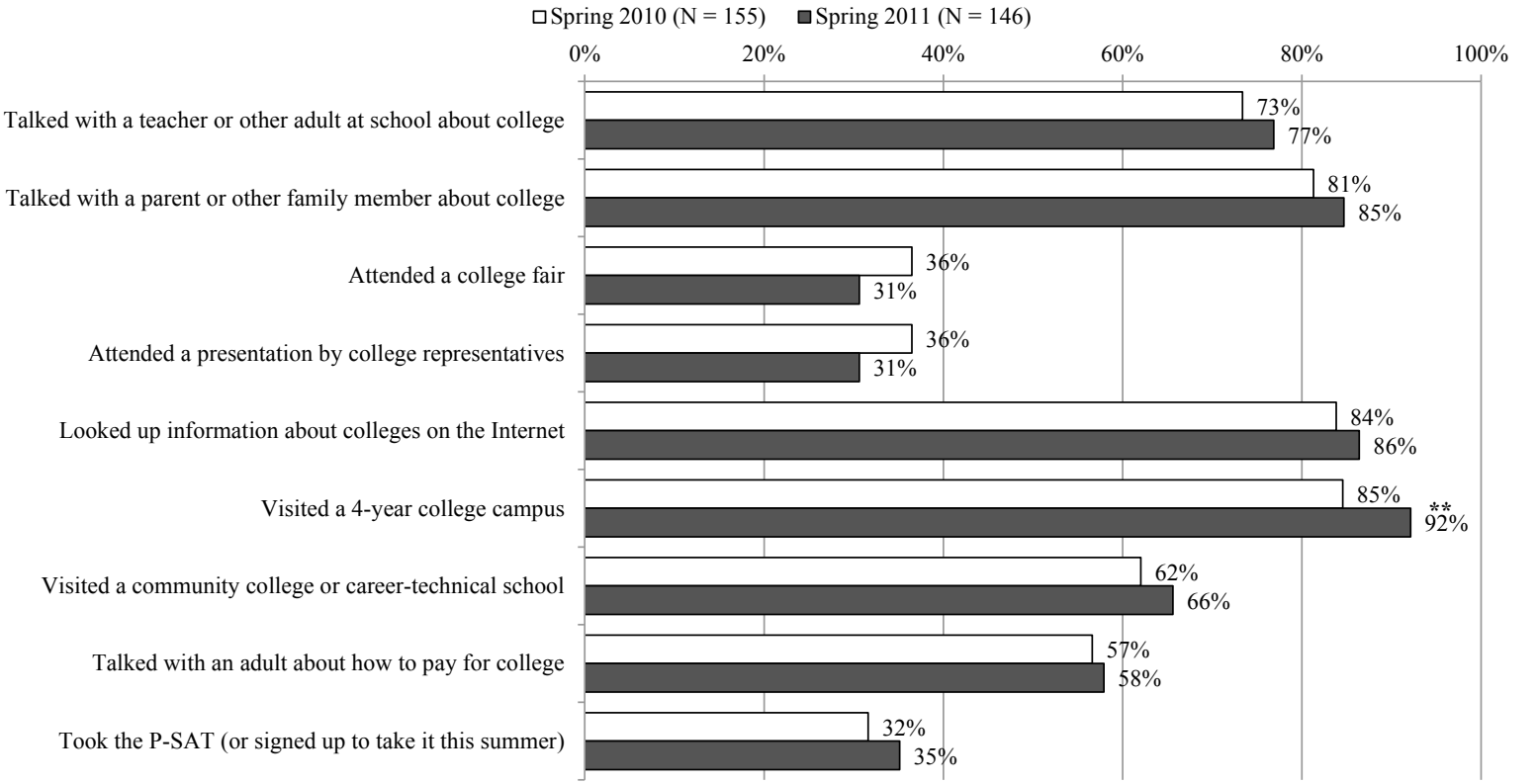
Due to missing values on some survey items, the number of students included in the analysis varies by activity. The numbers of students reported in the figure are the number of students who responded to the survey.

COA = Culinary Operations Academy; DSA = Digital Safari Academy.

The Career Academies Project

Appendix Figure C.3

Participation in College Exploration Activities During the School Year: Comparison of Tenth- and Eleventh-Grade Cohorts Combined, with Two and Four Semesters of ECCO, Second-Year Academies (COA and DSA)



(continued)

Appendix Figure C.3 (continued)

SOURCE: MDRC calculations are from the ECCO spring student surveys.

NOTES: This analysis is based on survey respondents enrolled in a given grade in spring 2010 and spring 2011. The white bars are the regression-adjusted outcomes of students who responded to the spring 2010 student survey. The dark bars are the regression-adjusted outcomes of students who responded to the spring 2011 survey.

Outcomes are adjusted for the following student characteristics: academy fixed effects, grade fixed effects, whether a student belonged to a racial or ethnic minority, gender, mother's educational attainment, whether a student was ever held back, whether the student received a D or below in English or math in the previous school year, and missing indicators for each of these characteristics.

A two-tailed t-test is used for all statistical tests presented in this figure. Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

