



# WWC Intervention Report

A summary of findings from a systematic review of the evidence



## Dropout Prevention

Updated September 2015

# Career Academies

## Program Description<sup>1</sup>

*Career Academies* were developed more than 30 years ago as a dropout prevention strategy for youth considered most at risk of dropping out of high school. Students in *Career Academies* take both career-related and academic courses and acquire work experience through partnerships with local employers. Since their inception, *Career Academies* have broadened the kinds of students they serve, integrated rigorous academic curricula with career themes, and now attract students who are preparing for postsecondary education.

## Research<sup>2</sup>

The What Works Clearinghouse (WWC) identified one study of *Career Academies* that falls within the scope of the Dropout Prevention topic area and meets WWC group design standards. This study meets WWC group design standards without reservations. The study included between 1,379 and 1,454 students (depending on outcome) who applied to an academy before their ninth- or tenth-grade years. Academies were located in eight urban areas in six states.

The WWC considers the extent of evidence for *Career Academies* on the educational attainment of high-school aged youth to be small for three outcome domains—completing school, staying in school, and progressing in school. (See the Effectiveness Summary on p. 4 for more details of effectiveness by domain.)

## Effectiveness

*Career Academies* were found to have potentially positive effects on completing school and no discernible effects on staying in school or progressing in school for high-school aged youth.

**Table 1. Summary of findings<sup>3</sup>**

Outcome domain	Rating of effectiveness	Improvement index (percentile points)		Number of studies	Number of students	Extent of evidence
		Average	Range			
Completing school	Potentially positive effects	+11	na	1	1,428	Small
Staying in school	No discernible effects	+6	na	1	1,454	Small
Progressing in school	No discernible effects	+4	na	1	1,379	Small

na = not applicable

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This intervention report presents findings from a systematic review of *Career Academies* conducted using the WWC Procedures and Standards Handbook, version 3.0, and the Dropout Prevention review protocol, version 3.0.

### Program Information

#### Background

*Career Academies* were first implemented in Philadelphia in 1969 and replicated in California beginning in the 1980s. Today, academies are in districts throughout the country, including more than 1,200 career academies in nearly 500 California high schools. Many *Career Academies* received support from the federal Small Learning Communities discretionary grants authorized by the Elementary and Secondary Education Act, and from grants funded by the Perkins Career and Technical Education Act. Information on the history of *Career Academies* and current resources for program implementation are available from the National Career Academy Coalition (<http://www.ncacinc.com>) and the Career Academy Support Network (<http://casn.berkeley.edu>).

#### Program details

This report focuses on *Career Academies* with a school-within-a-school structure. Each academy has a career theme, such as health care, finance, technology, communications, and public service. Students take their career-related courses in the academy, which often are taught by a core team of academy teachers. Generally, students remain with the same group of students and teachers over time, take both academic and career-oriented courses, and participate in work-based learning activities inside and outside of school. National standards of practice for *Career Academies*, created by the National Career Academy Coalition, indicate that three basic features are key elements of a career academy. First, *Career Academies* are small learning communities in which clusters of students share several classes each year and teachers collaborate around student needs. Second, *Career Academies* have a focused curriculum with a career theme relevant to local industry and economic needs. Third, *Career Academies* develop partnerships with employers, higher education institutions, and the community. Participants in these partnerships advise on curriculum related to occupations, speak in classes, host field trips, provide financial or other support, and serve as student mentors.

#### Cost<sup>4</sup>

The cost of *Career Academies* was estimated in 2004 to be \$600 per pupil more than a district's average per-pupil expenditure (cost data refer to the California Partnership Academies). More recent cost information was not available at the time of this report.

### Research Summary

The WWC identified nine eligible studies that investigated the effects of *Career Academies* on the educational outcomes of youth at risk of dropping out. An additional seven studies were identified but do not meet WWC eligibility criteria for review in this topic area. Citations for all 16 studies are in the References section, which begins on p. 6.

The WWC reviewed nine eligible studies against group design standards.

One study (Kemple & Snipes, 2000) is a randomized controlled trial that meets WWC group design standards without reservations. The study is summarized in this report. Eight studies do not meet WWC group design standards.

**Table 2. Scope of reviewed research**

<b>Grade</b>	9–12
<b>Delivery method</b>	Whole school
<b>Program type</b>	Curriculum

### Summary of study meeting WWC group design standards without reservations

Kemple and Snipes (2000) conducted a randomized controlled trial that included between 1,379 and 1,454 youth (depending on outcome) who applied to *Career Academies* starting at grade nine and who participated in the evaluation. The study measured outcomes at the end of a student's projected twelfth-grade year (Kemple & Snipes, 2000), 4 years after a student's projected twelfth-grade year (Kemple, 2004), and 8 years after a student's projected twelfth-grade year (Kemple & Willner, 2008).

### Summary of studies meeting WWC group design standards with reservations

No studies of *Career Academies* met WWC group design standards with reservations.

