

USING EVIDENCE TO CREATE NEXT GENERATION HIGH SCHOOLS

Next Generation High Schools are schools that redesign the high school experience to make it more engaging and worthwhile for high school students. In order to create such Next Generation High Schools, schools, districts, and States should utilize evidence-based strategies to transform high schools in ways that engage students and help prepare them for college and career success. Evidence-based strategies encompass a variety of approaches. Strategies can include providing students with rich, personalized coursework and hands-on experience aligned to postsecondary and career-readiness standards. These strategies often may involve opportunities to engage in postsecondary learning with the ability to gain college credit while in high school and incorporate educational technologies for individualized and project-based learning in addition to competency-based learning. Additional strategies can change instructional approaches and student supports, such as access to educators with strong content knowledge in all subjects, including science, technology, engineering and mathematics (STEM); as well as needed academic, wrap-around, and college and career counseling services.

This document highlights six general evidence-based strategies to improve America's high schools for the next generation.¹ Though many of the effective strategies may share common features, each has been identified by the research literature as a stand-alone intervention or model for improving students' educational outcomes. Reviewed strategies for enhancing students' high school and college outcomes include: 1) participation in rigorous curriculum; 2) small learning communities/small schools of choice; 3) career academies; 4) dual enrollment; 5) early college high schools; and 6) college and career counseling.²

¹ The following criteria were used in selecting these particular strategies: (1) they were general strategies or approaches and (2) they were supported by studies that have met the What Works Clearinghouse™ (WWC) evidence standards according to WWC certified reviewers or that authors of this document believe may meet WWC standards based on an informal review. The WWC provides educators, policymakers, researchers, and the public with a centralized and trusted source of scientific evidence of what works in education. In addition to these general strategies, there are proprietary interventions that may meet the WWC evidence standards which schools, districts, and States can consider pursuing. To find evidence about education interventions, see the WWC database at <http://ies.ed.gov/ncee/wwc/findwhatworks.aspx> and <http://ies.ed.gov/ncee/wwc/documentsum.aspx?sid=19> for information on WWC evidence standards.

² For more information about the specific studies supporting these strategies, see the Appendix.

Strategy 1: Participation in rigorous curriculum

Students who engage in a rigorous high school curriculum have the potential to improve their academic performance and be more prepared for college-level coursework. Rigorous curriculum can mean offering students higher level courses, which may be advanced, honors, Advanced Placement (AP) courses or those included in accelerated curricula like the International Baccalaureate Diploma Programme (IBDP). Several correlational studies have identified a connection between taking rigorous coursework and improved academic achievement for students.³ A quasi-experimental⁴ study from 2012 found improvements in several student outcomes for those students enrolled in rigorous courses. By analyzing the high school transcripts of more than 100,000 Florida students, researchers found that those taking advanced courses (e.g., AP, International Baccalaureate, advanced, honors) in either 9th or 10th grade had improved math achievement, high school completion, and college enrollment over those who did not.⁵

Strategy 2: Small learning communities/small schools of choice

Small learning communities and small schools of choice serve a limited number of students in order to foster strong relationships between students, teachers, and members of the community to enhance students' learning experiences. Smaller-scale settings allow for personalized learning, which can improve the rigor and use of real world applications in coursework and create a sense of belonging for students that is both motivating and encouraging. Teaching and learning in this smaller scale and close-knit framework has demonstrated some positive effects on high school persistence and completion. A notable example is New York City's "small schools of choice" (SSC) movement which began in the early 2000s. In a study of urban public high school students from disadvantaged communities who – in most instances – were randomly assigned through a lottery to attend a SSC, students who attended the SSC had improved language arts achievement and higher graduation rates than those who did not.⁶

³ A summary of some of the research by the Center for Public Education is available at <http://www.centerforpubliceducation.org/Main-Menu/Instruction/Is-high-school-tough-enough-At-a-glance/Is-high-school-tough-enough-Full-report.html>

⁴ This document uses terms like quasi-experimental and experimental studies. A *quasi-experimental study* (also known as a quasi-experimental design study or QED), as defined by Part 77.1 of the [Education Department General Administration Regulations](#) (EDGAR), means a study using a design that attempts to approximate an experimental design by identifying a comparison group that is similar to the treatment group in important respects. An *experimental study* may refer to a randomized controlled trial, which employs random assignment of, for example, students, teachers, classrooms, schools, or districts to receive the intervention being evaluated (the treatment group) or not to receive the intervention (the control group).