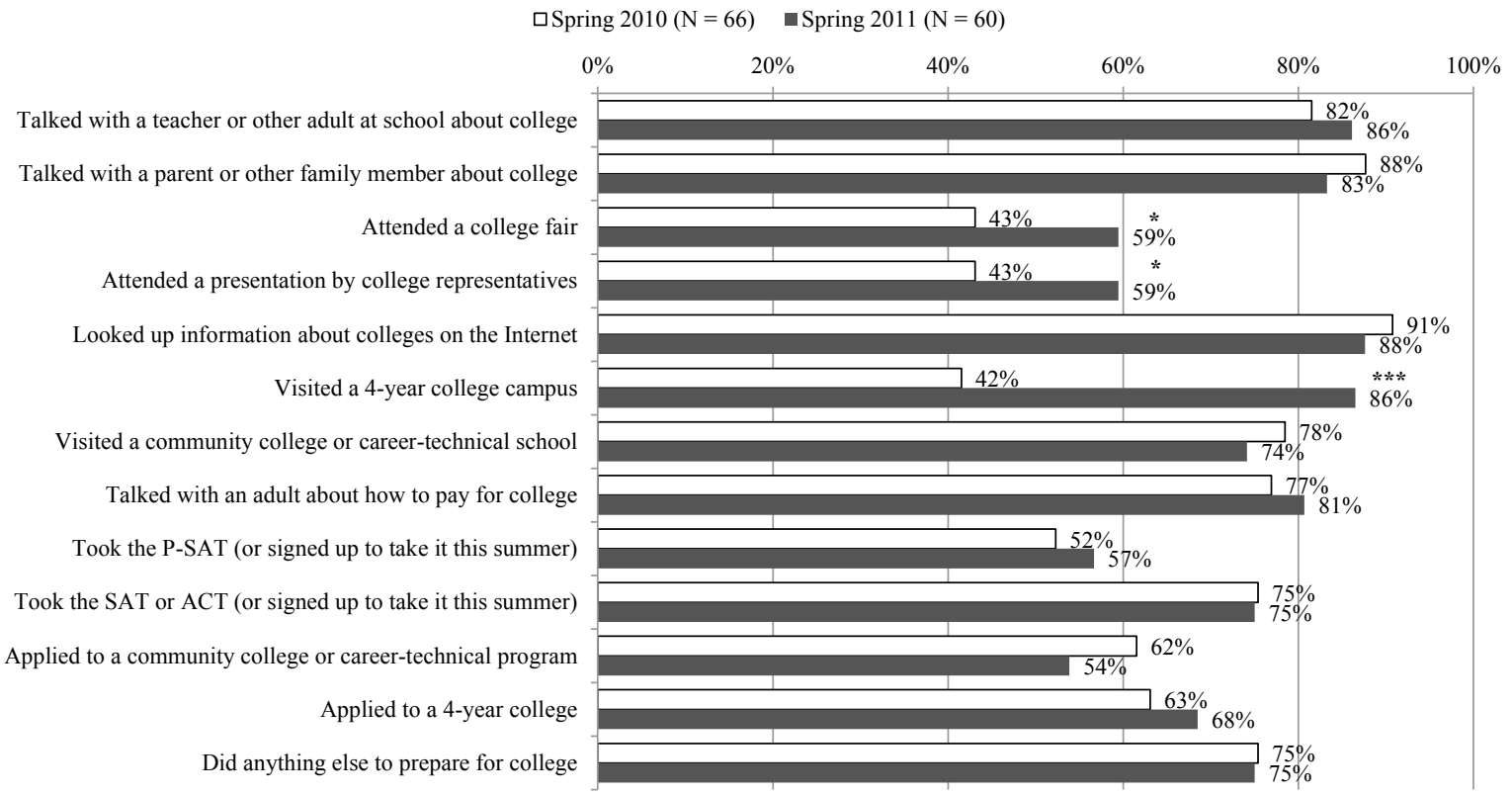
Due to missing values on some survey items, the number of students included in the analysis varies by activity. The numbers of students reported in the figure are the number of students who responded to the survey.

COA = Culinary Operations Academy; DSA = Digital Safari Academy.

The Career Academies Project

Appendix Figure C.4

Participation in College Exploration Activities During the School Year: Comparison of Twelfth-Grade Cohorts with Zero and Four Semesters of ECCO, Second-Year Academies (COA and DSA)



(continued)

Appendix Figure C.4 (continued)

SOURCE: MDRC calculations are from the ECCO spring student surveys.

NOTES: This analysis is based on twelfth-grade survey respondents enrolled in a given grade in spring 2010 and spring 2011. Each spring, students were asked to reflect on their activities during the past school year. The white bars are the regression-adjusted outcomes of students who responded to the spring 2010 student survey. The dark bars are the regression-adjusted outcomes of students who responded to the spring 2011 survey.

Outcomes are adjusted for the following student characteristics: academy fixed effects, grade fixed effects, whether a student belonged to a racial or ethnic minority, gender, mother's educational attainment, whether a student was ever held back, whether the student received a D or below in English or math in the previous school year, and missing indicators for each of these characteristics.

A two-tailed t-test is used for all statistical tests presented in this figure. Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

Due to missing values on some survey items, the number of students included in the analysis varies by activity. The numbers of students reported in the figure are the number of students who responded to the survey.

COA = Culinary Operations Academy; DSA = Digital Safari Academy.

Changes Over Time in Student Outcomes for Individual Students

Chapter 5 examines the potential of the Exploring Career and College Options (ECCO) program for improving student outcomes, based on whether there has been an improvement over time in student outcomes across *consecutive cohorts* of students at the academies (that is, whether students who were enrolled in the grade levels that were exposed to ECCO in spring 2011 had better outcomes than the previous cohorts of students who were enrolled in these same grade levels in spring 2010). Overall, the findings indicate that it is plausible that ECCO may have increased students' participation in college and career exploration activities, as well as their career and college awareness, during their first year in the program.

However, these findings must be interpreted with caution. Improvements over time may be attributable to preexisting differences between consecutive cohorts of students at the academy, rather than to the effect of ECCO. For example, higher college awareness in spring 2011 than in spring 2010 could be explained by the possibility that the 2011 cohort at an academy was more "college aware" at the outset. As discussed in Appendix A, the observed characteristics of student respondents do differ across survey years. Although the analysis controls for these differences, it remains possible that that are still differences in respondents' *unobserved* characteristics between school years.

An alternative strategy for evaluating ECCO's potential for improving student outcomes is to look at the change over time for *individual students* who were enrolled in the academies in both survey years (2010 and 2011). "Change" for these students is defined as the difference between a survey respondent's outcomes in 2010 and the same respondent's outcomes in 2011. If ECCO had an effect on student outcomes, then one would expect to see an improvement in individual respondents' outcomes.

The advantage of this type of analysis — compared with the cohort-level change analysis in Chapter 5 — is that student-level changes are *not* confounded with differences in preexisting characteristics, because the same respondents are being compared in spring 2010 and spring 2011 (in other words, this analysis implicitly controls for all observed and unobserved time-invariant characteristics). That said, the change in student-level outcomes is not without its own limitations. Most notably, growth at the individual level could simply be a result of normal *maturation* as students get older and have more relevant experiences. For example, one would expect students to become more "college aware" as they get closer to graduation, even if ECCO had not been implemented.

