

Systematic Review Protocol for College and Career Readiness

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This protocol guides the What Works Clearinghouse's (WWC) systematic reviews of evidence relating to college and career readiness for secondary school students in grades 6-12. Reviewers conducting the systematic review should use this protocol in conjunction with version 4.1 of the [WWC Standards and Procedures Handbooks](#) and the corresponding [Study Review Protocol](#).

PURPOSE STATEMENT

Although there is no single national measure of American students' readiness to succeed in college or a career, recent data suggest the nation is falling short. More than a third (35 percent) of 2018 high-school graduates taking the ACT met none of that assessment's four college and career readiness benchmarks in English, Reading, Math, or Science (ACT 2018, p. 5). And although a slightly larger fraction of students (38 percent) met three or four of the benchmarks, this figure conceals gaps between students from historically underserved groups and their more advantaged peers. For example, among students who would be the first in their family to attend college, come from low-income households, and self-identify as a member of an underserved racial or ethnic group, just 10 percent met three or four benchmarks while 81 percent of these students met either none or one of them (p. 9). Even as these figures suggest that American students are not leaving high school as prepared as they should be for college or career, other research points to growing skill demands in the American labor market (for example, Carnevale 2010; Goldin and Katz 2008).

This protocol guides two systematic reviews, the first focusing on educational interventions designed to improve college access and readiness for students in grades 6-12 and the second focusing on career access and readiness for this same population of students. To reap the benefits of a college education and be successful in a career, students need academic and non-academic services and supports that help them gain entry into and meet the demands of college-level coursework and jobs with opportunities for career advancement.

This first review focuses on interventions that support students' preparedness to enter and succeed in postsecondary education, as indicated by such milestones and outcomes as secondary academic achievement; earning credit for college-level coursework, including during high school; and completing other steps necessary to gain access to postsecondary education, such as applying for college or student financial aid. The second review examines interventions seeking to bolster access to and readiness for successful careers, as indicated by milestones and outcomes such as demonstration of general employability skills, attainment of industry-recognized credentials, employment, and earnings. In addition to college or career readiness, interventions reviewed under this protocol might seek to improve outcomes that facilitate college or career readiness, such as students' social-emotional well-being.

The following research questions guide these systematic reviews:

- Which interventions, that district or school administrators, counselors, or teachers can implement, improve students' access to college or other pathways to competitive careers?

- Which interventions, that districts or school administrators, counselors, or teachers can implement, improve students' readiness to progress and succeed in college or another career-aligned pathway?
- Which interventions, that district or school administrators, counselors, or teachers can implement to support students' college and career readiness, improve related outcomes, such as academic achievement or social-emotional well-being?
- What are the demographic characteristics, such as race and ethnicity, English learner status, and disability status, of students in the analytic samples for findings that meet WWC standards?
- Are certain practices of college or career access and readiness interventions associated with statistically significant improvements in relevant student outcomes?

The following three processes are key to the WWC's systematic review process:

1. Identifying research on college or career access and readiness interventions.
2. Screening research for relevance to college or career access and readiness and eligibility for WWC review.
3. Synthesizing and disseminate evidence on college or career access and readiness interventions.

The following sections describe each process in more detail.

LITERATURE SEARCH

As described in [Section III: Identifying Relevant Literature](#) and [Appendix B: Principles for Searching for Studies to Review](#) of the *WWC Procedures Handbook*, the WWC conducts literature searches in consultation with research librarians. In conducting literature searches under this protocol, the WWC identifies studies on college and career access and readiness interventions that it has not yet reviewed. These searches are intended to identify studies that are relevant and useful to educators or other decision makers. To do this, the WWC identifies studies from the following sources:

- Federally funded research available in [Education Resources Information Center](#) (ERIC) or from other sources
- Other research identified in ERIC using key terms
- Research on specific interventions available in ERIC or other databases

See Appendix A for additional details on identifying interventions for systematic review and on the search, screening, and prioritization processes.