### Effectiveness Summary

The WWC review of *Career Academies* for the Dropout Prevention topic area includes outcomes in three domains: completing school, staying in school, and progressing in school. The one study of *Career Academies* that meets WWC group design standards reported findings in all three domains. The findings below present the authors' estimates and WWC-calculated estimates of the size and statistical significance of the effects of *Career Academies* on high-school aged youth. For a more detailed description of the rating of effectiveness and extent of evidence criteria, see the WWC Rating Criteria on p. 16.

#### Summary of effectiveness for the completing school domain

One study that meets WWC group design standards without reservations reported findings in the completing school domain.

Kemple and Willner (2008) reported that students who enrolled in *Career Academies* were more likely to earn a high school diploma or General Educational Development (GED) certificate of high school equivalency within 8 years of their expected high school graduation. About 96% of the students enrolled in *Career Academies* earned a high school diploma or GED certificate within 8 years of their expected high school graduation date, compared to about 94% of students in the comparison group. The effect size of 0.27 was not statistically significant but was substantively important. The WWC characterizes these study findings as having a potentially positive effect.

Thus, for the completing school domain, the one study that met WWC group design standards showed positive effects that were not statistically significant. This results in a rating of potentially positive effects, with a small extent of evidence.

**Table 3. Rating of effectiveness and extent of evidence for the completing school domain**

Rating of effectiveness	Criteria met
<b>Potentially positive effects</b> <i>Evidence of a positive effect with no overriding contrary evidence.</i>	In the one study that reported findings, the estimated impact of the intervention on outcomes in the <i>completing school</i> domain was not statistically significant but was substantively important.
Extent of evidence	Criteria met
<b>Small</b>	One study that included 1,428 students in nine schools reported evidence of effectiveness in the <i>completing school</i> domain.

#### Summary of effectiveness for staying in school domain

One study that meets WWC group design standards without reservations reported findings in the staying in school domain.

Kemple and Snipes (2000) reported that students enrolled in *Career Academies* were no more likely than similar comparison group students to have dropped out of school by the end of twelfth grade. About 10% of the students enrolled in *Career Academies* had dropped out of high school before the end of grade 12, compared to about 12% of students in the comparison group. The effect size of 0.14 was not statistically significant or substantively important. The WWC characterizes these study findings as an indeterminate effect.

Thus, for the staying in school domain, the one study that met WWC group design standards did not show either a statistically significant effect or an effect large enough to be considered substantively important. This results in a rating of no discernible effects, with a small extent of evidence.

**Table 4. Rating of effectiveness and extent of evidence for the staying in school domain**

Rating of effectiveness	Criteria met
<b>No discernible effects</b> <i>None of the studies show statistically significant or substantively important effects, either positive or negative.</i>	In the one study that reported findings, the estimated impact of the intervention on outcomes in the <i>staying in school</i> domain was not statistically significant or substantively important.
Extent of evidence	Criteria met
<b>Small</b>	One study that included 1,454 students in nine schools reported evidence of effectiveness in the <i>staying in school</i> domain.

**Summary of effectiveness for the progressing in school domain**

One study that meets WWC group design standards without reservations reported findings in the progressing in school domain.

Kemple and Snipes (2000) reported that students enrolled in *Career Academies* accrued no more credits than similar comparison group students by the end of the twelfth-grade year. The WWC-calculated effect size of 0.09 was not statistically significant or substantively important. The WWC characterizes these study findings as an indeterminate effect.

Thus, for the progressing in school domain, the one study that met WWC group design standards did not show either a statistically significant effect or an effect large enough to be considered substantively important. This results in a rating of no discernible effects, with a small extent of evidence.

**Table 5. Rating of effectiveness and extent of evidence for the progressing in school domain**

Rating of effectiveness	Criteria met
<b>No discernible effects</b> <i>None of the studies show statistically significant or substantively important effects, either positive or negative.</i>	In the one study that reported findings, the estimated impact of the intervention on outcomes in the <i>progressing in school</i> domain was not statistically significant or substantively important.
Extent of evidence	Criteria met
<b>Small</b>	One study that included 1,379 students in nine schools reported evidence of effectiveness in the <i>progressing in school</i> domain.

### References

#### Study that meets WWC group design standards without reservations

Kemple, J. J., & Snipes, J. C. (2000). *Career Academies: Impacts on students' engagement and performance in high school*. New York, NY: MDRC.

**Additional sources:**

Kemple, J. J. (1997). *Career Academies communities of support for students and teachers: Emerging findings from a 10-site evaluation*. New York, NY: MDRC.

Kemple, J. J. (2001). *Career Academies: Impacts on students' initial transitions to postsecondary education and employment*. New York, NY: MDRC.

Kemple, J. J. (2004). *Career Academies: Impacts on labor market outcomes and educational attainment*. New York, NY: MDRC.