Therefore, the student-level changes in outcomes (presented in this section) and the changes at the cohort level (presented in Chapter 5) should be used as complements to each other. For stronger evidence that ECCO could have affected student outcomes, changes should be observed at *both* levels. In other words, students who were enrolled in the grade levels that

were exposed to ECCO in spring 2011 should have better outcomes than (1) the previous cohorts of students enrolled in these grades (cohort-level change) and (2) their own outcomes in the previous school year (student-level change). If statistically significant changes are observed at both levels, then it is more likely that ECCO had a hand in bringing about these changes.

The remainder of this section presents estimates of the individual-level changes in student outcomes. For the sake of brevity, the discussion focuses on the student outcomes for which there is a statistically significant improvement at the cohort level (Chapter 5) but for which the student-level change is *not* statistically significant. Such a pattern of results reduces the likelihood that the cohort-level change over time for this outcome can be plausibly attributable to ECCO. In fact, it turns out that there are very few instances of this happening; overall, the student-level findings support the conclusions in Chapter 5 and strengthen the plausibility than ECCO could have improved student outcomes in respondents' first year of exposure to the program.

Appendix Table C.3 presents selected characteristics of the students who were used for these analyses (that is, students who responded to the survey in both years). For reference, the table also shows the characteristics of students who responded to the survey in spring 2010 but who did *not* respond in spring 2011 (that is, the students who are, by definition, excluded from this analysis). As seen in this table, students who responded to both surveys are more likely to be from a racial/ethnic minority group and were more likely to be enrolled in certain academies rather than others. This means that the findings presented in this appendix may not be generalizable to all students enrolled in the academies. That said, the findings are nonetheless a useful source of information for evaluating ECCO's potential.

Participation in Career Exploration Activities

Appendix Tables C.4 to C.9 present estimates of the student-level changes in participation rates in career exploration activities, beginning with a comparison of students with zero and two semesters of participation and ending with a comparison of students with two and four semesters of participation. Student-level change is evaluated by gauging whether respondents' program participation in spring 2011 was greater than in the previous year (spring 2010).[1]

For students in the first-year academies, for whom zero and two semesters of participation in ECCO are compared, the findings support the findings discussed in Chapter 5. That is,

[1]The analysis does not look at growth from eleventh to twelfth grade because ECCO was not yet being implemented in twelfth grade in spring 2011, so these students' outcomes could not have been affected by the program.

The Career Academies Project

Appendix Table C.3

Selected Characteristics of Students Who Responded to Both Surveys, Compared with Students Who Responded in Spring 2010 Only, Pilot Academies

Characteristic (%)	Responded to Both Surveys	Responded Spring 2010 Only	Estimated Difference	P-Value for Change
Racial/ethnic minority[a]	91.4	82.3	9.1	0.005 ***
Male	47.4	50.9	-3.5	0.465
Mother's educational attainment				0.314
Less than high school	48.3	43.8	4.5	
High school diploma or GED certificate	30.9	29.2	1.7	
Postsecondary credential	20.2	27.0	-6.8	
Ever held back a grade	23.3	27.4	-4.1	0.332
Received a D or below in English or math in the previous school year	35.5	37.9	-2.3	0.660
Academy				<0.001 ***
Academy of Art and Technology	36.8	40.3	-3.4	
Center for Hospitality, Tourism, and Marketing	15.3	35.4	-20.1	
Culinary Operations Academy	8.1	15.0	-6.9	
Digital Safari Academy	39.7	9.3	30.4	
Omnibus test (chi-squared = 66.8 [b]				<0.001 ***
Total number of students[c]	209	226		

SOURCE: MDRC calculations are from the ECCO spring student surveys.

NOTES: This analysis is based on students enrolled in tenth or eleventh grade in spring 2010. Values in the "Responded to both surveys" column are the characteristics of students who responded to both the spring 2010 and the spring 2011 student survey. Values in the "Responded spring 2010 only" column are the characteristics of students who responded to the spring 2010 survey only. The "Estimated difference" column is the difference in characteristics between the two groups of students.

A two-tailed t-test was used to test whether these differences are statistically significant. Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

Rounding may cause slight discrepancies in calculating sums and differences.

[a]This includes students who are black, Hispanic, Asian, or "Other" race/ethnicity.

[b]A chi-squared test was used to determine whether there is a systematic difference between the two groups of students, across all characteristics included in this table as well as indicators of whether data were missing on each of these characteristics.

[c]Due to missing values on some survey items and characteristics from the rosters, the number of students included in the analysis varies by characteristic. The total numbers of students reported here are for the sample of students who responded to the survey.

for most of the activities for which there was an increase in participation at the cohort level, there was also an improvement at the student level (Appendix Table C.4).

For students in the second-year academies, for whom two and four semesters of participation in ECCO are compared, the findings also generally support those discussed in Chapter 5. Appendix Table C.5 shows results of the analysis whereby student-level change is evaluated by gauging whether students' outcomes in spring 2011 (after being exposed to four semesters of ECCO) are better than in spring 2010 (after they had experienced two semesters of ECCO). These students were enrolled in either tenth or eleventh grade in spring 2010 and had been promoted to either eleventh or twelfth grade in spring 2011.

Estimates of change are presented separately, by grade level (that is, student-level changes from tenth to eleventh grade and from eleventh to twelfth grade). When comparing these results with those in Chapter 5, the student-level changes from tenth to eleventh grade (Appendix Table C.5) should be compared with the cohort-level changes from tenth to eleventh grade, while the student-level changes from eleventh to twelfth grade (Appendix Table C.6) should be compared with the cohort-level changes for twelfth grade.

In general, the pattern of results in these tables largely supports the conclusions from Chapter 5, that is, that there is not much evidence of an increase in participation rates after the first year of implementation. Of the few indicators for which there *are* cohort-level changes, several did not improve at the student-level:

- Learn in class about how to write a good résumé (tenth and eleventh grade s)
- Learn in class about how to act appropriately in a workplace setting (tenth and eleventh grades)
- Do a practice job interview (twelfth grade)
- Learn what level of education is needed for various careers (twelfth grade)

Participation in College Exploration Activities

Appendix Tables C.7 to C.9 present similar comparisons of the student-level changes in participation in college exploration activities. Again, the results are generally consistent with those reported in Chapter 5. Strong growth in participation for most indicators is observed in both the cohort-level and the individual-level indicators. But there is little evidence that ECCO is associated with additional increases in participation in the second year.