⁵ Long, M. C., Conger, D., and Iatorola. (2012). "Effects of high school course-taking on secondary and postsecondary success." *American Educational Research Journal*. <https://eric.ed.gov/?id=EJ960491>

⁶ Bloom, H. S., & Unterman, R. (2013). *Sustained progress: New findings about the effectiveness and operation of small public high schools of choice in New York City*. <https://eric.ed.gov/?id=ED545475>

Strategy 3: Career academies

Career academies, another high school redesign model, typically serve fewer than 200 students and are usually located within a larger high school. Career academies are similar to the small schools model mentioned above, but are set apart by the focus on career-related and academic coursework coupled with work experience, often through partnerships with local employers. Originally designed as a dropout prevention strategy to keep at-risk high school students engaged in their education, career academies now serve a broader segment of students, including those who are college-bound, with career-themed curricula and hands-on experiences. Research suggests that career academies can be an effective model for improving longer-term outcomes.⁷ For example, in a randomized controlled trial of 1,400 racially diverse students attending nine urban high schools across the United States, those assigned to a career academy within their high schools earned nearly \$17,000 more over an eight-year period after high school graduation than did students who were assigned to the regular high school program.⁸

Strategy 4: Dual enrollment

Dual enrollment, or allowing students to take one or more credit-bearing, college-level courses (but not necessarily a full certificate or degree program) while still in high school, is a strategy for improving college readiness and completion outcomes both at the high school and college levels. By providing high school students with college-level coursework and, in some cases experiences on a college campus, dual enrollment can promote students' understanding of, and adjustment to, the rigor of college-level work and to engage with the college environment, both essential for future college success. Dual enrollment models vary: in some, students attend classes taught by college faculty on a college campus, while others involve college or specially-trained high school teachers providing college-level coursework in a high school. In a quasi-experimental study that analyzed nationally representative federal data, students who participated in dual enrollment programs were significantly more likely to complete college – and in particular, earn a bachelor's degree – than their peers who did not.⁹

⁷ What Works Clearinghouse. (2015). *Career Academies*. <https://eric.ed.gov/?id=ED559721>

⁸ Kemple, J. J., & Willner, C. J. (2008). *Career Academies: Long-term impacts on labor market outcomes, educational attainment, and transitions to adulthood*. <http://tinyurl.com/jr4997w>

⁹ An, B. P. (2013). "The impact of dual enrollment on college degree attainment: Do low-SES students benefit?" *Educational Evaluation and Policy Analysis*. <https://eric.ed.gov/?id=EJ1009522>

Strategy 5: Early college high schools

The “early college” high school model, similar to but more immersive than dual enrollment, involves high schools partnering with colleges so that all students in the high school have the opportunity to earn an associate’s degree – or up to two years of college credits – concurrently with a high school diploma. The aim of many early college high schools is to improve college readiness and increase access for students historically underrepresented in higher education by providing college credits and sub-baccalaureate degrees at little or no cost. A recently conducted randomized controlled trial consisting of more than 2,400 predominantly low-income students and ten “early colleges” in five states across the country found that those who attended “early colleges” experienced improved language arts achievement, college entry, and postsecondary degree attainment compared to those who attended traditional high schools.¹⁰

Strategy 6: College and career counseling

College and career counseling serves a critical role in the college-going and career-building process. School counselors and other college access professionals can provide students with the necessary information and guidance to navigate the complex, longitudinal steps of applying to and entering college (e.g., college entrance exams, admissions applications, student financial aid applications) and realizing their career goals. Research suggests that the availability and quality of college and career counseling varies widely among schools, often due to limited financial resources and other counselor time commitments.¹¹ In a randomized controlled trial involving approximately 1,150 seniors who attended 12 high schools in New Hampshire, those who received individually tailored college coaching were significantly more likely to enroll and persist in college than seniors who did not.¹² This college counseling model is also promising because of its low cost for high schools, as college coaches can be undergraduate volunteers from a nearby college. In another randomized controlled trial studying approximately 930 low-income high school graduates in Boston, college-bound students who received college and financial aid counseling the summer before college had a higher rate of persistence into their sophomore year than students who were not offered summer counseling.¹³

¹⁰ Berger, A., Turk-Bicakci, L., Garet, M., Song, M., Knudson, J., Haxton, C., et al. (2013). *Early college, early success: Early college high school initiative impact study*. Washington, DC: American Institutes for Research.

http://www.air.org/sites/default/files/downloads/report/ECHSI_Impact_Study_Report_Final1_0.pdf

¹¹ Perna et al. (2008). “The role of college counseling in shaping college opportunity: Variations across high schools.” *The Review of Higher Education*. <http://eric.ed.gov/?id=EJ782662>

¹² Carrell, S., & Sacerdote, B. (2013). *Late interventions matter too: The case of college coaching*.