Kemple, J. J., & Rock, J. L. (1996). *Career Academies: Early implementation lessons from a 10-site evaluation*. New York, NY: MDRC.

Kemple, J. J., & Willner, C. J. (2008). *Career Academies long-term impacts on labor market outcomes, educational attainment, and transitions to adulthood*. New York, NY: MDRC.

#### Studies that meet WWC group design standards with reservations

None.

#### Studies that do not meet WWC group design standards

Crain, R. L. (1995). *The effectiveness of New York City's career magnet schools: An evaluation of ninth grade performance using an experimental design*. Berkeley, CA: University of California at Berkeley. The study does not meet WWC group design standards because the equivalence of the analytic intervention and comparison groups prior to the intervention was necessary and not demonstrated.

Dayton, C., Weisberg, A., & Stern, D. (1989). *California Partnership Academies: 1987-88 evaluation report* (Policy Paper No. PP89-9-1). Berkeley, CA: Policy Analysis for California Education. The study does not meet WWC group design standards because the equivalence of the analytic intervention and comparison groups prior to the intervention was necessary and not demonstrated.

**Additional sources:**

Dayton, C., Weisberg, A., Stern, D., & Evans, J. (1988). *Peninsula Academies replication: 1986-87 evaluation report* (Policy Paper No. PP88-4-3). Berkeley, CA: Policy Analysis for California Education.

Stern, D., Dayton, C., Paik, I., & Weisberg, A. (1989). Benefits and costs of dropout prevention in a high school program combining academic and vocational education: Third-year results from replications of the California Peninsula Academies. *Educational Evaluation and Policy Analysis*, 11(4), 405–416.

Stern, D., Dayton, C., Paik, I., Weisberg, A., & Evans, J. (1988). Combining academic and vocational courses in an integrated program to reduce high school dropout rates: Second-year results from replications of the California Peninsula Academies. *Educational Evaluation and Policy Analysis*, 10(2), 161–170.

Elliott, M. N., Hanser, L. M., & Gilroy, C. L. (2002). Career Academies: Additional evidence of positive student outcomes. *Journal of Education for Students Placed at Risk*, 7(1), 71–90. The study does not meet WWC group design standards because the equivalence of the analytic intervention and comparison groups prior to the intervention was necessary and not demonstrated.

**Additional source:**

Elliott, M. N., Hanser, L. M., & Gilroy, C. L. (2000). *Evidence of positive student outcomes in JROTC Career Academies*. Santa Monica, CA: RAND Corporation.

- Hanser, L., & Stasz, C. (1999). *The effects of enrollment in the Transportation Career Academy program on student outcomes*. Santa Monica, CA: RAND. The study does not meet WWC group design standards because the equivalence of the analytic intervention and comparison groups prior to the intervention was necessary and not demonstrated.
- Heebner, A. L. (1995). The impact of career magnet high schools: Experimental and qualitative evidence. *Journal of Vocational Education Research*, 20(2), 27–56. The study does not meet WWC group design standards because equivalence of the analytic intervention and comparison groups prior to the intervention was necessary and not demonstrated.
- Maxwell, N., & Rubin, L. (2000). *High school Career Academies: A pathway to educational reform in urban school districts?* Kalamazoo, MI: Upjohn Institute for Employment Research. The study does not meet WWC group design standards because the equivalence of the analytic intervention and comparison groups prior to the intervention was necessary and not demonstrated.

**Additional sources:**

- Maxwell, N. (2001). Step to college: Moving from the high school career academy through the 4-year university. *Evaluation Review*, 25(6), 619–654.
- Maxwell, N., & Rubin, L. (1997). *The relative impact of a career academy on post-secondary work and education skills in urban, public high schools* (Discussion Paper No. 97-2). Hayward, CA: California State University, Human Investment Research and Education Center.
- Maxwell, N., & Rubin, L. (2001). *Career academy programs in California: Outcomes and implementation*. Berkeley, CA: University of California at Berkeley, California Policy Research Center.
- Stern, D., Saroyan, P., & Hester, C. H. (2013). *Longitudinal description of students in California partnership academies*. Berkeley, CA: University of California at Berkeley, College and Career Academy Support Network. The study does not meet WWC group design standards because the equivalence of the analytic intervention and comparison groups prior to the intervention was necessary and not demonstrated.
- Warren, E. (1998). *Four-year report on the effectiveness of California partnership academies: 1992-93 – 1995-96*. Sonoma, CA: California Department of Education. The study does not meet WWC group design standards because the equivalence of the analytic intervention and comparison groups prior to the intervention was necessary and not demonstrated.