The Career Academies Project

Appendix Table C.4

Participation in Career Exploration Activities During the School Year (2009-2010 to 2010-2011), Student-Level Change from Tenth to Eleventh Grade, First-Year Academies (AOAT and HTM)

Indicator (%)	2009-2010	2010-2011	Estimated Change	P-Value for Change	
Grade level	*10th*	*11th* [b]			
Participation in ECCO program	*0 semesters*	*2 semesters*			
Attended an activity in which adults came to school to talk about jobs or workplace skills	7.8	60.8	52.9	<0.001	***
Did a practice job interview with classmates or an adult at school	17.8	45.5	27.7	<0.001	***
Learned in class about how to write a good résumé	42.9	96.9	54.1	<0.001	***
Learned in class about how to act appropriately in a workplace setting	65.0	94.0	29.0	<0.001	***
Learned in class about how to recognize and respond to workplace challenges, such as discrimination or harassment	59.8	70.6	10.8	0.086	*
Had opportunities to practice or learned 21st-century skills	71.6	76.5	4.9	0.356	
Discussed in class, or with a teacher or counselor, what career would be best for you	23.0	47.0	24.0	<0.001	***
Worked with a teacher or counselor to create a plan for your future	18.8	37.6	18.8	<0.001	***
Learned about what level of education is needed for various careers	57.4	64.4	6.9	0.210	
Learned about what level of education is needed for a career that interests you	42.6	57.4	14.9	0.006	***
Ever visited a work site as part of a school activity to learn about what it is like to work there	6.9	60.4	53.5	<0.001	***
Total number of students[a]	109	109			

(continued)

Appendix Table C.4 (continued)

SOURCE: MDRC calculations are from the ECCO spring student surveys.

NOTES: This analysis is based on students who responded to both the spring 2010 and the spring 2011 student survey. Each spring, students were asked to reflect on their activities during the past school year. Values in the "2009-2010" column are the activities of these students during that school year. Values in the "2010-2011" column are the activities of these students during that school year. The "Estimated change" column is the change in outcomes across school years. Hypothesis testing accounts for repeated observations of students across survey years.

A two-tailed t-test is used for all statistical tests presented in this table. Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

Rounding may cause slight discrepancies in calculating sums and differences.

[a]Due to missing values on some survey items, the number of students included in the analysis varies by activity. The total numbers of students reported in the table are the number of students who responded to the survey in each year.

[b]Seven students (6 percent) were still in tenth grade in spring 2011 because they had been retained.

AOAT = Academy of Art and Technology; HTM = Center for Hospitality, Tourism, and Marketing.

The Career Academies Project

Appendix Table C.5

Participation in Career Exploration Activities During the School Year (2009-2010 to 2010-2011), Student-Level Change from Tenth to Eleventh Grade, Second-Year Academies (COA and DSA)

Indicator (%)	2009-2010	2010-2011	Estimated Change	P-Value for Change
Grade level	*10th*	*11th*		
Participation in ECCO program	*2 semesters*	*4 semesters*		
Attended an activity in which adults came to school to talk about jobs or workplace skills	56.3	81.3	25.0	0.104
Did a practice job interview with classmates or an adult at school	51.0	40.8	-10.2	0.302
Learned in class about how to write a good résumé	100.0	95.9	-4.1	0.159
Learned in class about how to act appropriately in a workplace setting	91.8	98.0	6.1	0.175
Learned in class about how to recognize and respond to workplace challenges, such as discrimination or harassment	61.7	55.3	-6.4	0.445
Had opportunities to practice or learned 21st-century skills	93.9	91.8	-2.0	0.659
Discussed in class, or with a teacher or counselor, what career would be best for you	40.8	55.1	14.3	0.109
Worked with a teacher or counselor to create a plan for your future	49.0	38.8	-10.2	0.229
Learned about what level of education is needed for various careers	77.1	81.3	4.2	0.569
Learned about what level of education is needed for a career that interests you	57.1	57.1	0.0	1.000
Ever visited a work site as part of a school activity to learn about what it is like to work there	63.3	83.7	20.4	0.017 **
Had an internship during this last school year or last summer[a]	2.1	10.6	8.5	0.097 *
Total number of students[b]	50	50		

(continued)

Appendix Table C.5 (continued)

SOURCE: MDRC calculations are from the ECCO spring student surveys.

NOTES: This analysis is based on students who responded to both the spring 2010 and the spring 2011 student survey. Each spring, students were asked to reflect on their activities during the past school year. Values in the "2009-2010" column are the activities of these students during that school year. Values in the "2010-2011" column are the activities of these students during that school year. The "Estimated change" column is the change in outcomes across school years. Hypothesis testing accounts for repeated observations of students across survey years.

A two-tailed t-test is used for all statistical tests presented in this table. Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

Rounding may cause slight discrepancies in calculating sums and differences.

[a]This includes only students in eleventh grade in spring 2010.

[b]Due to missing values on some survey items, the number of students included in the analysis varies by activity. The total numbers of students reported in the table are the number of students who responded to the survey in each year.

COA = Culinary Operations Academy; DSA = Digital Safari Academy.

The Career Academies Project

Appendix Table C.6

Participation in Career Exploration Activities During the School Year (2009-2010 to 2010-2011), Student-Level Change from Eleventh to Twelfth Grade, Second-Year Academies (COA and DSA)

Indicator (%)	2009-2010	2010-2011	Estimated Change	P-Value for Change
Grade level	*11th*	*12th*		
Participation in ECCO program	*2 semesters*	*4 semesters*		
Attended an activity in which adults came to school to talk about jobs or workplace skills	90.9	72.7	-18.2	0.056 *
Did a practice job interview with classmates or an adult at school	69.4	63.3	-6.1	0.497
Learned in class about how to write a good résumé	98.0	86.0	-12.0	0.029 **
Learned in class about how to act appropriately in a workplace setting	93.9	89.8	-4.1	0.420
Learned in class about how to recognize and respond to workplace challenges, such as discrimination or harassment	77.6	75.5	-2.0	0.799
Had opportunities to practice or learned 21st-century skills	93.9	91.8	-2.0	0.659
Discussed in class, or with a teacher or counselor, what career would be best for you	49.0	53.1	4.1	0.687
Worked with a teacher or counselor to create a plan for your future	53.1	59.2	6.1	0.473
Learned about what level of education is needed for various careers	79.6	79.6	0.0	1.000
Learned about what level of education is needed for a career that interests you	71.4	71.4	0.0	1.000
Ever visited a work site specifically to learn about what it is like to work there as part of a school activity	71.4	42.9	-28.6	0.001 ***
Had an internship during this last school year or last summer[a]	4.2	56.3	52.1	<0.001 ***
Total number of students[b]	50	50		

(continued)

Appendix Table C.6 (continued)

SOURCE: MDRC calculations are from the ECCO spring student surveys.