<http://econ.msu.edu/seminars/docs/Carrell%20Sacerdote%20College%20Coaching%20Late%20Interventions%207.16.12.pdf>

¹³ Castleman, B. L., Page, L. C., & Schooley, K. (2014). The forgotten summer: “Does the offer of college counseling after high school mitigate summer melt among college-intending, low-income high school graduates?” *Journal of Policy Analysis and Management*. <https://eric.ed.gov/?id=EJ1027721>

Conclusion

The six evidence-based strategies in this document can be used to create Next Generation High Schools that improve important student outcomes, such as high school completion, readiness for college and careers, or later income. These strategies do not represent all potentially successful or innovative strategies for Next Generation High Schools – others could include personalized learning and access to high-quality digital tools and technology that enable such personalization. The strategies instead provide a number of options that when combined with each other or with other successful interventions may provide a full, engaging high school experience. In the coming months, the Department will release a series of briefs about specific high school strategies designed to improve graduation rates, based on survey results from a nationally representative sample of 2,142 public high schools.¹⁴ Together, this information can be used to understand ways that high schools are and should be working to transform the high school experience to ensure successful futures for all students.

¹⁴ These briefs are part of the National Survey on High School Strategies Designed to Help At-Risk Students Graduate (HSS) and can be found at <http://www2.ed.gov/about/offices/list/opepd/ppss/reports-high-school.html>.

Appendix: Research Inventory for Evidence-Based Strategies

Strategy	Citation	Research Design & Evidence Level ¹⁵	Improved Outcomes	Study Link
Rigorous Curriculum	Long, M. C., Conger, D., and Iatorola. (2012). "Effects of high school course-taking on secondary and postsecondary success." <i>American Educational Research Journal</i> , 49(20), 285-322.	Quasi-experimental design ----- May meet WWC evidence standards with reservations	High school completion; postsecondary enrollment	https://eric.ed.gov/?id=EJ960491
Small Learning Communities ----- Small Schools of Choice	Bloom, H. S., & Unterman, R. (2013). <i>Sustained progress: New findings about the effectiveness and operation of small public high schools of choice in New York City</i> . New York, NY: MDRC.	Randomized controlled trial ----- Meets WWC evidence standards without reservations	English/language arts achievement; high school completion	https://eric.ed.gov/?id=ED545475
	Herman, J. L., Wang, J., Rickles, J., Hsu, V., Monroe, S., Leon, S., et al. (2012). <i>Evaluation of Green Dot's Locke transformation project: Findings for cohort 1 and 2 students</i> (CRESST report 815). Los Angeles, CA: National Center for Research on Evaluation, Standards, and Student Testing (CRESST).	Quasi-experimental design ----- May meet WWC evidence standards with reservations	High school completion	https://eric.ed.gov/?id=ED531993
	Kemple, J., Herlihy, C., & Smith, T. (2005). <i>Making progress toward graduation: Evidence from the Talent Development High School model</i> . New York: MDRC.	Quasi-experimental design ----- Meets WWC evidence standards with reservations	High school persistence	https://eric.ed.gov/?id=ED485348

¹⁵ See note on p. 8 for a description of the evidence levels.

Strategy	Citation	Research Design & Evidence Level ¹⁵	Improved Outcomes	Study Link
Career Academies	Kemple, J. J., & Willner, C. J. (2008). <i>Career Academies: Long-term impacts on labor market outcomes, educational attainment, and transitions to adulthood</i> . New York, NY: MDRC. ¹⁶	Randomized controlled trial Meets WWC evidence standards without reservations	High school completion	http://www.mdrc.org/publication/career-academies-long-term-impacts-work-education-and-transitions-adulthood
Dual Enrollment	An, B. P. (2013). "The impact of dual enrollment on college degree attainment: Do low-SES students benefit?" <i>Educational Evaluation and Policy Analysis</i> , 35, 57-75.	Quasi-experimental design Meets WWC evidence standards with reservations	Postsecondary completion	https://eric.ed.gov/?id=EJ1009522
	Fowler, M. (2007). <i>A program evaluation of achieving a college education plus</i> (Unpublished doctoral dissertation). Northern Arizona University.	Quasi-experimental design May meet WWC evidence standards with reservations	High school completion; postsecondary enrollment	http://eric.ed.gov/?id=EJ934822
	Struhl, B., & Vargas, J. (2012). <i>Taking college courses in high school: A strategy guide for college readiness: The college outcomes of dual enrollment in Texas</i> . Boston, MA: Jobs for the Future.	Quasi-experimental design May meet WWC evidence standards with reservations	Postsecondary enrollment; postsecondary attainment	https://eric.ed.gov/?id=ED537253
	Taylor, J. L. (2013). <i>Community college dual credit: Differential participation and differential impacts on college access and completion</i> (Doctoral dissertation). University of Illinois at Urbana-Champaign.	Quasi-experimental design May meet WWC evidence standards with reservations	Postsecondary enrollment; postsecondary attainment	https://www.ideals.illinois.edu/bitstream/handle/2142/44429/Jason_Taylor.pdf?sequence=1

