Topic Area Focus

What Works Clearinghouse (WWC) reviews in this topic area focus on dropout prevention interventions designed for use in secondary school (middle school, junior high school, and high school) or community-based settings to help students stay in school, progress in school, and/or complete school.

Systematic reviews of evidence in this topic area address the following questions:

- Which dropout prevention programs are effective in keeping students in school or getting them to return to school?
- Which dropout prevention programs are effective in helping youth progress in school?
- Which dropout prevention programs are effective in helping youth complete high school by earning a diploma or a GED certificate?

Key Definitions

**Dropout prevention programs.** Dropout prevention programs are interventions designed to keep students in school and ultimately improve their likelihood of completing high school. These interventions can include services and activities such as incentives, counseling, monitoring, school restructuring, curriculum design, literacy support, or community-based services to mitigate factors impeding progress in school. They can operate in a public or private school setting, postsecondary institutions, or in a community facility such as a youth center or community-based organization.

The interventions can target middle school students, junior high school students, high school students, or youth who have dropped out of school. For middle school students, program goals might be to keep students in middle school or encourage them to complete middle school. For high school students, program goals might be to keep students in high school or encourage them to complete high school either by receiving a diploma or GED certificate. For dropouts, program goals might be to get students to return to school and work toward a high school diploma or GED certificate.

**Staying in school, progressing in school, or completing school outcomes.** The success of a dropout prevention intervention will be examined by comparing program participants (an intervention group) and a comparison group to assess whether the intervention group was more
likely to stay in school, progress in school, or complete school. Staying in school will be measured by school enrollment. Progressing in school will be measured by credit accumulation, grade promotion, or highest grade completed. Completing school will be measured by whether the participant has earned a high school diploma or GED certificate.

ELIGIBILITY CRITERIA AND EVIDENCE STANDARDS

Populations to be Included

The Dropout Prevention topic area will review studies of interventions for students who attend middle school, junior high school, or high school, or who are at the age when they could be attending these schools but are not (that is, they have dropped out of school). In addition, programs must serve students considered “at risk” of dropout. The research literature has identified risk factors for dropping out, including being behind in grade level, having dropped out in the past, being a member of a racial or ethnic minority, being an English learner, being a teen parent, growing up in a poverty household, having low grades or poor attendance, and receiving special education services.

Types of Interventions to be Included

The interventions considered for inclusion are determined after a search of the publicly available literature by the Dropout Prevention review team, as well as a review of nominations submitted to the WWC. The intervention must have a primary focus on dropout prevention or high school completion. Programs focused on improving middle or high schools generally, such as school turnaround programs, are not considered in this topic area. Interventions whose primary purpose is to affect behaviors that are correlated with staying in school or completing school—such as violent behavior, drug use, or teen pregnancy—will not be included in the review. The intervention must operate in the United States, its territories, or tribal entities.

Three broad types of interventions to be included in reviews are:

1. **Practices.** The review will include both targeted and general practices. A targeted practice is a direct approach to prevention that program staff implement with students; for example, through counseling and case management. A general practice is an approach that promotes; for example, the development of a school climate that encourages staying in school. Both targeted and general practices must be clearly described and commonly understood in the field and literature.

2. **Policies.** The review may include policies, which are set by federal, state, or local governments with an explicit goal of reducing dropping out or encouraging high school completion. Examples of dropout prevention policies include:

   - Driver license suspension;
   - Welfare payment reductions; or
   - Financial incentives.
3. **Programs.** A program is a service delivery model with clear guidelines for implementation. Examples of dropout prevention programs include:

- Alternative middle schools and high schools;
- Schools within schools (including freshman and career academies);
- After-school and enrichment;
- Peer tutoring and mentoring;
- College preparation;
- Community service and service learning;
- GED preparation.

All reviewed practices, programs, and policies must be replicable (i.e., can be implemented by those other than the developers of the approach). The following characteristics of an intervention must be documented to reliably reproduce the intervention with different participants, in other settings, and at other times:

- Intervention description: services provided and activities that are part of the intervention;
- Intervention duration and intensity;
- Description of individuals delivering or administering the intervention;
- Targeted population; and
- Institutional setting (setting in which the intervention is implemented).