NOTES: This analysis is based on students who responded to both the spring 2010 and the spring 2011 student survey. Each spring, students were asked to reflect on their activities during the past school year. Values in the "2009-2010" column are the activities of these students during that school year. Values in the "2010-2011" column are the activities of these students during that school year. The "Estimated change" column is the change in outcomes across school years. Hypothesis testing accounts for repeated observations of students across survey years.

A two-tailed t-test is used for all statistical tests presented in this table. Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

Rounding may cause slight discrepancies in calculating sums and differences.

[a]This includes only students in eleventh grade in spring 2010.

[b]Due to missing values on some survey items, the number of students included in the analysis varies by activity. The total numbers of students reported in the table are number of students who responded to the survey in each year.

COA = Culinary Operations Academy; DSA = Digital Safari Academy.

The Career Academies Project

Appendix Table C.7

Participation in College Exploration Activities During the School Year (2009-2010 to 2010-2011), Student-Level Change from Tenth to Elevent Grade, First-Year Academies (AOAT and HTM)

Indicator (%)	2009-2010	2010-2011	Estimated Change	P-Value for Change	
Grade level	*10th*	*11th* [b]			
Participation in ECCO program	*0 semesters*	*2 semesters*			
Talked with a teacher or other adult at school about college	44.4	68.9	24.4	<0.001	***
Talked with a parent or other family member about college	75.6	75.6	0.0	1.000	
Attended a college fair	7.8	27.8	20.0	<0.001	***
Attended a presentation where college representatives or graduates talked about college	7.8	27.8	20.0	<0.001	***
Looked up information about colleges on the Internet	48.9	81.1	32.2	<0.001	***
Visited a 4-year college campus	28.9	78.9	50.0	<0.001	***
Visited a community college or career-technical school	32.2	45.6	13.3	0.033	**
Talked with parents, teacher, or counselor about how to pay for college	27.8	51.1	23.3	<0.001	***
Took the P-SAT (or signed up to take it this summer)					
Took the SAT or ACT (or signed up to take it this summer)					
Applied to a community college or career-technical program					
Applied to a 4-year college					
Did anything else to prepare for college					
Total number of students[a]	109	109			

SOURCE: MDRC calculations are from the ECCO spring student surveys.

NOTES: This analysis is based on students who responded to both the spring 2010 and the spring 2011 student survey. Each spring, students were asked to reflect on their activities during the past school year. Values in the "2009-2010" column are the activities of these students during that school year. Values in the "2010-2011" column are the activities of these students during that school year. The "Estimated change" column is the change in outcomes across school years. Hypothesis testing accounts for repeated observations of students across survey years.

A two-tailed t-test is used for all statistical tests presented in this table. Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

Rounding may cause slight discrepancies in calculating sums and differences.

[a]Due to missing values on some survey items, the number of students included in the analysis varies by activity. The total numbers of students reported in the table are the number of students who responded to the survey in each year.

[b]Seven students (6 percent) were still in tenth grade in spring 2011 because they had been retained.

AOAT = Academy of Art and Technology; HTM = Center for Hospiality, Tourism, and Marketing.

The Career Academies Project

Appendix Table C.8

Participation in College Exploration Activities During the School Year (2009-2010 to 2010-2011), Student-Level Change from Tenth to Eleventh Grade, Second-Year Academies (COA and DSA)

Indicator (%)	2009-2010	2010-2011	Estimated Change	P-Value for Change	
Grade level	*10th*	*11th*[b]			
Participation in ECCO program	*2 semesters*	*4 semesters*			
Talked with a teacher or other adult at school about college	70.5	81.8	11.4	0.200	
Talked with a parent or other family member about college	75.0	77.3	2.3	0.743	
Attended a college fair	16.7	28.6	11.9	0.096	*
Attended a presentation where college representatives or graduates talked about college	16.7	28.6	11.9	0.096	*
Looked up information about colleges on the Internet	69.8	95.3	25.6	0.001	***
Visited a 4-year college campus	83.3	100.0	16.7	0.007	***
Visited a community college or career-technical school	61.9	73.8	11.9	0.168	
Talked with parents, teacher, or counselor about how to pay for college	38.1	52.4	14.3	0.110	
Took the P-SAT (or signed up to take it this summer)					
Took the SAT or ACT (or signed up to take it this summer)					
Applied to a community college or career-technical program					
Applied to a 4-year college					
Did anything else to prepare for college					
Total number of students[a]	50	50			

SOURCE: MDRC calculations are from the ECCO spring student surveys.

NOTES: This analysis is based on students who responded to both the spring 2010 and the spring 2011 student survey. Each spring, students were asked to reflect on their activities during the past school year. Values in the "2009-2010" column are the activities of these students during that school year. Values in the "2010-2011" column are the activities of these students during that school year. The "Estimated change" column is the change in outcomes across school years. Hypothesis testing accounts for repeated observations of students across survey years.

A two-tailed t-test is used for all statistical tests presented in this table. Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

Rounding may cause slight discrepancies in calculating sums and differences.

[a]Due to missing values on some survey items, the number of students included in the analysis varies by activity. The total numbers of students reported in the table are the number of students who responded to the survey in each year.

[b]Seven students (6 percent) were still in tenth grade in spring 2011 because they had been retained.

COA = Culinary Operations Academy; DSA = Digital Safari Academy.