### Studies that are ineligible for review using the Dropout Prevention Evidence Review Protocol

- Clark, P., Dayton, C., Stern, D., Tidyman, S., & Weisberg, A. (2007). *Can combining academic and career-technical education improve high school outcomes in California?* Santa Barbara, CA: University of California at Santa Barbara, California Dropout Research Project. The study is ineligible for review because does not use an eligible design.
- Crain, R. L. (1999). *The effects of academic career magnet education on high schools and their graduates*. Berkeley, CA: University of California at Berkeley, National Center for Research in Vocational Education. The study is ineligible for review because does not use an eligible design.
- Herlihy, C. M., & Quint, J. (2006). *Emerging evidence on improving high school student achievement and graduation rates: The effects of four popular improvement programs*. New York, NY: MDRC. The study is ineligible for review because it does not use an eligible design.
- James, D. W. (1997). *SOME things DO make a difference for youth: A compendium of evaluations of youth programs and practices*. Washington, DC: American Youth Policy Forum. The study is ineligible for review because it does not use an eligible design.
- REL Central. (2011). *Dropout prevention intervention strategies*. Denver, CO: Author. The study is ineligible for review because it does not use an eligible design.

Stern, D., Dayton, C., & Raby, M. (2000). *Career Academies: Building blocks for reconstructing American high schools*. Berkeley, CA: University of California at Berkeley. The study is ineligible for review because it does not use an eligible design.

**Additional source:**

Stern, D., Dayton, C., & Raby, M. (2010). *Career Academies: A proven strategy to prepare high school students for college and careers*. Berkeley, CA: University of California at Berkeley.

Wilson, S. J., Lipsey, M., Tanner-Smith, E., Huang, C. H., & Steinka-Fry, K. (2011). Dropout prevention and intervention programs: Effects on school completion and dropout among school-aged children and youth: A systematic review. *Campbell Systemic Reviews*, 7(8). The study is ineligible for review because it does not use an eligible design.

**Additional source:**

Wilson, S. J., & Tanner-Smith, E. (2013). Dropout prevention and intervention programs for improving school completion among school-aged children and youth: A systematic review. *Journal of the Society for Social Work and Research*, 4(4), 357–372. doi:10.5243/jsswr.2013.22

**Appendix A: Research details for Kemple & Snipes, 2000**

**Kemple, J. J., & Snipes, J. C. (2000). *Career Academies: Impacts on students’ engagement and performance in high school*. New York, NY: MDRC.**

**Additional sources:**

Kemple, J. J. (1997). *Career Academies communities of support for students and teachers: Emerging findings from a 10-site evaluation*. New York, NY: MDRC.

Kemple, J. J. (2001). *Career Academies: Impacts on students’ initial transitions to postsecondary education and employment*. New York, NY: MDRC.

Kemple, J. J. (2004). *Career Academies: Impacts on labor market outcomes and educational attainment*. New York, NY: MDRC.

Kemple, J. J., & Rock, J. L. (1996). *Career Academies: Early implementation lessons from a 10-site evaluation*. New York, NY: MDRC.

Kemple, J. J., & Willner, C. J. (2008). *Career Academies long-term impacts on labor market outcomes, educational attainment, and transitions to adulthood*. New York, NY: MDRC.

**Table A. Summary of findings**

**Meets WWC group design standards without reservations**

Outcome domain	Sample size	Study findings	
		Average improvement index (percentile points)	Statistically significant
Completing school	1,428 students	+11	No
Staying in school	1,454 students	+6	No
Progressing in school	1,379 students	+4	No

**Setting**

Ten sites were chosen for the evaluation because they were implementing components of *Career Academies* (namely, a school-within-a-school organization, academic and vocational curricula based on a career theme, and employer partnerships—features not available in participating high schools) but were not in the early stages of implementation. Of the 10 sites initially in the study, one dropped out after randomization. Nine sites contributed outcome data: three sites in the East (the District of Columbia, Maryland, and Pennsylvania), two sites in Florida, one site in Texas, and three sites in California.

**Study sample**

Participants were students entering ninth or tenth grade. The initial research sample included 1,953 students from 10 sites. Many were from low-income or single-parent households that received public assistance or food stamps. Students were randomly assigned to one of three conditions: (1) enrollment in *Career Academies*, (2) waitlist for *Career Academies* enrollment, and (3) a comparison group. This resulted in a randomized sample of 1,064 intervention and 889 comparison students. The final analytic sample reflects losses due to (1) individuals who were randomly assigned to condition but were subsequently determined to be ineligible for the study, (2) a site dropping out of the study, and (3) non-response on the outcomes of interest. No significant differences were found between intervention and comparison students at baseline. The size of the analytic samples varied for each of the outcomes of interest, ranging from 1,379 to 1,454 students. Demographic characteristics for the study (only reported for the 2004 analytic sample) are as follows: 41.4% were male (both intervention and comparison); 56.1% (intervention) and 57.4% (comparison) were Hispanic, 30.6% (intervention) and 27.8% (comparison) were Black, and 5.7% (intervention) and 7.5% (comparison) were White. English language learners accounted for 6.6% (intervention) and 8.9% (comparison) of the sample.

