What Works Clearinghouse

Career Academies

Program description

Career Academies are school-within-school programs operating in high schools. They offer career-related curricula based on a career theme, academic coursework, and work experience through partnerships with local employers.[1]

Research

One study of *Career Academies* met What Works Clearinghouse (WWC) evidence standards. This randomized controlled trial included 474 youth who were predicted to be most at-risk of dropping out of high school prior to the intervention.[2] The *Academies* were located in eight urban areas in six states.

Effectiveness

Career Academies were found to have potentially positive effects on staying in school, potentially positive effects on progressing in school, and no discernible effects on completing school for those youth most at-risk of dropping out prior to the intervention.[3] The *Career Academies* served a more heterogeneous population, and the results for the high-risk youth may not be independent of their participation in the intervention with youth less at risk of dropping out.

	Staying in school	Progressing in school	Completing school
Rating of effectiveness	Potentially positive effects	Potentially positive effects	No discernible effects
Improvement index[4]	*Average*: +13 percentile points	*Average:* +13 percentile points *Range:* +11 to +15 percentile points	*Average:* -0.1 percentile points

1. This report focuses on *Career Academies* with a school-within-school structure. Some *Career Academies* have operated as entire schools but are outside the scope of the review because their primary focus is not dropout prevention.
2. This report focuses on the 474 youth in the study sample who were most at risk of dropping out of high school because the *Career Academies* model initially focused on high-risk youth; these youth represent 27% of the total study sample of 1,764. Researchers used student background characteristics (including sibling dropped out, overage for grade, transferred schools two or more times, and attendance, GPA, and credits earned in the year of random assignment) to develop a model to predict whether students in the comparison group dropped out of school, and then applied the estimated model to predict which intervention-group students were most likely to drop out. The findings for those youth considered less at-risk of dropping out of school are presented in Appendices A4.1–A4.3.
3. The evidence presented in this report is based on available research. Findings and conclusions may change as new research becomes available.
4. These values show the average and range of improvement indices for all findings in the three review domains across the one study included in this report. The range is provided only if more than one outcome was measured within a domain.

Additional program information

Developer and contact

Information on the history of *Career Academies* and current resources for program implementation is available from the National Career Academy Coalition (NCAC) and the Career Academy Support Network (CASN).

Scope of use

The NCAC reports that at least 1,500 *Career Academies* are currently in operation, and a registry maintained by the CASN includes more than 1,600 *Career Academies*.

Description of intervention

Career Academies were developed more than 30 years ago as a drop-out prevention strategy and targeted youth considered most at risk of dropping out of high school. More recently, *Career Academies* have broadened the kinds of students they serve, consistent with efforts to integrate rigorous academic curricula with career themes and to attract students who are preparing for post-secondary education. *Career Academies* operate within a larger high school and are guided by a career theme such as health care, finance, technology, communications, and public service. Students take their career-related courses within the *Academy*, which often are taught by the core team of *Academy* teachers. Some *Academies* integrate their courses with other academic subjects required for graduation. *Career Academies* also partner with local employers, who provide internship opportunities and mentoring to students, contribute resources, participate in special events, and serve on *Academy* advisory boards.

Cost

Information on the cost of *Career Academies* was found for the California Partnership Academies and was estimated in 2004 to be $600 a pupil more than a district's average per pupil expenditure.[5] The WWC did not find information on the cost to deliver services to the high-risk youth within the *Career Academies*.

Research

The WWC reviewed seven studies of the effectiveness of *Career Academies*. One study (Kemple & Snipes, 2000; Kemple, 2004) was a randomized controlled trial that met WWC evidence standards. Six studies did not meet WWC evidence screens.

The Kemple and Snipes (2000) and Kemple (2004) study was a randomized controlled trial that included a total of 1,764 students who applied to the entrance grade (9th or 10th) of nine *Career Academies* included in the evaluation. Of these, 474 students were predicted to be at high risk of dropping out of high school.[2] The study measured outcomes at the end of a student's projected 12th-grade year and then four years after a student's projected 12th-grade year.

Effectiveness

Findings[2]

The WWC review of interventions for dropout prevention addresses student outcomes in three domains: staying in school, progressing in school, and completing school.

Staying in school. Kemple and Snipes (2000) reported that for the sample of youth most at risk of dropping out of high school, *Career Academies* had a positive and statistically significant effect on dropping out. At the end of the students' projected 12th-grade year, 21% of the *Career Academy* group and 32% of the comparison group had dropped out of high school. Findings for youth who were predicted to have a low or medium risk of dropping out of high school are presented in Appendix A4.1.

5. This estimate is derived from the following sources: www2.bc.cc.ca.us/techprep/partnershipplus.html and www.ncset.org/publications/essentialtools/dropout/part3.3.02.asp.