The Career Academies Project

Appendix Table C.9

Participation in College Exploration Activities During the School Year (2009-2010 to 2010-2011), Student-Level Change from Eleventh to Twelfth Grade, Second-Year Academies (COA and DSA)

Indicator (%)	2009-2010	2010-2011	Estimated Change	P-Value for Change	
Grade level	*11th*	*12th*			
Participation in the ECCO program	*2 semesters*	*4 semesters*			
Talked with a teacher or other adult at school about college	80.9	91.5	10.6	0.133	
Talked with a parent or other family member about college	83.0	87.2	4.3	0.485	
Attended a college fair	44.7	61.7	17.0	0.044	**
Attended a presentation where college representatives or graduates talked about college	44.7	61.7	17.0	0.044	**
Looked up information about colleges on the Internet	95.7	93.6	-2.1	0.569	
Visited a 4-year college campus	95.7	91.5	-4.3	0.406	
Visited a community college or career-technical school	57.4	83.0	25.5	<0.001	***
Talked with parents, teacher, or counselor about how to pay for college	66.0	87.2	21.3	0.011	**
Took the P-SAT (or signed up to take it this summer)[a]	43.5	60.9	17.4	0.044	**
Took the SAT or ACT (or signed up to take it this summer)[a]		75.5		<0.001	***
Applied to a community college or career-technical program[a]		57.1		<0.001	***
Applied to a 4-year college[a]		75.5		<0.001	***
Did anything else to prepare for college[a]		75.5		<0.001	***
Total number of students[b]	50	50			

SOURCE: MDRC calculations are from the ECCO spring student surveys.

NOTES: This analysis is based on students who responded to both the spring 2010 and the spring 2011 student survey. Each spring, students were asked to reflect on their activities during the past school year. Values in the "2009-2010" column are the activities of these students during that school year. Values in the "2010-2011" column are the activities of these students during that school year. The "Estimated change" column is the change in outcomes across school years. Hypothesis testing accounts for repeated observations of students across survey years.

A two-tailed t-test is used for all statistical tests presented in this table. Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

Rounding may cause slight discrepancies in calculating sums and differences.

[a]This includes only studnets in eleventh grade in spring 2010.

[b]Due to missing values on some survey items, the number of students included in the analysis varies by activity. The total numbers of students reported in the table are the number of students who responded to the survey in each year.

COA = Culinary Operations Academy; DSA = Digital Safari Academy.

Outcome Measures

Appendix Tables C.10 to C.13 present the individual-level comparisons for the short-term outcomes discussed in Chapter 5. In general the pattern of results again largely supports the conclusions from Chapter 5, that is, that there is not much evidence of improvement in student outcomes after the first two semesters. As Appendix Table C.10 shows, individual-level and cohort-level growth are seen in two of the four indicators for the first-year academies but are not seen for the second-year academies. For some outcomes, improvement at the cohort level was not observed at the student level or vice versa.

The Career Academies Project

Appendix Table C.10

Student-Level Change in Short-Term Outcomes, First-Year Academies (AOAT and HTM)

Outcome	Spring 2010	Spring 2011	Estimated Change	Effect Size	P-Value for Change	
Change from 10th to 11th grade						
Grade level	*10th*	*11th*[b]				
Participation in ECCO program	*0 semesters*	*2 semesters*				
Engagement	2.92	2.94	0.02	0.03	0.700	
Career awareness	2.77	3.03	0.26	0.33	0.001	***
College awareness	2.63	2.89	0.26	0.33	0.002	***
Self-assessed 21st-century skills	3.25	3.40	0.15	0.29	0.003	***
Total number of students[a]	109	109				

SOURCE: MDRC calculations are from the ECCO spring student surveys.

NOTES: The student outcomes presented in this table are calculated by averaging across a student's responses to relevant survey items. These survey items (and the resulting outcomes) are on a 4-point scale (1 = not at all true; 2 = not very true; 3 = sort of true; 4 = very true). This analysis is based on students who responded to both the spring 2010 and the spring 2011 student survey. The "Spring 2010" column presents the outcomes of these students in spring 2010. The "Spring 2011" column presents the outcomes of these students in spring 2011. The "Estimated change" column is the change in outcomes for these students from spring 2010 to spring 2011. Hypothesis testing accounts for repeated observations of students across survey years.

A two-tailed t-test is used for all statistical tests presented in this table. Effect sizes are based on the standard deviation of an outcome for all survey respondents in spring 2010 and spring 2011. Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

Rounding may cause slight discrepancies in calculating sums and differences.

[a]Due to missing values on some survey items, the number of students included in the analysis varies by outcome. The total numbers of students reported in the table are the number of students who responded to the survey.

[b]Seven students (6 percent) were still in tenth grade in spring 2011 because they had been retained.

AOAT = Academy of Art and Technology; HTM = Center for Hospitality, Tourism, and Marketing.

The Career Academies Project

Appendix Table C.11

Student-Level Change in Short-Term Outcomes, Second-Year Academies (COA and DSA)

Outcome	Spring 2010	Spring 2011	Estimated Change	Effect Size	P-Value for Change	
Change from 10th to 11th grade						
Grade level	*10th*	*11th*				
Participation in ECCO program	*2 semesters*	*4 semesters*				
Engagement	2.84	2.80	-0.04	-0.07	0.580	
Career awareness	2.95	2.84	-0.12	-0.15	0.306	
College awareness	2.90	2.77	-0.13	-0.16	0.283	
Self-assessed 21st-century skills	3.20	3.30	0.10	0.21	0.115	
Total number of students[a]	50	50				
Change from 11th to 12th grade						
Grade level	*11th*	*12th*				
Participation in ECCO program	*2 semesters*	*4 semesters*				
Engagement	3.18	3.09	-0.10	-0.18	0.181	
Career awareness	3.07	3.14	0.07	0.09	0.444	
College awareness	3.00	3.48	0.48	0.61	<0.001	***
Self-assessed 21st-century skills	3.45	3.39	-0.06	-0.12	0.314	
Total number of students[a]	50	50				

SOURCE: MDRC calculations are from the ECCO spring student surveys.

NOTES: The student outcomes presented in this table are calculated by averaging across a student's responses to relevant survey items. These survey items (and the resulting outcomes) are on a 4-point scale (1 = not at all true; 2 = not very true; 3 = sort of true; 4 = very true). This analysis is based on students who responded to both the spring 2010 and the spring 2011 student survey. The "Spring 2010" column presents the outcomes of these students in spring 2010. The "Spring 2011" column presents the outcomes of these students in spring 2011. The "Estimated change" column is the change in outcomes for these students from spring 2010 to spring 2011. Hypothesis testing accounts for repeated observations of students across survey years.