These final two criteria reflect the fact that dropout prevention programs can target a range of students and be implemented in a range of institutional settings. Information about the types of students and institutions is needed to replicate the program appropriately.

**Types of Research Studies to be Included**

To be included in the review, a study must meet several criteria for relevance:

- **Topic relevance.** The study must be focused on the intervention’s effects on whether participants stay in school, progress in school, or complete school.² It cannot be a correlational study examining relationships between school attendance or dropout behavior and other characteristics.

- **Time frame relevance.** The study has to have been published in 1988 or later. This time frame was established in order to define a realistic scope of work for the review. Rigorous evaluations of interventions implemented in this time frame test versions of interventions that are most likely to be available today and that were tested under conditions more likely to be similar to those existing today.

- **Sample relevance.** The study sample must meet the requirements described in the “Populations to be Included” section above.

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² A main task for the WWC is to answer the question of intervention effectiveness. To this end, the WWC may use the data provided in studies differently than as presented by the study author.
• **Language relevance.** The study must be available in English to be included in the review.

• **Study location relevance.** The study must include participants in a public or private school setting, postsecondary institutions, or in a community facility such as a youth center or community-based organization in the United States, its territories, or tribal entities.

• **Study design relevance.** The study must be empirical, using quantitative methods and inferential statistical analysis, and must take the form a randomized controlled trial (RCT) or use a quasi-experimental design (QED), a regression discontinuity design (RD), or a single-case design (SCD).

• **Outcome relevance.** The study must focus on participant outcomes related to staying in school, progressing in school, or completing school (described in the next section “Outcome Measures”).

### Outcome Measures

**Types of Outcomes to be Included.** The primary outcome domains for the Dropout Prevention topic area are staying in school, progressing in school, and completing school. Additional information about each of these domains is described below:

- **Staying in school.** Includes outcomes that measure whether the student has dropped out of school and the number of days the student was enrolled in school.

- **Progressing in school.** Includes outcomes that assess the number of high school course credits the student has earned, whether the student was promoted to the next grade, and the highest grade the student has completed.

- **Completing school.** Includes outcomes that measure whether the student has earned a high school diploma or GED or whether he or she has graduated from a district high school.

For measures to be considered appropriate for this review, they need to be defined in the same way for all study participants (including dropouts). They should not be examined only for students who have remained in school. On this basis, the review does not examine academic performance (such as grades and standardized test scores) as outcomes, because they are not defined for students who have dropped out of school. In addition, this review does not examine outcomes associated with dropping out, such as delinquency, drug use, or teenage pregnancy.

**Overalignment of outcome measures.** A study’s rating will be based only on those measures that are not overaligned. Overalignment occurs when outcome measures are more closely aligned to one of the research groups (intervention or comparison) than the other and could bias a study’s results. For example, the number of days of school attended could be interpreted to be overaligned in a study that assigned students attending school to an online program that does not count days of attendance. In this example, the comparison group will have higher attendance, but it is an artifact of the intervention design.
Validity of outcome measures. Measures of the outcome of interest should demonstrate adequate face validity. Acceptable outcome measures include administrative records of school enrollment, credit accumulation, grade promotion, and grade completion. Participant surveys that record whether a participant has earned a high school diploma or GED certificate are also acceptable. The lead methodologist will have discretion regarding the validity of outcome measures.

The interval for measuring post-intervention effects. The minimum length of the follow-up period is 6 months after program entry. A program that examines whether students have stayed in school using data collected less than 6 months after entry (a follow-up period of less than 6 months from baseline) will not be evaluated against standards or incorporated in reports. The length of the intervention itself is not a factor.