SCREENING OF RESEARCH USING ELIGIBILITY CRITERIA

The *WWC Procedures Handbook* discusses the types of research reviewed by the WWC in [Section II: Developing the Review Protocol](#), [Section III: Identifying Relevant Literature](#), and [Section IV: Screening Studies](#). The WWC reviews studies using the [Study Review Protocol](#), which guides the review in conjunction with the *WWC Standards Handbook* and the *WWC Procedures Handbook*. To be included in a systematic review under this protocol, a study must meet both the eligibility criteria in the [Study Review Protocol](#) and the criteria listed below.

Eligible Interventions

The WWC will conduct a systematic review and synthesize evidence for (1) college access and readiness and (2) career access and readiness interventions. The WWC defines the term “intervention” broadly, and this term might comprise practices, products, policies, and programs. See the [Study Review Protocol](#) for definitions of each type of intervention. Therefore, interventions that meet the following criteria may be included:

- **Intervention type.** For this review, interventions must be primarily focused on improving college and career access and readiness outcomes, as opposed to simply raising the academic performance of students while in secondary school. A wide range of eligible college and career access and readiness interventions can be reviewed under this protocol, including:
 - **Interventions designed to help students in secondary grades (including the summer months immediately following high school graduation) complete the necessary steps to be eligible and ready for college.** For example, interventions that encourage or require students to take the college preparatory course sequence in grades 9-12; take (and pass) the required college preparatory curriculum in the state; take (and do well on) any required college entrance exams; complete the Free Application for Federal Student Aid (FAFSA); apply to a college; respond after being accepted and pay any registration fees; and, finally, show up on campus. Summer bridge programs are an example of an eligible intervention that aims to help ensure secondary students are academically ready for college.
 - **Interventions designed to promote students' development of the executive function skills necessary for college.** For example, interventions that help students develop study skills, time management strategies, or the navigational and decision-making skills necessary for progressing through college and careers.
 - **Interventions designed to increase knowledge about college and careers for students and families.** For example, interventions focused on family and community engagement, after-school and community-based programs, and interventions aimed at increasing the awareness of the types of colleges, price of college, options to improve college affordability, entrance requirements, types of careers, high-growth career prospects, steps to navigate career pathways, and opportunities for mentorship or advising in specific career fields.
 - **Interventions designed to develop the technical skills and knowledge required for specific jobs or fields of work through formal coursework.** Such interventions could include Career or Technical Education (CTE) coursework accessed either at comprehensive high schools or at specialized CTE environments (i.e. technical academies, area technical centers); career pathway programs, which are series of structured and connected programs and support services that enable students to advance over time to higher levels of education and training (Strengthening Career and Technical Education for the 21st Century Act of 2018); integrated education and training courses or curricula; or simultaneous enrollment in high school general education and career technical education coursework.
 - **Interventions designed to develop the technical skills and knowledge required for specific jobs or fields of work through experiential learning.** Such interventions could include work-based learning (i.e. internships, job shadowing, apprenticeships); student enterprises or simulated workplaces; or sectoral training programs facilitated in partnership with local employers.
 - **Interventions aimed at helping students prepare for and experience college-level coursework before enrolling in college,** such as dual enrollment, International Baccalaureate, and Advanced Placement programs.

- **Interventions designed to help students start college on time**, such as immediate enrollment programs.
- **Interventions designed to support access to and through college** that provide long-time bundled support, such as comprehensive support programs. Examples of comprehensive support programs include Scholarship, Pipeline, Pathways, and federal college access programs.
- **Setting.** Interventions must be provided in the United States in secondary education school-based settings or other learning environments, including remote instruction, home-schooling programs, after-school, or summer school. Interventions must have a connection to a secondary education program and can include partnerships with organizations such as postsecondary institutions. Interventions provided in settings outside the secondary learning environment (e.g., interventions provided by post-secondary institutions or community-based organizations) can be included for review if the intervention can reasonably be provided by secondary school staff.
- **Delivery.** Interventions may be implemented across or within school districts, schoolwide, at the classroom level, with small groups, or with individuals. See the [Study Review Protocol](#) for definitions of each delivery method.
- **Replicability.** An intervention must be replicable (that is, it must be possible to reproduce the delivery of the intervention in another setting). To ensure that the intervention is replicable, all the following characteristics of an intervention must be documented within the primary record:
 - Intervention goals, including the targeted student skills and teacher practices
 - The focal population of the intervention
 - The unit of delivery of the intervention (for example, whole group versus individual)
 - The frequency and duration of the intervention
 - Key intervention components, including activities and characteristics of activities, as well as the strategies used to improve the targeted skills, and the method and setting of delivery (for example, online versus in-person, school site versus work-based learning site)
 - Resources (including technology, facilities, personnel, and other materials) needed to implement the intervention
 - Qualifications of individuals delivering or administering the intervention