A two-tailed t-test is used for all statistical tests presented in this table. Effect sizes are based on the standard deviation of an outcome for all survey respondents in spring 2010 and spring 2011. Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

Rounding may cause slight discrepancies in calculating sums and differences.

[a]Due to missing values on some survey items, the number of students included in the analysis varies by outcome. The total numbers of students reported in the table are the number of students who responded to the survey.

COA = Culinary Operations Academy; DSA = Digital Safari Academy.

The Career Academies Project

Appendix Table C.12

Student-Level Change in Beliefs About Connection Between School and Future, First-Year Academies (AOAT and HTM)

Outcome	Spring 2010	Spring 2011	Estimated Change	P-Value for Change
Change from 10th to 11th grade				
Grade level	*10th*	*11th*[b]		
Participation in ECCO program	*0 semesters*	*2 semesters*		
There is a connection between school and what I will do when I finish school	46.7	56.1	9.3	0.105
What is learned in school is important for later in life	78.5	80.4	1.9	0.685
Total number of students[a]	109	109		

SOURCE: MDRC calculations are from the ECCO spring student surveys.

NOTES: The student outcomes presented in this table are calculated by averaging across a student's responses to relevant survey items. These survey items (and the resulting outcomes) are on a 4-point scale (1 = not at all true; 2 = not very true; 3 = sort of true; 4 = very true). This analysis is based on students who responded to both the spring 2010 and the spring 2011 student survey. The "Spring 2010" column presents the outcomes of these students in spring 2010. The "Spring 2011" column presents the outcomes of these students in spring 2011. The "Estimated change" column is the change in outcomes for these students from spring 2010 to spring 2011. Hypothesis testing accounts for repeated observations of students across survey years.

A two-tailed t-test is used for all statistical tests presented in this table. Effect sizes are based on the standard deviation of an outcome for all survey respondents in spring 2010 and spring 2011. Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

Rounding may cause slight discrepancies in calculating sums and differences.

[a]Due to missing values on some survey items, the number of students included in the analysis varies by outcome. The total numbers of students reported in the table are the number of students who responded to the survey.

[b]Seven students (6 percent) were still in tenth grade in spring 2011 because they had been retained.

AOAT = Academy of Art and Technology; HTM = Center for Hospitality, Tourism, and Marketing.

The Career Academies Project

Appendix Table C.13

Student-Level Change in Beliefs About Connections Between School and Future, Second-Year Academies (COA and DSA)

Outcome (%)	Spring 2010	Spring 2011	Estimated Change	P-Value for Change
Change from 10th to 11th grade				
Grade level	*10th*	*11th*		
Participation in ECCO program	*2 semester*	*4 semesters*		
There is a connection between school and what I will do when I finish school	50.0	58.3	8.3	0.351
What is learned in school is important for later in life	83.3	72.9	-10.4	0.133
Total number of students[a]	50	50		
Change from 11th to 12th grade				
Grade level	*11th*	*12th*		
Participation in ECCO program	*2 semester*	*4 semesters*		
There is a connection between school and what I will do when I finish school	68.0	74.0	6.0	0.322
What is learned in school is important for later in life	85.4	91.7	6.3	0.182
Total number of students[a]	50	50		

SOURCE: MDRC calculations are from the ECCO spring student surveys.

NOTES: The student outcomes presented in this table are calculated by averaging across a student's responses to relevant survey items. These survey items (and the resulting outcomes) are on a 4-point scale (1 = not at all true; 2 = not very true; 3 = sort of true; 4 = very true). This analysis is based on students who responded to both the spring 2010 and the spring 2011 student survey. The "Spring 2010" column presents the outcomes of these students in spring 2010. The "Spring 2011" column presents the outcomes of these students in spring 2011. The "Estimated change" column is the change in outcomes for these students from spring 2010 to spring 2011. Hypothesis testing accounts for repeated observations of students across survey years.

A two-tailed t-test is used for all statistical tests presented in this table. Effect sizes are based on the standard deviation of an outcome for all survey respondents in spring 2010 and spring 2011. Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

Rounding may cause slight discrepancies in calculating sums and differences.

[a]Due to missing values on some survey items, the number of students included in the analysis varies by outcome. The total numbers of students reported in the table are the number of students who responded to the survey.

COA = Culinary Operations Academy; DSA = Digital Safari Academy.

Statistical Models

This section presents the statistical models used to estimate the cohort-level change in Chapter 5, the student-level changes presented in this appendix, and the student-level changes for interns compared with noninterns (Chapter 5).

Cohort-Level Changes Over Time

The cohort-level changes over time (Chapter 5) are estimated by fitting the following multilevel model to the sample of survey respondents:[2]

$$Y_i = \beta YR2011_i + \sum_k \delta_k X_{ki} + \sum_s \sum_g \omega_{sg} SITE_{si} GRADE_{gi} + \varepsilon_i$$

Where

Y_i = Participation or outcome for student i

$YR2011_i$ = Indicator equal to 1 for students surveyed in spring 2011 and equal to 0 for students surveyed in spring 2010

X_k = A set of K student characteristics for student i[3]

$SITE_s$ = A set of S dummy indicators for the academy in which student i is enrolled

$GRADE_g$ = A set of G dummy indicators for the grade level in which student i is enrolled[4]

$\boldsymbol{\varepsilon_i}$ = Random variation in outcome Y for student i

In this model, β is the estimated cohort-level change over time (from spring 2010 to spring 2011). The academy indicators (*SITE*) account for the fact that the data are clustered (students are nested within schools), which makes it possible to obtain the right standard errors

[2]Individual-level change is simply the difference in outcomes from 2010 to 2011. There is no need to adjust for differences in students' characteristics because this type of before-and-after analysis implicitly controls for all observed and unobserved characteristics that are fixed over time.

[3]The following characteristics are included in the model: whether the student is in a racial/ethnic minority group, the student's gender, the educational attainment of the student's mother, whether the student was ever held back, whether the student received a D or below in English or math in the previous school year, and missing indicators for each of these characteristics.

[4]These dummy indicators for grade level are included only for analyses that pool students in different grade levels (that is, analyses that pool tenth- and eleventh-grade students).

and p-values for hypothesis testing. The analysis is conducted separately for each grade level (tenth or eleventh grade and twelfth grade) and for each group of academies (first-year academies and second-year academies).