### Intervention group

The *Career Academies* included in the study had the following features:

**School-within-a-school organization.** A small learning community is formed within the larger high school by clustering three to five teachers and 50–75 students per grade. Teachers are drawn from academic and career-related disciplines and remain with students from year to year. One teacher assumes lead responsibility for administering the academy and serves as liaison with school and district administrators and employer partners. Students take two to four courses a year in the academy and other courses in the regular high school. Block scheduled academy-oriented classes in the morning are followed by regular classes in the afternoon. Academic and technical curricula are based on a career theme. Occupational classes are structured around a range of areas in a career field. Career themes are chosen based on local employment needs and demand for expertise. Among the career themes are health professions, business and finance, electronics, travel and tourism, and information technology.

**Focused curricula and enriched learning opportunities.** Academies try to bring academic rigor to career-related courses and applied learning opportunities to academic courses. Academy curricula are intended to ensure that students meet core academic requirements for graduation and college preparation and to provide a coherent sequence of technical and occupation-related classes. Career awareness and development activities aim to improve students' understanding of the world of work and occupations within the program's broad career theme. Through work-based learning programs developed in collaboration with employer partners, students are placed in jobs (or a series of short-term jobs) that expose them to occupations.

**Employer partnerships.** Relationships with local employers help to support academy programs and to provide a basis for work- and career-related activities for students. Employer partners contribute funds, and their staff participate as speakers, supervisors of student interns, and student mentors. Many academies create advisory boards to guide the development of curricular and extracurricular activities. Academy staff and employer representatives develop career-awareness and development activities, including field trips, job shadowing, and outside speakers from the business community.

**Interpersonal support.** Academies function as communities of support for students and teachers. Academies attempt to ensure that students get personalized attention from teachers, teachers have higher expectations, and students collaborate with peers. Academies try to ensure that teachers are supported by opportunities for professional collaboration and by adequate resources, and that they have the capacity to influence instructional and administrative decisions. Parent involvement is encouraged.

### Comparison group

The comparison group were students randomly assigned not to attend the *Career Academies* program. The majority of these students attended their regular high school and did not enroll in any *Career Academies* classes. Of the students in the comparison group, 7.2% enrolled in an academy at some point; 4.3% participated in an academy through graduation. The regular high school classes attended by members of the comparison group may have included students who were in the *Career Academies* in their school. Researchers purposefully chose to include *Career Academies* sites where there was a clear contrast between the *Career Academies* and other programs available to potential academy students.

### Outcomes and measurement

Eligible outcomes under the WWC's Dropout Prevention review protocol include the percentage of students who graduated or received a GED (in the completing school domain), the percentage of students dropping out (in the staying in school domain), and the number of course credits completed (in the progressing in school domain). These outcomes were reported in the Kemple and Snipes (2000), Kemple (2004), and Kemple and Willner (2008) studies.

The Kemple and Snipes (2000) study reported on a number of outcomes that are ineligible for this review, including math and reading test scores, risky behaviors, steps towards postsecondary education and employment, and specific courses taken. The Kemple and Rock (1996) study reported a number of teacher outcomes; none of these are eligible. The Kemple (2004) and Kemple and Willner (2008) studies reported on employment and earnings post-high school, as well as outcomes related to family formation and public assistance, which are not eligible. For a more detailed description of these outcome measures, see Appendix B.

### Support for implementation

*Career Academies* teachers came from a variety of academic and vocational disciplines and had similar background characteristics as other teachers in the same high school. Professional development opportunities included focusing on student-related concerns and on coordinating the career development and employer-related activities. All of the schools studied had used the *Career Academies* framework for at least 2 years before the beginning of the study.

### Appendix B: Outcome measures for each domain

#### Completing school

*Earned high school diploma or GED 8 years after projected date of graduation (%)*

This outcome was measured by the *Career Academies* post-high school follow-up survey, administered 8 years after a student's projected twelfth-grade year. Students responded whether they had earned a high school diploma or a GED certificate (as cited in Kemple, 2008).

#### Staying in school

*Dropped out of high school (%)*

This measure counted a student as a dropout at the end of their scheduled twelfth-grade year if they were not listed as enrolled on any of three data sources (student survey, district records, and school enrollment status reports completed by the host high schools) and if one of the following conditions were met: student reported being a dropout on the survey, or school records indicated student had dropped out with no indication of being enrolled elsewhere (as cited in Kemple & Snipes, 2000 and through author communication).

#### Progressing in school

*Total course credits*

This measure included all course credits students earned from ninth grade through the end of their projected twelfth-grade year (until just before they would have graduated from high school). In seven sites, academies began in the tenth grade, and ninth-grade course credits were earned before entering the academy. The remaining two academies began in the ninth grade, and course credits were earned during 4 years of high school (as cited in Kemple & Snipes, 2000). Data on credits were obtained from school records.