For interventions included in studies meeting WWC standards, the review will also document the intervention’s key components and the cost ingredients for implementing the intervention. An intervention may be excluded from a systematic review if little is known about its key components or the categories of resources needed to implement the intervention, either from the corresponding studies and their authors, the developers of the intervention, or the content experts advising the systematic review.

Eligible Populations

- To be included in a systematic review under this protocol, studies must examine the effectiveness of an intervention administered to students or staff.
- **Students.** Students and other learners who are part of the traditional-aged college pipeline, namely students in grades 6-12 enrolled in secondary education programs (including the summer following grade 12). The eligible age range is 11-21 when grade is not specified. In some instances, students younger than 11

or older than 21 may be included in the sample. In these cases, a study is eligible for review if it meets at least one of two criteria:

- The study reports disaggregated results for students in the eligible age range.
- The mean age for students is 11 to 21.
- **Staff.** Teachers, school leaders, other educators, or home- or school-based service providers.

College and career access and readiness interventions might be designed to improve outcomes for all students or might be designed specifically to meet the needs of subpopulations of students with specific characteristics (e.g., students with disabilities).

When a study is being reviewed as part of a systematic review of a college or career access and readiness intervention under this protocol, the WWC will review findings reported for the following subpopulations from the [Study Review Protocol](#):

- **Students with disabilities or developmental delays.** Students with disabilities are students who are eligible for special education and related services under the reauthorized Individuals with Disabilities Education Act of 2004 (IDEA 2004), most recently amended through Public Law 114-95, the Every Student Succeeds Act, in 2015. IDEA defines the term “child with disability” as a child with (i) with intellectual disabilities, hearing impairments (including deafness), speech or language impairments, visual impairments (including blindness), serious emotional disturbance (referred to as “emotional disturbance”), orthopedic impairments, autism, traumatic brain injury, other health impairments, or specific learning disabilities; and (ii) who, by reason thereof, needs special education and related services (U.S. Department of Education, n.d.). These students typically have an Individualized Education Program (IEP) or a 504 Plan.
- **Students at risk of low performance in academics or behavior.** Students at risk of low performance in academics or behavior are students who have performed below a pre-determined level of proficiency on a relevant standardized measure (e.g., low-performing students).
- **Dual language learners, English learners.** English learners are students with a primary language other than English who have a limited range of listening, speaking, reading, or writing skills in English. English learners could be described using a variety of terms, including limited English proficient, English language learner, non-native English speaker, language minority, multilingual learners, multilanguage learners, second language learner, or dual language learner.

When a study is being reviewed as part of a systematic review of a career access and readiness intervention under this protocol, the WWC will additionally review findings reported for the following subpopulation:

- **Students involved in the juvenile justice system.** Students involved in the juvenile justice system are students who are currently, or have previously, been arrested or referred to the juvenile justice system due to a delinquent or criminal activity. Students’ cases may have been formally processed, diverted from court, or dismissed. Students may have spent time in juvenile detention facilities or residential custody.

Eligible Research

Studies included in a systematic review under this protocol must meet the eligibility criteria in the [WWC Procedures Handbook](#) and the [Study Review Protocol](#), and the following additional criteria:

- **Time frame.** The [Study Review Protocol](#) allows inclusion of studies that have been released or made public within the 20 years preceding the year of the review. To ensure that the research base for these

practice guides is timely, this project will identify studies released within the 15 years preceding the year of the review (for example, in 2008 or later for reviews occurring in 2023). However, if an abundance of research from the past 15 years is identified, studies released during the past 10 years will be prioritized for review.