Student-Level Changes Over Time

Student-level changes over time are estimated by fitting the following multilevel model to the sample of students who responded to both surveys:

$$Y_{it} = \alpha + \beta YR2011_{it} + \varepsilon_i + \tau_{it}$$

Where

Y_{it} = Participation or outcome for student *i* in time *t* (spring 2010 or spring 2011)

$YR2011_{it}$ = Indicator equal to 1 if a student's outcome is measured in spring 2011 and equal to 0 if it is measured in spring 2010

$\boldsymbol{\varepsilon_i}$ = Random variation in outcomes *Y* across students (between-student error term)

$\boldsymbol{\tau_{it}}$ = Random variation in outcome Y across time for student i (within-student error term)

In this model, β is the estimated student-level change over time (from spring 2010 to spring 2011) for students in the sample. The multilevel structure of the error term accounts for the fact that the data are longitudinal and, therefore, are clustered (time points are nested within students), which makes it possible to obtain the right standard errors and p-values for hypothesis testing.

The student-level changes are estimated separately for students in the first-year academies and for those in the second-year academies. The findings for the first-year academies represent student-level growth during the *first year* of students' exposure to ECCO, while findings for second-year academies provide information on student-level change during students' *second year* of exposure to the program.

References

Darche, Svetlana, and Brad Stam. 2012. "College and Career Readiness: What Do We Mean? A Proposed Framework." Drafted manuscript (June). Berkeley, CA: ConnectEd.

Dayton, Charles, Candace Hamilton Hester, and David Stern. 2011. *Profile of the California Partnership Academies, 2009-2010.* Berkeley: University of California, Graduate School of Education, Career Academy Support Network.
Web site: http://casn.berkeley.edu/downloads/CPA_Report_2009-10.pdf.

Harvard University Graduate School of Education. 2011. *Pathways to Prosperity: Meeting the Challenge of Preparing Young Americans for the 21st Century*. Cambridge, MA: Harvard University. Web site: http://www.gse.harvard.edu/news_events/features/2011/Pathways_to_Prosperity_Feb2011.pdf.

Kemple, James J. 2008. *Career Academies: Long-Term Impacts on Labor Market Outcomes, Educational Attainment, and Transitions to Adulthood.* New York: MDRC. Web site: http://www.mdrc.org/sites/default/files/full_50.pdf.

Murnane, Richard, and Frank Levy. 1996. *Teaching the New Basic Skills.* New York: Free Press.

Page, Lindsay C. 2012. "Understanding the Impact of Career Academy Attendance: An Application of the Principal Stratification Framework for Causal Effects Accounting for Partial Compliance." *Evaluation Review* 36: 99-132.

Stern, David, Phil Saroyan, and Candace Hamilton Hester. 2012. *Comparing Students in Each California Partnership Academy with Non-Academy Students at the Same High School, 2009-10.* Berkeley: University of California, Graduate School of Education, Career Academy Support Network. Web site: http://casn.berkeley.edu/resource_files/ComparingAcad_%20Non-AcadStudents_2012.pdf.

Stern, David, Charles Dayton, and Marilyn Raby. 2010. *Career Academies: A Proven Strategy to Prepare High School Students for College and Careers.* Berkeley: University of California, Graduate School of Education, Career Academy Support Network.
Web site: www.casn.berkeley.edu/resources.php?r=158&c=1.

Stern, David, and Roman Stearns. 2008. "Evidence and Challenges: Will Multiple Pathways Improve Students' Outcomes?" Pages 37-54 in J. Oakes and M. Saunders (eds.), *Beyond Tracking: Multiple Pathways to College, Career, and Civic Participation.* Cambridge, MA: Harvard Education Press.

Earlier MDRC Publications on Career Academies

Career Academies: Long-Term Impacts on Labor Market Outcomes, Educational Attainment, and Transitions to Adulthood.
2008. James J. Kemple

Career Academies: Course Taking, Test Preparation, and Career Academy Programs — Findings from a Field Study
2002. Thomas Smith

Career Academies: Getting Connected: A Resource Directory for Career Academies
2002. Career Academy Support Network and MDRC

Career Academies: Impacts on Students' Initial Transitions to Post-Secondary Education and Employment
2001. James Kemple

Career Academies: Impacts on Students' Engagement and Performance in High School
2000. James Kemple, Jason Snipes

Career Academies: Building Career Awareness and Work-Based Learning Activities Through Employer Partnerships
1999. James Kemple, Susan Poglinco, Jason Snipes

NOTE: A complete list of MDRC publications is available from MDRC and on its Web site (www.mdrc.org), from which copies of reports can also be downloaded.

About MDRC

MDRC is a nonprofit, nonpartisan social and education policy research organization dedicated to learning what works to improve the well-being of low-income people. Through its research and the active communication of its findings, MDRC seeks to enhance the effectiveness of social and education policies and programs.

Founded in 1974 and located in New York City and Oakland, California, MDRC is best known for mounting rigorous, large-scale, real-world tests of new and existing policies and programs. Its projects are a mix of demonstrations (field tests of promising new program approaches) and evaluations of ongoing government and community initiatives. MDRC's staff bring an unusual combination of research and organizational experience to their work, providing expertise on the latest in qualitative and quantitative methods and on program design, development, implementation, and management. MDRC seeks to learn not just whether a program is effective but also how and why the program's effects occur. In addition, it tries to place each project's findings in the broader context of related research — in order to build knowledge about what works across the social and education policy fields. MDRC's findings, lessons, and best practices are proactively shared with a broad audience in the policy and practitioner community as well as with the general public and the media.

Over the years, MDRC has brought its unique approach to an ever-growing range of policy areas and target populations. Once known primarily for evaluations of state welfare-to-work programs, today MDRC is also studying public school reforms, employment programs for ex-offenders and people with disabilities, and programs to help low-income students succeed in college. MDRC's projects are organized into five areas:

- Promoting Family Well-Being and Children's Development
- Improving Public Education
- Raising Academic Achievement and Persistence in College
- Supporting Low-Wage Workers and Communities
- Overcoming Barriers to Employment

Working in almost every state, all of the nation's largest cities, and Canada and the United Kingdom, MDRC conducts its projects in partnership with national, state, and local governments, public school systems, community organizations, and numerous private philanthropies.