Effectiveness *(continued)*

Progressing in school. Kemple and Snipes (2000) reported that for the sample of youth most at risk of dropping out of high school, *Career Academies* had a positive and statistically significant effect on progressing through high school. At the end of the students' projected 12th-grade year, *Career Academy* youth had earned an average of 19 credits and comparison youth had earned an average of 17 credits, and 40% of *Career Academy* youth and 26% of comparison youth had earned sufficient credits to graduate. Findings for youth who were predicted to have a low or medium risk of dropping out of high school are presented in Appendix A4.2.

Completing school. Kemple (2004) reported that four years after students' projected 12th-grade year, there was no statistically significant difference between the percentage of high-risk *Career Academy* and comparison youth who earned a diploma or GED certificate; 83% of the youth in both groups had either graduated with a diploma or received a GED. Findings for youth who were predicted to have a low or medium risk of dropping out of high school are presented in Appendix A4.3.

Rating of effectiveness

The WWC rates an intervention's effects for a given outcome as positive, potentially positive, mixed, no discernible effects, potentially negative, or negative. The rating of effectiveness takes into account four factors: the quality of the research design, the statistical significance of the findings,[6] the size of the difference between participants in the intervention condition and the comparison condition, and the consistency in findings across studies (see the WWC Intervention Rating Scheme).

The WWC found *Career Academies* to have potentially positive effects on staying in school, potentially positive effects on progressing in school, and no discernible effects on completing school.

Improvement index

The WWC computes an improvement index for each individual finding. In addition, within each outcome domain, the WWC computes an average improvement index for each study and an average improvement index across studies (see Technical Details of WWC-Conducted Computations). The improvement index represents the difference between the percentile rank of the average student in the intervention condition versus the percentile rank of the average student in the comparison condition. Unlike the rating of effectiveness, the improvement index is entirely based on the size of the effect, regardless of the statistical significance of the effect, the study design, or the analysis. The improvement index can take on values between -50 and +50, with positive numbers denoting favorable results for the intervention group. The improvement index for staying in school is +13 percentile points based on one study. The average improvement index for progressing in school is +13 percentile points based on one study, with a range of +11 to +15 percentile points across the findings. The improvement index for completing school is –0.1 percentile point based on one study.

Summary

The WWC reviewed seven studies on *Career Academies*. One of these studies met WWC evidence standards, and the remaining six studies did not meet WWC evidence screens. Based on this one study, the WWC found potentially positive effects on staying in school, potentially positive effects on progressing in school, and no discernible effects on completing school. The evidence presented in this report is limited and may change as new research emerges.

6. The level of statistical significance was reported by the study authors or, where necessary, calculated by the WWC to correct for clustering within classrooms or schools and for multiple comparisons. For an explanation, see the WWC Tutorial on Mismatch. See Technical Details of WWC-Conducted Computations for the formulas the WWC used to calculate the statistical significance. In the case of *Career Academies*, a correction for multiple comparisons was needed for the multiple measures reported in the progressing in school domain.

References

Met WWC evidence standards

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

Additional sources:

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

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

Did not meet WWC evidence screens

Dayton, C., & Weisberg, A. (1987). *School-to-work and academy demonstration programs: 1986-87 evaluation report* (Policy Paper No. PC87-11-12-EMCF). Berkeley, CA: Policy Analysis for California Education.[7]

Additional source:

Dayton, C. (1988). *"Jobs for the Disadvantaged" graduate follow-up survey* (Policy Paper No. PP88-5-6). Berkeley, CA: Policy Analysis for California Education.

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.[7]

Additional sources:

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.

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.

Dayton, C., Reller, D., & Evans, J. (1987). *Peninsula Academies replication: 1985-86 evaluation report* (Report No. PC87-1-1-WFHF). Berkeley, CA: Policy Analysis for California Education.

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.[7]

Hanser, L., & Stasz, C. (1999). *The effects of enrollment in the Transportation Career Academy program on student outcomes*. Santa Monica, CA: RAND.[7]

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.[8]

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. (2001). *Career academy programs in California: Outcomes and implementation*. Berkeley, CA: University of California, California Policy Research Center.

7. Lack of evidence for baseline equivalence: the study, which used a quasi-experimental design, did not establish that the comparison group was equivalent to the intervention group at baseline.
8. Severe overall attrition: the study, which used a quasi-experimental design, lost a large proportion of its sample from the pretest to the posttest.

References *(continued)*

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.

Reller, D. J. (1984). *The Peninsula Academies: Final technical evaluation report*. Palo Alto, CA: American Institutes for Research.[7]

Additional sources:

Reynolds, D. F. (1984). T*he Peninsula Academies: Third yearly interim report*. Palo Alto, CA: American Institutes for Research.

Reynolds, D. F., & Reeves, J. K. (1983). *The Peninsula Academies: Second yearly interim report*. Palo Alto, CA: American Institutes for Research.

For more information about specific studies and WWC calculations, please see the WWC *Career Academies* Technical Appendices.