¹⁶ See also WWC's Career Academies report available at <https://eric.ed.gov/?id=ED559721> and Center for Evidence-Based Policy report available at <http://toptierevidence.org/wp-content/uploads/2014/09/Career-Academies-Summary.pdf>

Strategy	Citation	Research Design & Evidence Level ¹⁵	Improved Outcomes	Study Link
Early College High Schools	Berger, A., Turk-Bicakci, L., Garett, M., Song, M., Knudson, J., Haxton, C., et al. (2013). <i>Early college, early success: Early college high school initiative impact study</i> . Washington, DC: American Institutes for Research.	Randomized controlled trial <hr/> Meets WWC evidence standards without reservations	High school completion; English/language arts achievement; postsecondary enrollment; postsecondary attainment; less developmental education	http://www.air.org/sites/default/files/downloads/report/ECHSI_Impact_Study_Report_Final1_0.pdf
	Cellini, S. R. (2006). Smoothing the transition to college? "The effect of Tech-Prep programs on educational attainment." <i>Economics of Education Review</i> , 25(4), 394-411.	Quasi-experimental design <hr/> May meet WWC evidence standards with reservations	High school completion	http://home.gwu.edu/~scellini/Index/Research_files/EER_Tech-Prep.pdf
	Edmunds, J. A., Bernstein, L., Unlu, F., Glennie, E., Willse, J., Smith A., & Arshavsky, N. (2012). "Expanding the start of the college pipeline: Ninth-grade findings from an experimental study of the impact of the early college high school model." <i>Journal of Research on Educational Effectiveness</i> , 5(2), 136-159.	Randomized controlled trial <hr/> Meets WWC evidence standards without reservations	Algebra I completion; school attendance; lower suspension rates	https://eric.ed.gov/?id=EJ961443
	Miller, L., & Corritore, M. (2012). <i>Assessing the impact of North Carolina's early college high schools on college preparedness</i> (Working paper), Center on Education Policy and Workforce Competitiveness, University of Virginia.	Quasi-experimental design <hr/> May meet WWC evidence standards with reservations	Mathematics achievement	http://curry.virginia.edu/uploads/resourceLibrary/7_Miller_EarlyCollegeSchools.pdf

Strategy	Citation	Research Design & Evidence Level ¹⁵	Improved Outcomes	Study Link
College and Career Counseling	Avery, C. (2013). <i>Evaluation of the College Possible program: Results from a randomized controlled trial</i> . NBER Working Paper No. 19562. National Bureau of Economic Research.	Quasi-experimental design Meets WWC evidence standards with reservations	Applications made to 4-year and selective postsecondary institutions	https://eric.ed.gov/?id=ED544548
	Carrell, S. E., & Sacerdote, B. (2013). <i>Late interventions matter too: The case of college coaching</i> . NBER Working Paper No. 19031. National Bureau of Economic Research.	Randomized controlled trial Meets WWC evidence standards without reservations	Postsecondary enrollment; postsecondary persistence	http://econ.msu.edu/seminars/docs/Carrell%20Sacerdote%20College%20Coaching%20Late%20Interventions%207.16.12.pdf
	Castleman, B. L., Page, L. C., & Schooley, K. (2014). The forgotten summer: “Does the offer of college counseling after high school mitigate summer melt among college-intending, low-income high school graduates?” <i>Journal of Policy Analysis and Management</i> , 33(2), 320-344.	Randomized controlled trial Meets WWC evidence standards without reservations	Postsecondary persistence	https://eric.ed.gov/?id=EJ1027721
	Constantine, J. M., Seftor, N. S., Martin, E. S., Silva, T. & Myers, D. (2006). <i>Study of the effect of Talent Search program on secondary and postsecondary outcomes in Florida, Indiana and Texas</i> . Washington, DC: U.S. Department of Education.	Quasi-experimental design Meets WWC evidence standards with reservations	High school completion; postsecondary enrollment	https://eric.ed.gov/?id=ED493358

NOTE – Each research study has one of the following evidence level designations:

- **Meets WWC evidence standards without reservations.** Reviewed by WWC certified reviewers and met the highest rating for group design standards set by the WWC

(See also <http://ies.ed.gov/ncee/wwc/documentsum.aspx?sid=19>)

- **Meets WWC evidence standards with reservations.** Reviewed by WWC certified reviewers and met the middle rating for group design standards set by the WWC

(See also <http://ies.ed.gov/ncee/wwc/documentsum.aspx?sid=19>)

- **May meet WWC evidence standards without reservations.** Informally reviewed by the authors of this document because the study has not yet been reviewed by the WWC and based on the belief that the study “may meet” the highest rating for group design standards

- **May meet WWC evidence standards with reservations.** Informally reviewed by the authors of this document because the study has not yet been reviewed by the WWC and based on the belief that the study “may meet” the middle rating for group design standards