- **Implementation of intervention components.** Studies must describe the key components of the intervention and how each was implemented with adequate detail so reviewers can accurately document the intervention.
- **Intervention version.** If the study tests a commercially-available or replicated intervention, the studies must implement a version of the intervention that is similar to the version available from the developer or publisher at the time of the review. To be considered the same version as the available intervention, the intervention implemented in the study must share key intervention components, goals, and methods of delivery, and be delivered with similar frequency and duration, with only minor differences.
- **Feasibility of effect size estimation for findings.** Although single-case designs (SCDs) as well as group designs and regression discontinuity designs are eligible for review, studies may be excluded from review if their findings cannot be expressed for meta-analytic synthesis purposes as effect sizes or, in the case of some types of SCDs, as design-comparable effect sizes.

Eligible Outcomes

College or career access and readiness interventions might affect outcomes in multiple domains. Table 1 lists the outcome domains from the [Study Review Protocol](#) that will be included in systematic reviews under this protocol. For each study, findings from all outcome domains from version 1.0 of the [Study Review Protocol](#) will be reviewed and reported, but only findings from the outcome domains listed in Table 1 will be synthesized in reports under this protocol.

Table 1. Eligible outcome domains for systematic reviews of college or career readiness interventions

College access and readiness		Career entry and readiness
Required for inclusion	<ul style="list-style-type: none"> • College Readiness^a OR • College Enrollment 	General Employability Skills OR <ul style="list-style-type: none"> • Employment OR • Technical skills proficiency OR • Industry-recognized credential, certificate, degree OR • College Readiness
Relevant to the synthesis	<ul style="list-style-type: none"> • Academic Achievement (Secondary) • Postsecondary Academic Achievement^{b c} • Progressing in College^{b c} • Intrapersonal Competencies <ul style="list-style-type: none"> - Academic Dispositions* - Mental Health* 	<ul style="list-style-type: none"> • High School Completion • College Enrollment • Earnings • Intrapersonal Competencies <ul style="list-style-type: none"> - Academic Dispositions* - Mental Health*

College access and readiness		Career entry and readiness
Indirectly relevant outcome domains (not included in the synthesis)	• College Degree Attainment	

^a For reviews conducted under the college and career readiness synthesis protocol, outcomes pertaining to applying to college fall under the College Readiness domain ONLY. This differs from the [Study Review Protocol](#) that considers applying to college outcomes eligible under the College Readiness or College Enrollment domains.

^b Academic achievement measures from dual-enrollment coursework completed during high school are not eligible under this domain.

^c Outcomes assessing postsecondary academic achievement and college progression during the first two semesters of college (or first three trimesters) are relevant to the synthesis. Outcomes assessing postsecondary academic achievement and college progression beyond that point will be excluded from the synthesis.

* Subdomains marked with an asterisk (*) are defined below.

Subdomain Definitions for the Purpose of Meta-Analytic Synthesis

- **Academic Dispositions:** Indicators that are focused on self-reported or assessed student attitudes toward academics or participation in school activities. Outcomes in this subdomain include academic growth mindset, academic motivation, academic or subject-specific self-efficacy, academic engagement, and academic grit. Measures are included in this subdomain if they reflect attitudes toward learning, as opposed to observable behaviors (Student Behavior), mental well-being (Mental Health), or schoolwide environment (School Climate).
- **Mental Health:** Indicators that are primarily focused inward and reflect a student's emotional status and psychological well-being, and both positive and negative thoughts and feelings not tied specifically to academics. Outcomes in this subdomain include concepts such as anxiety, depression, and loneliness, as well as emotional regulation, happiness, self-esteem, positive identity development, behavioral inhibition, and overall adjustment. Measures may be based on a self-report, observation, or results from a clinical assessment scale. When measures include components of Mental Health and Academic Dispositions subdomains, synthesize the measures under this domain.

IMPLEMENTATION OF THE WWC STANDARDS

Adjusting for Baseline Differences¹

When multiple pretest measures are available, but none is a direct pretest of the outcome (e.g., college enrollment, student grade point average), reviewers should use the following to rank the available pretest measures:

1. Confirm all pretests entered into the Online Study Review Guide use the same analytic sample.
2. Use an independent, standardized measure if available, rather than a researcher-developed test.
3. Identify the pretest measure of those above (that satisfy #1 and #2) most closely related to the outcome measure.