Appendix

Appendix A1 Study characteristics: Kemple & Snipes, 2000 (randomized controlled trial) and Kemple, 2004 (randomized controlled trial)

Characteristic	Description
Study citation	Kemple, J. J., & Snipes, J. C. (2000). *Career Academies: Impacts on students' engagement and performance in high school*. New York: MDRC (Manpower Demonstration Research Corporation). ***Additional Sources:*** Kemple: J. J. (2004). *Career Academies: Impacts on labor market outcomes and educational attainment*. New York: MDRC (Manpower Demonstration Research Corporation).
Participants	This review focuses on the subgroup of 474 youth in the study sample who were considered most at risk of dropping out prior to the start of the intervention. These youth represent 27% of the total study sample of 1,764.[1] Among these high-risk youth, 79% were 15 years old or younger, a majority were female (57%), and many were Hispanic (52%) or African-American (38%), lived in a single-parent household (50%), and received welfare or Food Stamps (32%). In the year prior to random assignment, 33% of the high-risk youth were absent for at least 15% of the school year. In the year of random assignment, 62% of the high-risk youth earned a grade point average of 2.0 or lower and 43% were overage for their grade level.
Setting	The nine schools in the evaluation were in eight urban areas in six states: Pittsburgh, Pennsylvania; Baltimore, Maryland; Washington, DC; Miami Beach, Florida; Socorro, Texas; Santa Ana, California; Watsonville, California; and San Jose, California.

(continued)

1. Researchers used student background characteristics (including sibling dropped out, overage for grade, transferred schools two or more times, and attendance, GPA, and credits earned in year of random assignment) to develop a model to predict whether students in the comparison group dropped out of school, and then applied the estimated model to predict which intervention-group students were most likely to drop out.

Appendix A1 Study characteristics: Kemple & Snipes, 2000 (randomized controlled trial) and Kemple, 2004 (randomized controlled trial)
(continued)

Characteristic	Description
Intervention[2]	The intervention group was randomly assigned to the Career Academy to which they applied, and 86% of the high-risk youth randomly assigned to the Academy group enrolled in an Academy. The intervention group could attend the Academy until graduation. Career Academies in the evaluation had been operating several years before the study began. They had three primary components: a school-within-school organization with a career theme, academic plus vocational curricula related to the career theme, and employer partnerships. • *School-within-school organization with a career theme.* The Career Academies in the study were organized around six career themes: business and finance, electronics and aerospace technology, health, public service, travel and tourism, and video technology. Two Academies admitted students in ninth grade, and seven admitted students in 10th grade. Most Career Academies enrolled 50 to 75 students per grade (the average Academy class size was similar to class sizes in the host high schools). A group of two to nine teachers taught classes exclusively within the Academy, and students had the opportunity to have the same teacher for several years. In half of the sites, the Academy teachers had regularly scheduled common planning time. Some Academies were managed by a teacher who served as a liaison between the Academy and the school and district, while others were managed by a district administrator overseeing multiple Academies within the district. • *Academic plus vocational curricula related to the career theme.* Academies offered a sequence of career-related classes. Students took two to four courses each year in their Academy. The remaining courses, including core academic requirements for graduation, were usually taken in the host high school. In some Academies, academic and career-related courses were integrated. Researchers observed that the academic curricula and instructional practices were similar between the intervention and comparison conditions. • *Employer partnerships.* Formal relationships with employers in the community supported Academy programs and provided career-related activities for students. A range of 3–54 employer partners were associated with each Academy. All Academies provided internship opportunities to the students through the employer partners, and many of these took place in the summer between the 11th and 12th grade. Many Academies set minimum criteria, mostly related to academic progress, for students seeking internship positions. Additionally, employer partners contributed funds and other resources, assisted Academies in identifying relevant activities for students, participated as speakers and mentors, and served on advisory boards of some Academies.
Comparison	Youth not randomly offered admission to a Career Academy constituted the comparison group. Most comparison group youth enrolled in a general education program in the host high school. Some enrolled in citywide magnet programs or specialty schools. About 3% enrolled in a Career Academy that was in the evaluation, despite being in the comparison group.
Primary outcomes and measurement	Staying in school domain (one outcome from a student survey, district records, and school enrollment status reports): the percentage of students who dropped out of high school before the end of their projected 12th-grade year. Progressing in school domain (two outcomes from school records data): total course credits accumulated between 9th grade and the end of the projected 12th-grade year, and the percentage of students whose accumulated credits met their school's graduation requirements. Completing school domain (one outcome from a student survey administered four years after a student's projected 12th-grade year): earned a high school diploma or GED certificate. (See Appendices A2.1–A2.3 for more detailed descriptions of outcome measures.)
Teacher characteristics and training	Career Academy teachers came from a variety of academic and vocational disciplines but generally were similar to other teachers in host high schools. Some of the professional development opportunities offered to Academy teachers included learning how best to support students in a small learning environment and learning strategies for coordinating career development and employer-related activities. The smaller school-within-school structure lent itself to opportunities for shared planning time among Academy teachers.