Statistical and Analytic Issues

Attrition in RCTs

The WWC considers both the overall sample attrition rate and the difference in sample attrition between the intervention and comparison groups, as both contribute to the potential bias of the estimated effect of an intervention. The WWC has established conservative and liberal standards for acceptable levels of attrition. The conservative standards are applied in cases where the lead methodologist has reason to believe that much of the attrition can be attributed to the intervention reviewed. The liberal standards are applied in cases where the lead methodologist has reason to believe that little of the attrition is endogenous to the intervention reviewed. Attrition rates are based on the number of sample cases used in the analysis sample with measured, as opposed to imputed, values of the outcome measures.

The Dropout Prevention topic area uses the conservative standard. This reflects the presumption that attrition in studies of dropout prevention interventions may be linked with dropping out itself. Students who drop out may be more difficult to track or may be less responsive in data collection efforts, which means high rates of missing data may yield a skewed measure of the dropout rate between intervention and comparison groups. Table 1 and Figure 1 present the maximum difference in the attrition rate for the intervention and comparison group that is acceptable for a given level of overall sample attrition. The empirical basis for these thresholds is described in the WWC Technical Paper on Assessing Attrition Bias, which is available on the WWC website.

Studies based on cluster random assignment designs must meet attrition standards for both the study sample units that were assigned to intervention or comparison group status (e.g., schools or districts) and the study sample units for analysis (e.g., typically, students). In applying the attrition standards to the subcluster level (e.g., students), the denominator for the attrition calculation includes only sample members in the clusters that remained in the study sample.

RCTs with combinations of overall and differential attrition rates that exceed the applicable threshold, based on the applicable standard, must demonstrate baseline equivalence of the analysis sample, or, if nonequivalence falls within the allowable range, statistically control for that nonequivalence, in order to receive the rating of MEETS WWC GROUP DESIGN STANDARDS WITH RESERVATIONS. See the “Baseline Equivalence” section for more details.
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Baseline Equivalence

For the Dropout Prevention topic area, RCTs with high attrition or QED studies must demonstrate equivalence of the intervention and comparison groups before the intervention. The onus for demonstrating equivalence in these studies rests with the authors. Sufficient reporting of pre-intervention data should be included in the study report (or obtained from the study authors) to allow the review team to draw conclusions about the equivalence of the intervention and comparison groups.

Important pre-intervention characteristics can include measures that are highly related to the outcome measure(s). Other important pre-intervention characteristics can include outcome(s) measured prior to the intervention. However, when the unit of analysis is the student, many outcome(s) of interest for this review, such as dropout status or high school graduation status, are not defined or are not informative when measured prior to the intervention.

Studies for which the unit of analysis is the student must show that the groups are equivalent in terms of race/ethnicity and sex. Additionally, they must demonstrate equivalence of the research groups in at least one measure of degree of disadvantage including:

- **Free and reduced-price lunch status**, poverty status, family income
- Being from a single-parent family
- Parent’s education
- Immigrant or **English learner (EL) status**
• **Special education or disability status**
• **Teen parent status**

Finally, these studies must demonstrate equivalence of the research groups in at least one measure of academic performance. These measures can include:

• **Standardized test scores**
  • Whether behind in grade level (could be measured by age among students in the same grade)
  • Frequency of behavior or discipline incidents in school
  • Rate of school attendance
  • **GPA**

Because these measures of academic performance are not defined or typically not available for students who have dropped out of school, studies of interventions for students who have dropped out may demonstrate equivalence based on the proportion of students in each research group who are dropouts.

Studies for which the unit of assignment is the school must show that the groups are equivalent in terms of outcome(s) measured prior to the intervention. Additionally, they must demonstrate equivalence in race/ethnicity and at least one measure of degree of disadvantage or academic performance denoted above in **bold** text.

Groups are considered equivalent if the reported differences in pre-intervention data are less than or equal to one-quarter of the pooled standard deviation in the sample, regardless of statistical significance. However, if differences are greater than 0.05 standard deviations and less than or equal to one-quarter of the pooled standard deviation in the sample, the analysis must control for the pre-intervention outcome measure(s) on which the groups differ. If pre-intervention differences are greater than 0.25 for any of the outcomes in the same domain, the study does not meet standards. In addition, if there is evidence that comparison groups were drawn from very different settings (such as rural vs. urban), the lead methodologist may decide that the environments are too dissimilar to provide an adequate comparison.