Appendix C.1: Findings included in the rating for the completing school domain

Outcome measure	Study sample	Sample size	Mean (standard deviation)		WWC calculations			p-value
			Intervention group	Comparison group	Mean difference	Effect size	Improvement index	
<b>Kempe &amp; Willner (2008)<sup>a</sup></b>								
<i>Earned high school diploma or GED 8 years after projected date of graduation (%)</i>	Full research sample	1,428 students	95.8 (na)	93.6 (na)	2.2	0.27	11	> .10
<b>Domain average for completing school across all studies</b>						<b>0.27</b>	<b>11</b>	<b>Not statistically significant</b>

**Table Notes:** For mean difference, effect size, and improvement index values reported in the table, a positive number favors the intervention group and a negative number favors the comparison group. The effect size is a standardized measure of the effect of an intervention on outcomes, representing the average change expected for all individuals who are given the intervention (measured in standard deviations of the outcome measure). The improvement index is an alternate presentation of the effect size, reflecting the change in an average individual’s percentile rank that can be expected if the individual is given the intervention. Some statistics may not sum as expected due to rounding. na = not applicable.

<sup>a</sup> For Kempe & Willner (2008), no corrections for clustering or multiple comparisons and no difference-in-differences adjustments were needed. The p-value presented here was reported in the original study. Values shown for the academy group are unadjusted mean values; values shown for the non-academy group are calculated by subtracting the impact estimate from the academy group’s unadjusted mean values. This study is characterized as having potentially positive effects because the effect is not statistically significant but is substantively important. For more information, please refer to the WWC Procedures and Standards Handbook (version 3.0), p. 26.

Appendix C.2: Findings included in the rating for the staying in school domain

Outcome measure	Study sample	Sample size	Mean (standard deviation)		WWC calculations			p-value
			Intervention group	Comparison group	Mean difference	Effect size	Improvement index	
<b>Kempe &amp; Snipes (2000)<sup>a</sup></b>								
<i>Dropped out of high school (%)</i>	Full research sample	1,454 students	10.1 (na)	12.4 (na)	2.3	0.14	6	> .10
<b>Domain average for staying in school across all studies</b>						<b>0.14</b>	<b>6</b>	<b>Not statistically significant</b>

**Table Notes:** For mean difference, effect size, and improvement index values reported in the table, a positive number favors the intervention group and a negative number favors the comparison group. This outcome measures a negative behavior; thus, signs were reversed on the mean difference, effect size, and improvement index to demonstrate that the intervention group was favored when negative differences were reported and not favored when positive differences were reported. The effect size is a standardized measure of the effect of an intervention on outcomes, representing the average change expected for all individuals who are given the intervention (measured in standard deviations of the outcome measure). The improvement index is an alternate presentation of the effect size, reflecting the change in an average individual’s percentile rank that can be expected if the individual is given the intervention. Some statistics may not sum as expected due to rounding. na= not applicable.

<sup>a</sup> For Kempe & Snipes (2000), no corrections for clustering or multiple comparisons and no difference-in-differences adjustments were needed. The p-value presented here was reported in the original study. Sample sizes, adjusted means, and standard deviations were provided by the study authors in response to a WWC query. The authors also adjusted the impact estimates using regression techniques to control for background characteristics and clustering within the program sites. This study is characterized as having an indeterminate effect because the effect is neither statistically significant nor substantively important. For more information, please refer to the WWC Procedures and Standards Handbook (version 3.0), p. 26.

Appendix C.3: Findings included in the rating for the progressing in school domain

Outcome measure	Study sample	Sample size	Mean (standard deviation)		WWC calculations			p-value
			Intervention group	Comparison group	Mean difference	Effect size	Improvement index	
<b>Kemple &amp; Snipes (2000)<sup>a</sup></b>								
<i>Total course credits</i>	Full research sample	1,379 students	22.3 (5.6)	21.8 (5.5)	0.05	0.09	4	.08
<b>Domain average for staying in school across all studies</b>						<b>0.09</b>	<b>4</b>	<b>Not statistically significant</b>

**Table Notes:** For mean difference, effect size, and improvement index values reported in the table, a positive number favors the intervention group and a negative number favors the comparison group. The effect size is a standardized measure of the effect of an intervention on outcomes, representing the average change expected for all individuals who are given the intervention (measured in standard deviations of the outcome measure). The improvement index is an alternate presentation of the effect size, reflecting the change in an average individual’s percentile rank that can be expected if the individual is given the intervention. The statistical significance of the study’s comparisons and domain average was taken from the published study. Some statistics may not sum as expected due to rounding.

<sup>a</sup> For Kemple & Snipes (2000), no corrections for clustering or multiple comparisons and no difference-in-differences adjustments were needed. The p-value presented here was reported in the original study. Sample sizes were provided by the authors. This study is characterized as having an indeterminate effect because the effect is neither statistically significant nor substantively important. For more information, please refer to the WWC Procedures and Standards Handbook (version 3.0), p. 26.