¹ Only the first pretest measure entered into the Online Study Review Guide will be used to apply the difference-in-differences adjustment to an outcome when the difference between conditions is shown to be within the range that both allows and requires statistical adjustment.

SYNTHESIS AND DISSEMINATION OF FINDINGS

Determining the number of reports. The WWC will present findings from its systematic review of a college or career access and readiness intervention in two practice guides and up to six intervention reports. The WWC will determine the number and scope of the intervention reports once it identifies a set of eligible studies that meet WWC standards.

Reporting on findings for different subpopulations of interest. If findings for more than one subpopulation of interest are available and are eligible for review per the [Study Review Protocol](#), the WWC will report these findings on the WWC website. The WWC will usually rely on the full-sample findings for synthesis purposes, unless there are subpopulation findings that better align with the primary focus of the college or career readiness intervention or practice guide recommendation. For example, a class-wide intervention might incorporate targeted practices for a subpopulation of students. Although the class-wide findings will be reviewed and reported, the findings for the subpopulation of interest might be considered more relevant for the purpose of synthesis. If a recommendation or intervention report is relevant to a particular subpopulation, such as students of color, students from families with low incomes, first-generation college students, English learners, or students with disabilities, the WWC will synthesize findings for that subpopulation. For some studies, however, it will not be possible to disaggregate the intervention effects for the subpopulations of interest, so the full-sample estimates will be included in the synthesis. Depending on the nature of the intervention or practice guide recommendations, the syntheses prepared under this protocol may require that study samples include a minimum percentage (i.e., 25% or 50%) of students who identify as any of the following: a race or ethnicity other than White, being from families with low incomes, potential first-generation college students, English learners, or students with disabilities.

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APPENDIX A. PRIORITIZING RESEARCH FOR REVIEW AND SYNTHESIS

This appendix describes the processes for prioritizing studies for WWC review, and for selecting interventions for systematic reviews to inform “what works” in improving college and career access and readiness. The WWC prioritizes systematic reviews of evidence that are most likely to be relevant and useful to educators and other decision makers. The WWC also prioritizes for review studies that have not already been reviewed by the WWC.

To select studies and interventions for WWC review, the WWC uses the five-step process outlined below. Studies are identified in Steps 1 and 2, scored in Step 3, and reviewed in Step 4 on a rolling basis. The WWC then identifies interventions for systematic reviews and disseminates the findings in Step 5.

Step 1: Identify studies for possible WWC review. The WWC identifies studies on college or career access and readiness interventions. This step is intended to identify studies that are relevant and useful to educators or other decision makers through three literature search processes:

- Search ERIC using key terms for college or career access and readiness research not yet reviewed by the WWC.
 - The review team will search ERIC using specific key terms to identify recent research on college or career readiness interventions.
 - The WWC will use ERIC thesaurus terms and additional key search terms related to impact, study design, outcomes, and population and disability terms (if needed) to search key ERIC fields, including the title, abstract, and descriptors. Appendix B provides examples of the search terms that this review may use to focus the literature search. The ERIC database searches abstracts but does not search the full text of studies. Because abstracts are less likely to include the search terms than the full text, the WWC will identify studies that have terms from one or more of the categories in Appendix B, Table B.1 (such as impact and study design terms) to ensure that the search captures all relevant studies. To ensure the search focuses on college or career readiness research, the WWC will require the study abstract to contain at least one of the terms from the outcomes or population categories listed in Table B.1. To address a high volume of identified research, the review may prioritize screening of studies that include terms from more than one of the categories listed in Table B.1.
- Search ERIC and other key databases for research on specific interventions, such as those identified by researcher and practitioner experts in college access.
 - After identifying interventions for improving college or career access and readiness, the review team will conduct an intervention name search in ERIC and other databases listed in Appendix C. The team may also search additional websites that might be relevant to a particular intervention.
 - For some interventions, the literature search may result in many studies unrelated to the intervention. For example, this often occurs when the intervention name includes commonly used terms. These searches may be limited by specific keywords listed in Appendix B.
- Search for lists of studies funded by a range of ED grants or identified by ED-supported technical assistance providers.
 - The team will consider ED-funded research on college or career access and readiness interventions as well as interventions identified for systematic review in collaboration with members of the panel.