2. Details on the structural components of the Academies are found in Kemple & Rock (1996); this report does not contain data on student outcomes.

Appendix A2.1 Outcome measure for the staying in school domain

Outcome measure	Description
Dropped out of high school	This binary measure counted a student as a dropout at the end of their scheduled 12th-grade year if they were not listed as enrolled on any one 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 further author communication).

Appendix A2.2 Outcome measure for the progressing in school domain

Outcome measure	Description
Total course credits earned	This continuous measure taken from school records data includes all course credits students earned from ninth grade through the end of their projected 12th-grade year (until just before they would have graduated from high school). In seven of the study sites, the Academies began in the 10th grade and ninth-grade course credits were earned prior to the intervention. The remaining two Academies began in the ninth grade and the course credits were earned during four years of exposure to the intervention (as cited in Kemple & Snipes, 2000).
Credits earned met graduation requirements	This binary measure taken from school records data indicates whether the credits earned from 9th grade through the end of their projected 12th-grade year (until just before they would have graduated from high school) met the requirements for graduation of each study school (as cited in Kemple & Snipes, 2000).

Appendix A2.3 Outcome measure for the completing school domain

Outcome measure	Description
Earned a diploma or GED certificate	This binary outcome was measured by the Career Academies Four-Year Post-High School Follow-Up Survey administered four years after a student's projected 12th-grade year. Students responded whether they had earned a high school diploma (on-time or late) or earned a GED certificate (as cited in Kemple, 2004).

Appendix A3.1 Summary of study findings included in the rating for the staying in school domain[1]

Outcome measure	Study sample	Sample size (students)	Author's findings from the study: Mean outcome (standard deviation[2]) — *Career Academies* group	Author's findings from the study: Mean outcome (standard deviation[2]) — Comparison group	WWC calculations: Mean difference[3] *Career Academies – comparison*	WWC calculations: Effect size[4]	WWC calculations: Statistical significance[5] (at $\alpha = 0.05$)	WWC calculations: Improvement index[6]
Kemple & Snipes, 2000 (randomized controlled trial)[7]								
Dropped out of high school (%)	High-risk youth	345	21.3 (41.1)	32.2 (46.9)	10.9	0.34	Statistically significant	+13
Domain average[8] for staying in school						0.34	Statistically significant	+13

1. This appendix reports findings for the high-risk youth that were considered for the effectiveness rating and the average improvement indices. Findings from the low- and medium-risk subgroups are not included in these ratings, but are reported in Appendix A4.1.
2. The standard deviation for students in each group shows how dispersed participants' outcomes are: a smaller standard deviation on a given measure would indicate that participants had more similar outcomes. The standard deviation was derived by the WWC from a dichotomous variable for this outcome.
3. For this outcome, the mean difference was calculated so that a positive effect was found when fewer intervention youth than comparison youth dropped out of school (comparison group mean minus the intervention group mean).
4. Effect sizes for dichotomous variables are computed using the Cox index. For further explanation of the effect size calculation, see Technical Details of WWC-Conducted Computations.
5. Statistical significance is the probability that the difference between groups is a result of chance rather than a real difference between the groups.
6. The improvement index represents the difference between the percentile rank of the average student in the intervention condition and that of the average student in the comparison condition. The improvement index can take on values between -50 and +50, with positive numbers denoting favorable results.
7. The level of statistical significance was reported by the study authors or, where necessary, calculated by the WWC to correct for clustering within classrooms or schools and for multiple comparisons. For an explanation about the clustering correction, see the WWC Tutorial on Mismatch. See Technical Details of WWC-Conducted Computations for the formulas the WWC used to calculate statistical significance. In the case of Kemple and Snipes (2000), no corrections for clustering or multiple comparisons within this outcome domain were made.
8. This row provides the study average, which in this case is also the domain average. The WWC-computed domain average effect size is a simple average rounded to two decimal places. The domain improvement index is calculated from the average effect size.

Appendix A3.2 Summary of study findings included in the rating for the progressing in school domain[1]

Outcome measure	Study sample	Sample size[3] (students)	Author's findings from the study: Mean outcome (standard deviation[2]) — *Career Academies* group	Author's findings from the study: Mean outcome (standard deviation[2]) — Comparison group	WWC calculations: Mean difference *Career Academies – comparison*	WWC calculations: Effect size[4]	WWC calculations: Statistical significance[5] (at $\alpha = 0.05$)	WWC calculations: Improvement index[6]
Kemple & Snipes, 2000 (randomized controlled trial)[7]								
Total course credits earned	High-risk youth	316	19.3 (6.9)	17.3 (6.9)	2.0	0.29	Statistically significant	+11
Credits earned met graduation requirements (%)	High-risk youth	316	39.9 (49.1)	26.2 (44.1)	13.7	0.38	Statistically significant	+15
Domain average[8] for progressing in school						0.33	Statistically significant	+13