**Other Statistical and Analytical Issues**

For studies that do not report estimates adjusted for pre-intervention differences, the effect-size estimates will be adjusted for differences in pre-intervention characteristics at baseline (if available) using a difference-in-differences method (see Appendix F of the *Handbook*). Beyond the pre-intervention characteristics required by the equivalence standard, statistical adjustment can be made for other measures in the analysis as well, although they are not required.
For the WWC review, the preference is to report on and calculate effect sizes for post-intervention means adjusted for the pre-intervention measure. If a study reports both unadjusted and adjusted post-intervention means, the WWC review will report the adjusted means and unadjusted standard deviations. If effect sizes or the information required to calculate them are not reported, then the missing information will be requested from the author(s).

The statistical significance of group differences will be recalculated if (a) the study authors did not calculate statistical significance, (b) the study authors did not account for clustering when there is a mismatch between the unit of assignment and unit of analysis, or (c) the study authors did not account for multiple comparisons when appropriate. Otherwise, the review team will accept the $p$-values provided in the study.

When the unit of analysis in the study is not the same as the unit of assignment, the effect sizes computed by the WWC will incorporate a statistical adjustment for clustering. The default intraclass correlation used for the Dropout Prevention review is 0.20. For an explanation about the clustering correction, see Appendix G of the Handbook.

When multiple comparisons are made (that is, multiple outcome measures are assessed within an outcome domain in one study) and not accounted for by the authors, the WWC accounts for this multiplicity by adjusting the reported statistical significance of the effect using the Benjamini-Hochberg correction. See Appendix G of the Handbook for the formulas the WWC uses to adjust for multiple comparisons.

The Dropout Prevention topic area is unlikely to review regression discontinuity (RD) or single-case design (SCD) studies. If, however, one is identified, the review will follow the pilot standards as described in the WWC Procedures and Standards Handbook. Decisions about parameters unique to RD or SCD studies will be determined by the review team in collaboration with the content expert at that point; the protocol will then be updated.
LITERATURE SEARCH METHODOLOGY

The WWC literature search is comprehensive and systematic. Detailed protocols guide the entire literature search process. At the beginning of the process, relevant journals, organizations, and experts are identified. The WWC searches core sources and additional topic-specific sources identified by the content expert. The process is fully documented.

In 2014, the WWC staff members conducted a search of the literature related to the interventions of interest. For this search, WWC staff used a comprehensive list of search terms and strategies designed to identify literature pertaining to a broad range of programs and practices in the Dropout Prevention topic area. WWC staff used an extensive list of keywords to search electronic databases, conducted targeted searches of specific programs identified through the keyword search, and searched the web sites of organizations that conduct research on dropout prevention programs.

1. Keyword Search Parameters and Databases

The primary objective of the keyword search was to identify interventions with potentially eligible studies and assess the number of studies on each intervention, so that interventions could be prioritized for review. The WWC team identified keywords to capture the breadth of literature that falls within the scope of the protocol. Targeted outcomes and study design terms were included to focus the search on identifying literature that will support an intervention report.

Most of the literature search used the following search terms:

• **Targeted outcomes.** These potential outcomes were listed with OR between each word.

  | Completing school | Dropout recovery | Graduation |
  | Continued enrollment | Dropout reduction | On track to graduate |
  | Credit accumulation | Earned GED | Progressing in school |
  | Credit recovery | Earned high school diploma | Reduce dropout |
  | Decrease dropout | Highest grade completed | School persistence |
  | Dropout prevention | Increase high school completion | School retention |
  | Dropout program | Increase high school | School withdrawal |

3 Conference proceedings and master’s theses are not included in literature searches.
• **Target ages and programs.** These target age groups and programs were listed with OR between each word.

  Grade 6  Secondary school  
  Grade 7  Seventh grade  
  Grade 8  Sixth grade  
  Grade 9  Tenth grade  
  Grade 10  Twelfth grade  
  Grade 11  
  Grade 12  
  Eighth grade  
  Eleventh grade  
  Junior high school  
  Middle school  
  Ninth grade

• **Interventions.** These target intervention activities were listed with OR between each word.