- ED grants include those from the National Center for Education Research and the National Center for Special Education Research. Priority will go to Effectiveness, Efficacy, Replication, and Scale-Up grants.
- Additionally, the team will screen studies from other ED grants that have provided technical assistance for grantees to design evaluations to meet WWC standards, such as the Investing in Innovation program (i3), the Education Innovation and Research program (EIR), and the Supporting Effective Educator Development program (SEED).
- Finally, the review team will aim to identify federally funded education research from outside of ED, such as from the National Institutes of Health and the National Science Foundation.

Step 2: Narrow the list of studies for possible WWC review. The review team screens studies on the basis of eligibility criteria under the [Study Review Protocol](#), and whether the studies represent relevant research on the relevant interventions, populations, and outcomes described above. Initial screening focuses on the abstracts of studies, and full text screening occurs if the abstract contains insufficient information to determine the eligibility and relevance of the study.

Step 3: Prioritize studies for initial WWC review. As eligible and relevant studies are identified in Step 2, the WWC will assign a prioritization rating to each study on a rolling basis. The rating is designed to help prioritize studies for WWC review for an initial practice guide and to identify eligible and relevant research that is of high quality and interest to a wide range of WWC stakeholders for subsequent publications.

- **High priority** will go to eligible and relevant studies on college access or readiness.
- **Low priority** will go to eligible and relevant studies on career readiness.

Step 4: Conduct WWC study reviews. The WWC will review the studies ranked a high priority on an ongoing basis using the [Study Review Protocol](#).

Step 5: Disseminate findings and identify topics for intervention reports and other systematic review products. The WWC will disseminate its findings and conduct systematic reviews of evidence through one or more of the following:

- **Practice guides.** This protocol will guide the development of two Practice Guides.
 - The first Practice Guide will focus on college access and readiness interventions for students in grades 6-12.
 - The second Practice Guide *may* focus on career readiness interventions for students in grades 6-12.
- **Intervention reports.** The WWC will monitor potential interventions for which to conduct systematic reviews:
 - In general, if only one study of an intervention meets WWC standards, or if the pooled sample size across all studies that meet WWC standards is fewer than 350 individuals for group design and regression discontinuity design studies or 20 individuals for single-case design studies, then the WWC will review those studies but will not prepare an intervention report.
 - When at least two studies of the same intervention meet WWC standards (version 2.1 or higher) and both are not already included in an existing WWC intervention report, the WWC will identify the intervention as a candidate for an intervention report. Once it has identified an intervention, the WWC may conduct a literature search to identify all research in ERIC and other databases specified in this protocol on the intervention (if one was not already

conducted in **Step 1**). The WWC will then calculate a prioritization score for the intervention, which expands on the prioritization rating described in **Step 3** and is a sum of study-level prioritization scores that are based on a number of factors (see Table A.1). The intervention prioritization score will also include any studies previously reviewed by the WWC that meet WWC standards and exclude any studies that do not meet WWC standards or that are already included in an intervention report.

- IES reviews the prioritization scores and approves the production of intervention reports on a rolling basis.
- When IES approves an intervention report, the WWC will review all eligible studies of the intervention not already reviewed by the WWC. The WWC will also use the Study Review Protocol to update reviews of any studies of the intervention previously reviewed under a different protocol. The WWC may also review additional supplementary findings, including findings for groups of students outlined in this protocol (such as students of color, students from families with low incomes, first generation college students, English learners, or students with disabilities).