1. This appendix reports findings for the high-risk youth that were considered for the effectiveness rating and the average improvement indices. Findings from the low- and medium-risk subgroups are not included in these ratings, but are reported in Appendix A4.2.
2. The standard deviation for students in each group shows how dispersed the participants' outcomes are: a smaller standard deviation on a given measure would indicate that participants had more similar outcomes. For the total course credits earned, the standard deviation was provided by the author and is not reported in Kemple and Snipes (2000). For the credits meet graduation requirements outcome, the standard deviation was derived by the WWC from a dichotomous variable.
3. Sample size provided by the study author and differs slightly from those reported in Kemple and Snipes (2000).
4. Effect sizes for dichotomous variables are computed using the Cox index. For an explanation of the effect size calculations, see Technical Details of WWC-Conducted Computations.
5. Statistical significance is the probability that the difference between groups is a result of chance rather than a real difference between the groups.
6. The improvement index represents the difference between the percentile rank of the average student in the intervention condition and that of the average student in the comparison condition. The improvement index can take on values between -50 and +50, with positive numbers denoting favorable results.
7. The level of statistical significance was reported by the study authors or, where necessary, calculated by the WWC to correct for clustering within classrooms or schools and for multiple comparisons. For an explanation about the clustering correction, see the WWC Tutorial on Mismatch. See Technical Details of WWC-Conducted Computations for the formulas the WWC used to calculate statistical significance. In the case of Kemple and Snipes (2000), a correction for multiple comparisons was made, but the significance levels did not differ from those reported in the original study.
8. This row provides the study average, which in this case is also the domain average. The WWC-computed domain average effect size is a simple average rounded to two decimal places. The domain improvement index is calculated from the average effect size.

Appendix A3.3 Summary of study findings included in the rating for the completing school domain[1]

Outcome measure	Study sample	Sample size (students)	Author's findings from the study: Mean outcome (standard deviation[2]) — *Career Academies* group	Author's findings from the study: Mean outcome (standard deviation[2]) — Comparison group	WWC calculations: Mean difference *Career Academies – comparison*	WWC calculations: Effect size[3]	WWC calculations: Statistical significance[4] (at $\alpha = 0.05$)	WWC calculations: Improvement index[5]
Kemple, 2004 (randomized controlled trial)[6]								
Earned a diploma or GED certificate (%)	High-risk youth	360	82.7 (37.9)	83.2 (37.5)	-0.5	-0.02	ns	-0.1
Domain average[7] for completing school						-0.02	ns	-0.1

ns = not statistically significant

1. This appendix reports findings for the high-risk youth that were considered for the effectiveness rating and the average improvement indices. Findings from the low- and medium-risk subgroups are not included in these ratings, but are reported in Appendix A4.3.
2. The standard deviation for students in each group shows how dispersed the participants' outcomes are: a smaller standard deviation on a given measure would indicate that participants had more similar outcomes. The standard deviation was derived by the WWC from a dichotomous variable for this outcome.
3. Effect sizes for dichotomous variables are computed using the Cox index. For an explanation of the effect size calculations, see Technical Details of WWC-Conducted Computations.
4. Statistical significance is the probability that the difference between groups is a result of chance rather than a real difference between the groups.
5. The improvement index represents the difference between the percentile rank of the average student in the intervention condition and that of the average student in the comparison condition. The improvement index can take on values between -50 and +50, with positive numbers denoting favorable results.
6. The level of statistical significance was reported by the study authors or, where necessary, calculated by the WWC to correct for clustering within classrooms or schools and for multiple comparisons. For an explanation about the clustering correction, see the WWC Tutorial on Mismatch. See Technical Details of WWC-Conducted Computations for the formulas the WWC used to calculate statistical significance. In the case of Kemple (2004), no corrections for clustering or multiple comparisons within this outcome domain were made.
7. This row provides the study average, which in this case is also the domain average. The WWC-computed domain average effect size is a simple average rounded to two decimal places. The domain improvement index is calculated from the average effect size.

Appendix A4.1 Summary of low-risk and medium-risk subgroup findings for the staying in school domain[1]

Outcome measure	Study sample	Sample size (students)	Author's findings from the study: Mean outcome (standard deviation[2]) — *Career Academies* group	Author's findings from the study: Mean outcome (standard deviation[2]) — Comparison group	WWC calculations: Mean difference[3] *Career Academies – comparison*	WWC calculations: Effect size[4]	WWC calculations: Statistical significance[5] (at $\alpha = 0.05$)	WWC calculations: Improvement index[6]
Kemple & Snipes, 2000 (randomized controlled trial)[7]								
Dropped out of high school (%)	Low-risk youth	385	1.9 (13.7)	2.9 (16.8)	1.0	0.26	ns	+10
Dropped out of high school (%)	Medium-risk youth	724	9.0 (28.7)	8.0 (27.2)	-1.0	-0.08	ns	-3