### Endnotes

<sup>1</sup> The descriptive information for this program was obtained from publicly available sources: <http://www.ncacinc.com/>, downloaded November 2014; <http://casn.berkeley.edu/>, downloaded November 2014; <http://americasfutureworkforce.org/2013/10/26/opportunities/>, downloaded January 2015; <http://www.mdrc.org/project/career-academies-exploring-college-and-career-options-ecco#overview/>, downloaded January 2015; and Kemple & Snipes (2000). The WWC requests developers to review the program description sections for accuracy from their perspective. The program description was provided to the developers in July 2014; however, the WWC received no response. Further verification of the accuracy of the descriptive information for this program is beyond the scope of this review.

<sup>2</sup> The literature search reflects documents publicly available by December 2014. The previous intervention report was released in October 2006. This report has been updated to include reviews of five studies that have been released since 2006 and six studies that were released before 2006 and not included in the earlier report. Of the additional studies, seven were not within the scope of the review protocol for the Dropout Prevention topic area, and four were within the scope of the review protocol but did not meet WWC group design standards. A complete list and disposition of all studies reviewed are provided in the references.

While the overall rating of the current report did not change from the 2006 report, there are three reasons why some findings differ between reports. First, the current report includes findings from a more recent report released by the authors (Kemple and Snipes, 2008.) Second, the current report excludes an outcome in the progressing in school domain that was included in the 2006 report; the Lead Methodologist and Content Expert have now determined that the binary outcome of whether total course credits meets graduation requirements is not eligible for review because it is not independent of the total course credits outcome. And third, the current report focuses on the full sample of 1,890 students, while the 2006 report focused on a high-risk subgroup of 474 students. This change was made because the Lead Methodologist and Content Expert have determined that the full sample meets the protocol's criteria for students at risk for dropout, and because the high-risk group no longer meets WWC group design standards. The WWC attrition standard changed between version 1.0, used in the 2006 report, and version 3.0, used in the current report. As a result, the tenth site, which disbanded during the study and was excluded from attrition calculations in 2006, is now included in the attrition calculations. After including this site, the high-risk subgroup is likely to have high attrition and does not demonstrate equivalence between the intervention and comparison groups. Although requested in an author query, we were unable to obtain the number of youth in each risk group by condition.

In summary, the effectiveness ratings for the staying in school and progressing in school domains changed from potentially positive effects to no discernible effects due to the change in sample and the decreased number of outcome measures included in the progressing in school domain. The effectiveness rating for completing school changed to potentially positive effects due to the change in the focal sample and the inclusion of more recent data reported in Kemple and Snipes (2008). The studies in this report were reviewed using the standards from the WWC Procedures and Standards Handbook (version 3.0), along with those described in the Dropout Prevention review protocol (version 3.0). The evidence presented in this report is based on available research. Findings and conclusions may change as new research becomes available.

<sup>3</sup> For criteria used in the determination of the rating of effectiveness and extent of evidence, see the WWC Rating Criteria on p. 16. These improvement index numbers show the average and range of individual-level improvement indices for all findings across the studies.

<sup>4</sup> This estimate is derived from the following sources: <http://www2.bc.cc.ca.us/techprep/partnership.html> and [www.ncset.org/publications/essentialtools/dropout/part3.3.02.asp](http://www.ncset.org/publications/essentialtools/dropout/part3.3.02.asp)

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## WWC Rating Criteria

### Criteria used to determine the rating of a study

Study rating	Criteria
<b>Meets WWC group design standards without reservations</b>	A study that provides strong evidence for an intervention's effectiveness, such as a well-implemented RCT.
<b>Meets WWC group design standards with reservations</b>	A study that provides weaker evidence for an intervention's effectiveness, such as a QED or an RCT with high attrition that has established equivalence of the analytic samples.

### Criteria used to determine the rating of effectiveness for an intervention

Rating of effectiveness	Criteria
<b>Positive effects</b>	Two or more studies show statistically significant positive effects, at least one of which met WWC group design standards for a strong design, AND No studies show statistically significant or substantively important negative effects.
<b>Potentially positive effects</b>	At least one study shows a statistically significant or substantively important positive effect, AND No studies show a statistically significant or substantively important negative effect AND fewer or the same number of studies show indeterminate effects than show statistically significant or substantively important positive effects.
<b>Mixed effects</b>	At least one study shows a statistically significant or substantively important positive effect AND at least one study shows a statistically significant or substantively important negative effect, but no more such studies than the number showing a statistically significant or substantively important positive effect, OR At least one study shows a statistically significant or substantively important effect AND more studies show an indeterminate effect than show a statistically significant or substantively important effect.
<b>Potentially negative effects</b>	One study shows a statistically significant or substantively important negative effect and no studies show a statistically significant or substantively important positive effect, OR Two or more studies show statistically significant or substantively important negative effects, at least one study shows a statistically significant or substantively important positive effect, and more studies show statistically significant or substantively important negative effects than show statistically significant or substantively important positive effects.
<b>Negative effects</b>	Two or more studies show statistically significant negative effects, at least one of which met WWC group design standards for a strong design, AND No studies show statistically significant or substantively important positive effects.
<b>No discernible effects</b>	None of the studies shows a statistically significant or substantively important effect, either positive or negative.