Table A.1. Study characteristics used to determine prioritization score for each study

Points	Study characteristic	Justification
+2	The study is a randomized controlled trial, regression discontinuity design, or single-case design and is therefore eligible to receive the highest study rating.	Stronger research designs provide more credible evidence and are more likely to meet standards. Quasi-experimental design studies are eligible for review but will not receive these points.
+1	The study relies on data from multiple sites and the analytic sample for the study includes at least 350 individuals for group design and regression discontinuity design studies or 20 individuals for single-case design studies.	These studies provide evidence that is more likely to apply to different settings or populations of teachers or students.
+1	The study was funded by ED.	Research produced with support from ED is likely to be of great interest to a wide range of stakeholders.
+1	The study is already in ERIC with full text or with a direct link to the text in a journal or another publicly available source.	Research in ERIC is more accessible to educators and other decision makers.
+1	The intervention is widely used according to context experts or practitioner surveys.	Evidence on interventions in wide use is likely to be of interest to educators and other decision makers. For example, the RAND American Educator Panels are one source for this information.
+1	The WWC has not released an intervention report on the same intervention in the study.	The WWC prioritizes research that could contribute to new systematic reviews over research that might be included in an update to an existing systematic review.
+1	The WWC has previously reviewed at most one study of the same intervention that met WWC standards.	The WWC prioritizes reviewing studies of many different interventions. If an intervention is selected for systematic review in Step 5 , the WWC will review all research on the intervention.

APPENDIX B. SEARCH TERMS USED IN LITERATURE SEARCH

As described in Appendix A, the college or career readiness review will use four literature search processes to identify research that may be of interest to practitioners and decision makers. This appendix describes example search terms for the literature searches.

Table B.1. Example search terms for the college or career readiness review

Category	Search terms
Impact	achiev*, affect*, benefit*, decreas*, effect*, efficac*, evaluat*, gain, growth, impact*, improv*, increas*, progress, reduc*, success*
Study design	ABAB, alternating treatment*, assess*, assign*, baseline, causal, changing criteri*, comparison group*, comparison condition*, control*, control group*, control condition*, counterfactual, crossover design*, cross-over design*, difference in differences, empirical, evaluation, experiment*, intervention*, intervention condition*, matched, meta analy*, metaanaly*, mixed method, mixed-method, multi element, multielement, multiple baseline, multiple probe*, post test*, posttest*, post-test*, pre test*, pretest*, pre-test*, propensity score*, quasi experiment*, quasi experimental, quasiexperimental, quasi-experiment*, QED, random*, regression discontinuity, reversal design*, simultaneous treatment*, single case, single subject, treatment revers*, treatment*, treatment withdrawal*
Outcomes	academic*, acceleration, admission, apprenticeship, aspiration, attendance, certificate, citizenship, community involvement, completion, credential, credit, collaborat*, communication, critical think*, degree, diploma, determination, develop, earn*, education, educational attainment, educational change, emotional, emotional learning, employ*, enroll*, environment, GED, identity, knowledge, matriculate, milestone, persever*, persistence, problem solving, requir*, resilience, responsibility, skill*, social, social learning, student*, time to degree, transition, wellbeing
Population	access, application, apply, attain*, career, career academ*, career tech, career ed, career educat*, college, curricul*, CTE, early college, employment, enroll*, higher education, high school, opport,unit*, participat*, post secondary, postsecondary, prepar*, program*, readiness, ready, remedia*, school-to-work, student*, technical, transition*, vocation*, workforce, work-based

The asterisk (*) is a Boolean operator and allows the truncation of the term so that the search returns any word that begins with the specified letters.

APPENDIX C. DATABASES USED IN LITERATURE SEARCH

As described in Appendix A, the WWC will search ERIC and the following electronic databases and websites for research on college or career readiness interventions. The WWC may also search additional websites that might be relevant to particular interventions.