  Intervention*  Train*  
  Curricul*  Technique*  
  Program*  
  Strateg*  
  Approach*

• **Study design.** These target study design terms were listed with OR between each word.

  ABAB design*  QED  
  Alternating treatment*  Quasi-experimental design*  
  Causal  Random*  
  Comparison group*  Randomized controlled* trial*  
  Control group*  RCT  
  Effectiveness  Regression discontinuity design*  
  Experiment*  Simultaneous treatment*  
  Impact  Single case design*  
  Matched group*  Single subject design*  
  Meta-analysis  
  Meta analysis

Each of these four groups of keyword terms was joined by AND. These terms were used to search the electronic databases listed below.
Databases

WWC staff searched electronic databases using the search terms listed above. Staff used OVID to search Psychinfo; EBSCO to search Academic Search Premier, EconLit, Education Research Complete, ERIC, Socindex with full-text, and EJS E-journals; ProQuest to search Ph.D. dissertations; and WorldCat to search the holdings of 10,000 libraries.

a. **Academic Search Premier.** This multi-disciplinary database provides full text for more than 4,500 journals, including full text for more than 3,700 peer-reviewed titles. PDF backfiles to 1975 or further are available for well over 100 journals, and searchable cited references are provided for more than 1,000 titles.

b. **EconLit.** EconLit, the American Economic Association’s electronic database, is the world’s foremost source of references to economic literature. The database contains more than 785,000 records from 1969–present. EconLit covers virtually every area related to economics.

c. **Education Research Complete.** Education Research Complete is the definitive online resource for education research. Topics covered include all levels of education from early childhood to higher education, and all educational specialties, such as multilingual education, health education, and testing. Education Research Complete provides indexing and abstracts for more than 1,840 journals, as well as full text for more than 950 journals, and includes full text for more than 81 books and monographs and for numerous education-related conference papers.

d. **EJS E-Journals.** E-Journals from EBSCO host® provides article-level access for thousands of e-journals available through EBSCO’s Electronic Journal Service (EJS).

e. **ERIC.** Funded by the U.S. Department of Education (ED), ERIC is a nationwide information network that acquires catalogs, summarizes, and provides access to education information from all sources. All ED publications are included in its inventory.

f. **ProQuest Dissertations.** This database provides access to dissertations; the WWC searches are limited to Ph.D. dissertations.

g. **PsycINFO.** PsycINFO contains more than 1.8 million citations and summaries of journal articles, book chapters, books, dissertations and technical reports, all in the field of psychology. Journal coverage, which dates back to the 1800s, includes international material selected from more than 1,700 periodicals in over 30 languages. More than 60,000 records are added each year.

h. **Sage Journals online.** This database provides access to full-text articles published in over 500 SAGE journals. Articles published in 1999 or later are available as full-text reports. It includes all of the journals published by the American Educational Research Association (AERA), as well as many leading titles in psychology, early childhood, and survey methodology.
i. **Scopus.** The world’s largest abstract and citation database of peer-reviewed literature and quality web sources in the scientific, technical, medical, and social sciences. It covers 19,000+ titles, articles in press, conference proceedings, and e-books. Subjects covered in the database include disability, health, nutrition, statistics, and survey. Scopus provides tools to track, analyze, and visualize research and conduct citation analysis.

j. **SocINDEX with Full Text.** SocINDEX with Full Text is the world’s most comprehensive and highest quality sociology research database. The database features more than 1,986,000 records with subject headings from a 19,600+ term sociological thesaurus designed by subject experts and expert lexicographers. SocINDEX with Full Text contains full text for 708 journals dating back to 1908. This database also includes full text for more than 780 books and monographs and full text for 9,333 conference papers.

k. **WorldCat.** WorldCat is the world’s largest network of library content and services, and allows users to simultaneously search the catalogs of over 10,000 libraries, containing over 1.2 billion books, dissertations, articles, CDs, and other media.