ns = not statistically significant

1. This appendix presents findings for the low-risk and medium-risk youth for measures that fall in the staying in school domain. Findings for youth who were at high risk for dropping out were used for rating purposes and are presented in Appendix A3.1.
2. The standard deviation for students in each group shows how dispersed the participants' outcomes are: a smaller standard deviation on a given measure would indicate that participants had more similar outcomes. The standard deviation was derived by the WWC from a dichotomous variable for this outcome.
3. For this outcome, the mean difference is calculated so that a positive effect is found when fewer intervention youth than comparison youth drop out of school (comparison group mean minus the intervention group mean).
4. Effect sizes for dichotomous variables are computed using the Cox index. For an explanation of the effect size calculations, see Technical Details of WWC-Conducted Computations.
5. Statistical significance is the probability that the difference between groups is a result of chance rather than a real difference between the groups.
6. The improvement index represents the difference between the percentile rank of the average student in the intervention condition and that of the average student in the comparison condition. The improvement index can take on values between -50 and +50, with positive numbers denoting favorable results.
7. The level of statistical significance was reported by the study authors or, where necessary, calculated by the WWC to correct for clustering within classrooms or schools (corrections for multiple comparisons were not done for findings not included in the overall intervention rating). For an explanation about the clustering correction, see the WWC Tutorial on Mismatch. See Technical Details of WWC-Conducted Computations for the formulas the WWC used to calculate statistical significance. In the case of Kemple and Snipes (2000), no correction for clustering within this outcome domain was made.

Appendix A4.2 Summary of low-risk and medium-risk subgroup findings for the progressing in school domain[1]

Outcome measure	Study sample	Sample size (students)	Author's findings from the study: Mean outcome (standard deviation[2]) — *Career Academies* group	Author's findings from the study: Mean outcome (standard deviation[2]) — Comparison group	WWC calculations: Mean difference *Career Academies – comparison*	WWC calculations: Effect size[3]	WWC calculations: Statistical significance[4] (at $\alpha = 0.05$)	WWC calculations: Improvement index[5]
Kemple & Snipes, 2000 (randomized controlled trial)[6]								
Total course credits earned	Low-risk youth	376	24.4 (4.0)	23.6 (3.3)	0.80	0.22	ns	+9
Total course credits earned	Medium-risk youth	687	22.6 (5.1)	22.9 (4.9)	-0.30	-0.06	ns	-2
Credits earned met graduation requirements (%)	Low-risk youth	376	85.7 (35.1)	74.6 (43.7)	11.1	0.43	Statistically significant	+17
Credits earned met graduation requirements (%)	Medium-risk youth	687	64.8 (47.8)	65.2 (47.7)	-0.4	-0.01	ns	-0.4

ns = not statistically significant

1. This appendix presents findings for the low-risk and medium-risk youth for measures that fall in the progressing in school domain. Findings for youth who were at high risk for dropping out were used for rating purposes and are presented in Appendix A3.2.
2. The standard deviation for students in each group shows how dispersed the participants' outcomes are: a smaller standard deviation on a given measure would indicate that participants had more similar outcomes. For the total course credits outcome, the standard deviations were provided by the study author and are not reported in Kemple and Snipes (2000). For the credits meet graduation requirements outcome, the standard deviation was derived by the WWC from a dichotomous variable.
3. Effect sizes for dichotomous variables are computed using the Cox index. For an explanation of the effect size calculations, see Technical Details of WWC-Conducted Computations.
4. Statistical significance is the probability that the difference between groups is a result of chance rather than a real difference between the groups.
5. The improvement index represents the difference between the percentile rank of the average student in the intervention condition and that of the average student in the comparison condition. The improvement index can take on values between -50 and +50, with positive numbers denoting favorable results.
6. The level of statistical significance was reported by the study authors or, where necessary, calculated by the WWC to correct for clustering within classrooms or schools (corrections for multiple comparisons were not done for findings not included in the overall intervention rating). For an explanation about the clustering correction, see the WWC Tutorial on Mismatch. See Technical Details of WWC-Conducted Computations for the formulas the WWC used to calculate statistical significance. In the case of Kemple and Snipes (2000), no correction for clustering within this outcome domain was made.

Appendix A4.3 Summary of low-risk and medium-risk subgroup findings for the completing school domain[1]

Outcome measure	Study sample	Sample size (students)	Author's findings from the study: Mean outcome (standard deviation[2]) — *Career Academies* group	Author's findings from the study: Mean outcome (standard deviation[2]) — Comparison group	WWC calculations: Mean difference *Career Academies – comparison*	WWC calculations: Effect size[3]	WWC calculations: Statistical significance[4] (at $\alpha = 0.05$)	WWC calculations: Improvement index[5]
Kemple, 2004 (randomized controlled trial)[6]								
Earned a diploma or GED certificate (%)	Low-risk youth	376	100.0 (0.0)	99.4 (7.7)	0.6	na	ns	na
Earned a diploma or GED certificate (%)	Medium-risk youth	722	92.9 (25.7)	92.1 (27.0)	0.8	0.07	ns	+3