Table C.1. Databases and websites for the college or career readiness review

Category	Websites
Electronic databases	EBSCO databases - (Academic Search Complete, E-Journals, EconLit with Full Text , Education Source, ERIC, APA PsycInfo, Sociology Source Ultimate), UW-Madison's WISCAPE, Clarivate Web of Science (SOC), Clarivate ProQuest Dissertations & Theses, Sage Journals, Elsevier Scopus
Websites of federal agencies	Congressional Research Service (CRS), Government Accountability Office (GAO), Institute of Education Sciences (IES), National Center for Education Research (NCER), National Institute of Child Health and Human Development (NICHD), National Science Foundation (NSF), U.S. Department of Education, U.S. Department of Health & Human Services, U.S. Department of Labor, Trade Adjustment Assistance Community College and Career Training Grant Program (TAACCCT), U.S. Department of Labor, Workforce Innovation Fund (WIF)
Websites of professional associations	American Association of Community Colleges (AACC), American Association of School Administrators (AASA), American Educational Research Association (AERA), American Evaluation Association (AEA), American Federation of Teachers (AFT), American Math Association of Two Year Colleges (AMATC), American Technical Education Association (ATEA), Association for Career and Technical Education, Association for Public Policy Analysis and Management (APPAM), Association for Supervision and Curriculum Development (ASCD), National Academic Advising Association (NACADA), National Association for Developmental Education, National Association of Secondary School Principals, National Association of State Boards of Education (NASBE), National Association of State Workforce Agencies (NASWA), National Association of Workforce Boards (NAWB), National Education Association (NEA), National Governors Association, The School Superintendent Association, Society for Research on Educational Effectiveness (SREE)

Category	Websites
Websites of universities and other research organizations	<p>Abt Associates, Advance CTE, Alliance for Excellent Education, American Enterprise Institute, American Institutes for Research (AIR), Annie E. Casey Foundation, Aspen Institute, Best Evidence Encyclopedia, Better High Schools (re: Early Assessment), The Brookings Institution, California Center for Regional Leadership (CCRL), Carnegie Corporation of New York, Center for Data-Driven Reform in Education (CDDRE) at Johns Hopkins University, Center for Law and Social Policy (CLASP), Center for Research on Education, Diversity and Excellence (CREDE), Center for Research in Educational Policy (CREP), Center for Teaching, Vanderbilt University, Center for the Study of Higher Education and its related journal—Higher Ed in Review, Center for the Study of Higher Education at Berkeley (CSHE), Center on Education Policy, Center on Instruction, Charles Dana Center at University of Texas-Austin, City University of New York (Accelerated Study in Associate Programs), Cochrane Database of Systematic Reviews, Community College Research Center (CCRC) at Teachers College, Columbia University, Consortium for Policy Research in Education (CPRE), Cornell Higher Education Research Institute working papers, Council for Adult and Experiential Learning (CAEL), Council for the Study of Community Colleges (CSCC), Developmental Education Initiative (DEI), ECMC Foundation, Education Commission of the States, Edutopia, Gates Foundation, Harvard Graduate School of Education, Heritage Foundation, Hoover Institution, ICF International, IMPAQ International, Independent research cited from ACT, ETS, Noel-Livitz or testing companies for Multiple Measures or Early Assessment, Indiana Next Generation Manufacturing Competitiveness Center (N-MaC; Purdue University), Institute for Higher Education Leadership and Policy (news blasts), Iowa Reading Research Center, Jobs for the Future (JFF), John. J. Heldrich Center for Workforce Development (Rutgers University), Joyce Foundation, JP Morgan, Kresge Foundation, Laura and John Arnold Foundation, Mathematica (formerly known as Mathematica Policy Research), MDRC, Metacognition and Memory Lab, Columbia University, National Bureau of Economic Research (NBER), National Center for Career and Technical Education, Southern Regional Education Board, National Center for Education Statistics, National Center for Postsecondary Improvement, National Center for Postsecondary Research, National Center for Public Policy and Higher Education, National College Transition Network, Oklahoma State University (OSU) Institute of Technology, Pacific Resources for Education and Learning (PREL), Policy Study Associates, Public Policy Research Institute at Texas A&M University, RAND, Regional Educational Laboratories, RP Group, Social Policy Research Associates, Southwest Educational Development Laboratory (SEDL), SRI International, Stanford Center for Education Policy Analysis (CEPA), Thomas B. Fordham Institute, U.S. Chamber of Commerce Foundation (USCCF), The University of California—Los Angeles (UCLA), University of Illinois School of Labor and Employment Relations, University of Texas-Austin, University of Wisconsin Center on for Education Research (WCER), Urban Institute, Virginia Tech Office of Economic Development, WestEd, Westat</p>