In addition, WWC staff searched the Campbell Collaboration library using the target terms (for example, dropout prevention) from 1988 and later.

l. **Campbell Collaboration.** C2-SPECTR (Social, Psychological, Educational, and Criminological Trials Register) is a registry of over 10,000 randomized and possibly randomized trials in education, social work and welfare, and criminal justice.

Finally, WWC staff used a custom Google Scholar search to search “grey” literature (papers and reports not published in peer-reviewed journals) across URLs. Search terms included dropout prevention AND effectiveness; dropout prevention AND random; and dropout prevention AND quasi-experimental design.

In addition to the database and Google searches, the review team identified other relevant studies through the following approaches:

a. Public submissions:
   1) Materials submitted via the WWC website
   2) Materials submitted directly to WWC staff

b. Solicitations made to key researchers by the review team

c. Checking websites summarizing research on programs for youth, prior reviews, and research syntheses (i.e., using the reference lists of prior reviews and research syntheses to make sure key studies have not been omitted)

d. Searches of the websites of all the developers of relevant interventions or practices for any research or implementation reports
e. Searches of the websites of over 50 think tanks, research centers, and associations that conduct research in this topic area (see “Research Organizations” below)

References resulting from these searches are screened and sorted by intervention.

2. Intervention Search

Once a keyword search has been conducted and interventions prioritized, the next search is designed to identify all effectiveness studies conducted for a specific intervention.

**Search strategy:**

- Conduct database search on the intervention name (e.g., Talent Search).\(^4\)
- For practices, scan references to identify possible synonyms for the practice name in the literature (e.g., case management). Conduct database searches of these terms.
- Request full text of potentially eligible studies and review the reference lists to cross-check search results. Similarly, review relevant literature reviews.
- Identify seminal researchers associated with the intervention. Conduct full text searches of the researcher name combined with the intervention name (e.g., Institute on Community Integration AND Check & Connect).

All references resulting from these searches will be screened for eligibility.

3. Research Organizations

The websites of the research organizations conducting studies related to dropout prevention will be reviewed to identify studies for this review. Examples of these research organizations include:

- Abt Associates
- Alliance for Excellent Education
- American Education Research Association
- American Enterprise Institute
- American Institutes of Research
- Association of Public Policy Analysis and Management
- Best Evidence Encyclopedia
- Bill & Melinda Gates Foundation
- Brookings Institution
- Campbell Collaboration
- Carnegie Corporation of New York
- Center for Research and Reform in Education
- Center for Research in Educational Policy (CREP)
- Center on Education Policy
- Chapin Hall Center for Children at the University of Chicago

\(^4\) A standard library search consists of searching titles and abstracts in each of the databases described above.
Congressional Research Service (via OpenCRS.org)
Consortium for Policy Research in Education
Council of Chief State School Officers
Government Accountability Office (GAO)
Heritage Foundation
Hoover Institution
Institute of Education Sciences
Institute for Public Policy and Social Research (IPPSR)
Johns Hopkins University School of Education
Learning Disabilities Association of America
Mathematica Policy Research
MDRC
Mid-continent Research for Education and Learning
National Association of State Boards of Education
National Center for Education Research
National Conference of State Legislatures
National Dropout Prevention Network
National Governors’ Association
National Institute on Out-of-School Time at the Wellesley Centers for Women
NBER Working Papers
Policy Study Associates
PolicyArchive
Public Education Network
Public Policy Research Institute at Texas A&M University
RAND
REL Appalachia (contractor: CNA)
REL Central (contractor: Marzano Research Laboratory)
REL Mid-Atlantic (contractor: ICF International)
REL Midwest (contractor: American Institutes for Research [AIR])
REL Northeast and Islands (contractor: Education Development Center, Inc.)
REL Northwest (contractor: Education Northwest)
REL Pacific (contractor: Mid-continent Research for Education and Learning [McREL])
REL Southeast (contractor: Florida State University)
REL Southwest (contractor: REL Southwest at SEDL)
REL West (contractor: WestEd)
Society for Research on Educational Effectiveness
SRI
Thomas B. Fordham Institute
University of Texas-Austin