### Criteria used to determine the extent of evidence for an intervention

Extent of evidence	Criteria
<b>Medium to large</b>	The domain includes more than one study, AND The domain includes more than one school, AND The domain findings are based on a total sample size of at least 350 students, OR, assuming 25 students in a class, a total of at least 14 classrooms across studies.
<b>Small</b>	The domain includes only one study, OR The domain includes only one school, OR The domain findings are based on a total sample size of fewer than 350 students, AND, assuming 25 students in a class, a total of fewer than 14 classrooms across studies.

### Glossary of Terms

<b>Attrition</b>	Attrition occurs when an outcome variable is not available for all participants initially assigned to the intervention and comparison groups. The WWC considers the total attrition rate and the difference in attrition rates across groups within a study.
<b>Clustering adjustment</b>	If intervention assignment is made at a cluster level and the analysis is conducted at the student level, the WWC will adjust the statistical significance to account for this mismatch, if necessary.
<b>Confounding factor</b>	A confounding factor is a component of a study that is completely aligned with one of the study conditions, making it impossible to separate how much of the observed effect was due to the intervention and how much was due to the factor.
<b>Design</b>	The design of a study is the method by which intervention and comparison groups were assigned.
<b>Domain</b>	A domain is a group of closely related outcomes.
<b>Effect size</b>	The effect size is a measure of the magnitude of an effect. The WWC uses a standardized measure to facilitate comparisons across studies and outcomes.
<b>Eligibility</b>	A study is eligible for review and inclusion in this report if it falls within the scope of the review protocol and uses either an experimental or matched comparison group design.
<b>Equivalence</b>	A demonstration that the analysis sample groups are similar on observed characteristics defined in the review area protocol.
<b>Extent of evidence</b>	An indication of how much evidence supports the findings. The criteria for the extent of evidence levels are given in the WWC Rating Criteria on p. 16.
<b>Improvement index</b>	Along a percentile distribution of individuals, the improvement index represents the gain or loss of the average individual due to the intervention. As the average individual starts at the 50th percentile, the measure ranges from -50 to +50.
<b>Intervention</b>	An educational program, product, practice, or policy aimed at improving student outcomes.
<b>Intervention report</b>	A summary of the findings of the highest-quality research on a given program, product, practice, or policy in education. The WWC searches for all research studies on an intervention, reviews each against design standards, and summarizes the findings of those that meet WWC design standards.
<b>Multiple comparison adjustment</b>	When a study includes multiple outcomes or comparison groups, the WWC will adjust the statistical significance to account for the multiple comparisons, if necessary.
<b>Quasi-experimental design (QED)</b>	A quasi-experimental design (QED) is a research design in which study participants are assigned to intervention and comparison groups through a process that is not random.
<b>Randomized controlled trial (RCT)</b>	A randomized controlled trial (RCT) is an experiment in which eligible study participants are randomly assigned to intervention and comparison groups.
<b>Rating of effectiveness</b>	The WWC rates the effects of an intervention in each domain based on the quality of the research design and the magnitude, statistical significance, and consistency in findings. The criteria for the ratings of effectiveness are given in the WWC Rating Criteria on p. 16.
<b>Single-case design</b>	A research approach in which an outcome variable is measured repeatedly within and across different conditions that are defined by the presence or absence of an intervention.

### Glossary of Terms

- Standard deviation** The standard deviation of a measure shows how much variation exists across observations in the sample. A low standard deviation indicates that the observations in the sample tend to be very close to the mean; a high standard deviation indicates that the observations in the sample tend to be spread out over a large range of values.
- Statistical significance** Statistical significance is the probability that the difference between groups is a result of chance rather than a real difference between the groups. The WWC labels a finding statistically significant if the likelihood that the difference is due to chance is less than 5% ( $p < .05$ ).
- Substantively important** A substantively important finding is one that has an effect size of 0.25 or greater, regardless of statistical significance.
- Systematic review** A review of existing literature on a topic that is identified and reviewed using explicit methods. A WWC systematic review has five steps: 1) developing a review protocol; 2) searching the literature; 3) reviewing studies, including screening studies for eligibility, reviewing the methodological quality of each study, and reporting on high quality studies and their findings; 4) combining findings within and across studies; and, 5) summarizing the review.

Please see the WWC Procedures and Standards Handbook (version 3.0) for additional details.



An **intervention report** summarizes the findings of high-quality research on a given program, practice, or policy in education. The WWC searches for all research studies on an intervention, reviews each against evidence standards, and summarizes the findings of those that meet standards.

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