na = not applicable
ns = not statistically significant

1. This appendix presents findings for the low-risk and medium-risk youth for measures that fall in the completing school domain. Findings for youth who were at high risk for dropping out were used for rating purposes and are presented in Appendix A3.3.
2. The standard deviation for students in each group shows how dispersed the participants' outcomes are: a smaller standard deviation on a given measure would indicate that participants had more similar outcomes. The standard deviation was derived by the WWC from a dichotomous variable for this measure.
3. Effect sizes for dichotomous variables are computed using the Cox index. For an explanation of the effect size calculations, see Technical Details of WWC-Conducted Computations. An effect size cannot be calculated when there is no variance in outcomes among the groups.
4. Statistical significance is the probability that the difference between groups is a result of chance rather than a real difference between the groups.
5. The improvement index represents the difference between the percentile rank of the average student in the intervention condition and that of the average student in the comparison condition. The improvement index can take on values between -50 and +50, with positive numbers denoting favorable results. The improvement index cannot be estimated when an effect size cannot be calculated.
6. The level of statistical significance was reported by the study authors or, where necessary, calculated by the WWC to correct for clustering within classrooms or schools (corrections for multiple comparisons were not done for findings not included in the overall intervention rating). For an explanation about the clustering correction, see the WWC Tutorial on Mismatch. See Technical Details of WWC-Conducted Computations for the formulas the WWC used to calculate statistical significance. In the case of Kemple (2004), no correction for clustering within this outcome domain was made.

Appendix A5.1 *Career Academies* rating for the staying in school domain[1]

The WWC rates an intervention's effects for a given outcome domain as positive, potentially positive, mixed, no discernible effects, potentially negative, or negative.[2]

For the outcome domain of staying in school, the WWC rated *Career Academies* as having potentially positive effects. It did not meet the criteria for positive effects because it had only one study that met WWC standards. The remaining ratings (mixed effects, no discernible effects, potentially negative effects, and negative effects) were not considered because *Career Academies* was assigned a higher applicable rating.

Rating received

Potentially positive effects: Evidence of a positive effect with no overriding contrary evidence.

- Criterion 1: At least one study showing a statistically significant or substantively important *positive* effect.

  Met. The only study on *Career Academies* reported a statistically significant and substantively important positive effect in this domain.

- Criterion 2: No studies showing a statistically significant or substantively important *negative* effect and fewer or the same number of studies showing *indeterminate* effects than showing statistically significant or substantively important *positive* effects.

  Met. The WWC analysis found no statistically significant or substantively important negative effects or indeterminate effects in this domain.

Other ratings considered

Positive effects: Strong evidence of a positive effect with no overriding contrary evidence.

- Criterion 1: Two or more studies showing statistically significant *positive* effects, at least one of which met WWC evidence standards for a strong design.

  Not met. *Career Academies* has only one study meeting WWC evidence standards.

- Criterion 2: No studies showing statistically significant or substantively important *negative* effects.

  Met. The WWC analysis found no statistically significant or substantively important negative effects in this domain.

1. This intervention rating was calculated based on 474 youth in the study sample who were most at risk of dropping out of high school. Researchers used student characteristics at baseline (including whether students had a sibling who dropped out, was overage for grade, had transferred schools two or more times, and their attendance, GPA, and credits earned in the year of random assignment) to develop a model to predict whether students in the comparison group dropped out of school and then applied theses predictions to the intervention group students. The full study sample included 1,764 youth.
2. For rating purposes, the WWC considers the statistical significance of individual outcomes and the domain level effects. The WWC also considers the size of the domain level effects for ratings of potentially positive or potentially negative effects. See the WWC Intervention Rating Scheme for a complete description.

Appendix A5.2 *Career Academies* rating for the progressing in school domain[1]

The WWC rates an intervention's effects for a given outcome domain as positive, potentially positive, mixed, no discernible effects, potentially negative, or negative.[2]

For the outcome domain of progressing in school, the WWC rated *Career Academies* as having potentially positive effects. It did not meet the criteria for positive effects because it had only one study that met WWC standards. The remaining ratings (mixed effects, no discernible effects, potentially negative effects, and negative effects) were not considered, because *Career Academies* was assigned a higher applicable rating.

Rating received

Potentially positive effects: Evidence of a positive effect with no overriding contrary evidence.

- Criterion 1: At least one study showing a statistically significant or substantively important *positive* effect.

  Met. The only study on *Career Academies* reported a statistically significant and substantively important positive effect or indeterminate effects in this domain.

- Criterion 2: No studies showing a statistically significant or substantively important *negative* effect and fewer or the same number of studies showing *indeterminate* effects than showing statistically significant or substantively important *positive* effects.

  Met. The WWC analysis found no statistically significant or substantively important negative effects or indeterminate effects in this domain.

Other ratings considered

Positive effects: Strong evidence of a positive effect with no overriding contrary evidence.

- Criterion 1: Two or more studies showing statistically significant *positive* effects, at least one of which met WWC evidence standards for a strong design.

  Not met. *Career Academies* has only one study meeting WWC evidence standards.

- Criterion 2: No studies showing statistically significant or substantively important *negative* effects.

  Met. The WWC analysis found no statistically significant or substantively important negative effects in this domain.

1. This intervention rating was calculated based on 474 youth in the study sample who were most at risk of dropping out of high school. Researchers used student characteristics at baseline (including whether students had a sibling who dropped out, was overage for grade, had transferred schools two or more times, and their attendance, GPA, and credits earned in the year of random assignment) to develop a model to predict whether students in the comparison group dropped out of school and then applied theses predictions to the intervention group students. The full study sample included 1,764 youth.
2. For rating purposes, the WWC considers the statistical significance of individual outcomes and the domain level effects. The WWC also considers the size of the domain level effects for ratings of potentially positive or potentially negative effects. See the WWC Intervention Rating Scheme for a complete description.

Appendix A5.3 *Career Academies* rating for the completing school domain[1]

The WWC rates an intervention's effects for a given outcome domain as positive, potentially positive, mixed, no discernible effects, potentially negative, or negative.[2]

For the outcome domain of completing school, the WWC rated *Career Academies* as having no discernible effects. It did not meet the criteria for other ratings (positive effects, potentially positive effects, mixed effects, potentially negative effects, and negative effects) because the one study that met WWC standards did not show statistically significant or substantively important effects.

Rating received

No discernible effects: No affirmative evidence of effects.

- Criterion 1: None of the studies shows a statistically significant or substantively important effect, either *positive* or *negative*.

  Met. The WWC analysis found no statistically significant or substantively important effects in this domain.

Other ratings considered

Positive effects: Strong evidence of a positive effect with no overriding contrary evidence.

- Criterion 1: Two or more studies showing statistically significant *positive* effects, at least one of which met WWC evidence standards for a strong design.

  Not met. *Career Academies* has only one study meeting WWC evidence standards.

- Criterion 2: No studies showing statistically significant or substantively important *negative* effects.

  Met. The WWC analysis found no statistically significant or substantively important negative effects in this domain.

Potentially positive effects: Evidence of a positive effect with no overriding contrary evidence.

- Criterion 1: At least one study showing a statistically significant or substantively important *positive* effect.

  Not met. The WWC analysis found no statistically significant or substantively important positive effects in this domain.

- Criterion 2: No studies showing a statistically significant or substantively important *negative* effect and fewer or the same number of studies showing *indeterminate* effects than showing statistically significant or substantively important *positive* effects.

  Met. The WWC analysis found no statistically significant or substantively important negative effects in this domain.

Mixed effects: Evidence of inconsistent effects as demonstrated through either of the following criteria.

- Criterion 1: At least one study showing a statistically significant or substantively important *positive* effect, and at least one study showing 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.

  Not met. The WWC analysis found no statistically significant or substantively important effects, either positive or negative, in this domain.

OR

- Criterion 2: At least one study showing a statistically significant or substantively important effect, and more studies showing an *indeterminate* effect than showing a statistically significant or substantively important effect.

  Not met. The WWC analysis found no statistically significant or substantively important effects in this domain.

Potentially negative effects: Evidence of a negative effect with no overriding contrary evidence.

(continued)

Appendix A5.3 *Career Academies* rating for the completing school domain[1] *(continued)*

- Criterion 1: At least one study showing a statistically significant or substantively important *negative* effect.

  Not met. The WWC analysis found no statistically significant or substantively important negative effects in this domain.

- Criterion 2: No studies showing a statistically significant or substantively important *positive* effect, or more studies showing statistically significant or substantively important *negative* effects than showing statistically significant or substantively important *positive* effects.

  Met. The WWC analysis found no statistically significant or substantively important positive effects in this domain.

Negative effects: Strong evidence of a negative effect with no overriding contrary evidence.

- Criterion 1: Two or more studies showing statistically significant *negative* effects, at least one of which met WWC evidence standards for a strong design.

  Not met. The WWC analysis found no statistically significant or substantively important negative effects in this domain.

- Criterion 2: No studies showing statistically significant or substantively important *positive* effects.

  Met. The WWC analysis found no statistically significant or substantively important positive effects in this domain.

1. This intervention rating was calculated based on 474 youth in the study sample who were most at risk of dropping out of high school. Researchers used student characteristics at baseline (including whether students had a sibling who dropped out, was overage for grade, had transferred schools two or more times, and their attendance, GPA, and credits earned in the year of random assignment) to develop a model to predict whether students in the comparison group dropped out of school and then applied these predictions to the intervention group students. The full study sample included 1,764 youth.
2. For rating purposes, the WWC considers the statistical significance of individual outcomes and the domain level effects. The WWC also considers the size of the domain level effects for ratings of potentially positive or potentially negative effects. See the WWC Intervention Rating Scheme for a complete description.