WWC EVIDENCE REVIEW PROTOCOL FOR K–12 STUDENTS WITH LEARNING DISABILITIES, VERSION 2.1

_____

The What Works Clearinghouse (WWC) review in this topic area focuses on interventions for students with learning disabilities in grades K–12 (generally ages 5 to 18) that are intended to improve academic achievement. Outcome areas include reading, math, writing, science, social studies, and progressing in school. The reviews of evidence in this topic area address the following questions:

- Which interventions intended to provide academic skills instruction for students with learning disabilities improve academic achievement in reading, writing, math, science, or social studies, or promote progressing in school?

- Are some interventions especially effective for certain subgroups of students with learning disabilities; for example, students of different ages, students with particular types of learning disabilities, students of different racial/ethnic groups, or English language learners (ELLs)?

The Individuals with Disabilities Education Act (IDEA) of 2004 defined a specific learning disability as:

> "…a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which disorder may manifest itself in the imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations." (602(30)(A))

States and districts commonly use two methods to diagnose learning disabilities. The first is to diagnose a learning disability when there is a severe discrepancy between intellectual ability and achievement. Second, the IDEA allows a learning disability to be diagnosed if a student does not respond appropriately to a scientific, research-based intervention. Response to Intervention provides for early and intensive interventions for students experiencing difficulty in learning. A learning disability should not be diagnosed if the disorder is determined to result from: a visual, hearing, or motor disability; mental retardation; emotional disturbance; cultural factors; environmental or economic disadvantage; or limited English proficiency.

The actual procedures used to diagnose learning disabilities vary across states and school districts as a result of differences in (1) grade-level achievement standards, (2) the procedures and processes for determining a child's eligibility for special education under the classification of learning disability, and (3) how, and the extent to which, students are diagnosed with other disabilities. To ensure that the results of this review are relevant to the diverse learning disabilities community, this topic area will review studies in which the authors claim that the study participants have an identified learning disability based on federal, state, or school district criteria. To the extent possible, intervention reports will report on how each study identified students with learning disabilities.

ELIGIBILITY CRITERIA AND EVIDENCE STANDARDS

Populations to Be Included

Reviews in this topic area will address interventions designed for children in grades K–12 (generally ages 5 to 18). The students must attend school in the United States or its territories or tribal entities.[1] This topic area requires that a minimum of 50% of the sample be classified by the study authors as students with learning disabilities or that results are presented for a subgroup that is at least 50% students with learning disabilities. In addition, students must speak English or be non-native English speakers who are ELLs. Subpopulations of interest include students of different age groups (elementary, middle, and high school), different types of learning disabilities (such as dyslexia or math), students from different racial/ethnic groups, and ELLs.

Types of Interventions to Be Included

The interventions considered for inclusion will be determined after an exhaustive search of the published and unpublished literature by the topic area team, as well as a review of nominations submitted to the WWC. To be reviewed, interventions for students with learning disabilities or general education interventions commonly used for students with learning disabilities must be replicable; that is, the authors provide sufficient information so that the intervention can be reproduced in various settings, the information must be available through public channels, and the approach can be implemented by others besides the developers of the approach.

Eligible interventions are those in which schools have an important role in delivering an academic achievement program to students with learning disabilities. The studies may be conducted in any school-based setting; for example, special education classrooms, general education classrooms, or special education schools and institutions. Furthermore, the studies to be reviewed may be implemented by any school professional; for example, special education teachers, general education teachers, or teaching assistants. As long as the school is involved, parents also may participate in delivering the intervention. For example, an intervention for students with learning disabilities that combines an innovative school curriculum with parent/child reading at home would be appropriate for review under this topic area; however, parent/child reading at home would not be reviewed as a stand-alone intervention. Interventions administered by clinicians or physicians outside of a school setting will not be included.

Studies of interventions that were implemented with students with learning disabilities and that were reviewed in other WWC topic areas such as Beginning Reading, English Language Learners, or Elementary Math will be re-reviewed in this topic area, provided they meet the sample requirements described above.

The two types of interventions included in reviews conducted under this topic area are curricula and academic practices.

Curricula. A curriculum is a set of activities, materials, and/or guidance for working with students in classrooms. A curriculum has a name; includes a write-up/description; and can be

---

[1] Studies from other English-speaking countries are excluded from this review because the definition of learning disability may vary from country to country, affecting the interpretation of the results.

replicated by others based on written guidance, staff training, and/or technical assistance. We will include curricula developed by researchers if they are obtainable by the public.

Academic practices. An academic practice is a named approach to promoting the academic development of students with learning disabilities. School staff members implement a practice while interacting with students and materials in their classrooms. The named approach must be described and commonly understood in the field. Academic practices could include small group or one-on-one supplemental instruction, as well as guided practice and corrective feedback.

Types of Research Studies to Be Included

To be included in the review, a study must meet the following relevancy criteria:

Topic relevance. The study has to be about the effect of an intervention on academic outcomes for students with learning disabilities. The study must focus on the effectiveness of an intervention, not on individual differences (e.g., correlational studies examining the relationship between individual attributes and performance on a test, or studies focusing on brain functions or structures) or assessment (e.g., properties of an instrument, or approaches to identifying students with learning disabilities).

Time frame relevance. The study has to have been published in 1989 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 the past 20 years 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. To be reviewed, a study must be published research or research that is deemed "final" by the study authors. "In press" studies are acceptable. In general, conference papers or papers that are "under review" will not be reviewed.

Sample relevance. The study has to satisfy several sample-related criteria:

- The intervention must have taken place with students in grades K–12. The outcome(s) may be measured in grades K–12 or later.

- Studies will be included in the reviews if the authors report that the sample population is students who have been diagnosed with learning disabilities (this includes students diagnosed with a learning disability as well as another disability or disabilities). Identification of students with learning disabilities is often made with respect to federal, state, or school district criteria. To the extent that information is provided in the reviewed studies, the intervention reports will describe how students with learning disabilities were identified.

- Studies based entirely on a sample of students with learning disabilities will be included, as will studies for which results are presented for a group (full sample or subgroup) comprised of at least 50% students with learning disabilities.

- If the sample for a given study is an entire classroom, entire grade, or entire school, and there is no mention that the class, grade, or school consists of special education students or students likely to have learning disabilities ("resource room," "reading disabled"), then we assume that the sample contains fewer than 50% students with learning disabilities.

- An author query will be sent in an attempt to determine the learning disability status of the study sample under any of the following conditions:

    o If at least 50% of the sample for a study are identified as reading disabled, but the students are not identified as having a learning disability.

    o If the study documents a discrepancy between ability (IQ) and achievement, but the students are not identified as having a learning disability.

    o If the study documents that students in the sample have failed to respond to a previous intervention, but the students are not identified as having a learning disability.

    o If the study appears to be based on a sample of students from special education classrooms, but the students are not identified as having a learning disability.

- Studies that focus on academic outcomes of students with learning disabilities who are also ELLs will be considered for inclusion in the review for all outcomes measured in English.

- Studies that focus on academic outcomes in other languages will *not* be reviewed (e.g., Spanish reading skills among Spanish readers).

Study design relevance. Only empirical studies that use quantitative methods and inferential statistical analysis and that take the form of a randomized controlled trial (RCT) or use a quasi-experimental design (QED), a regression-discontinuity design (RDD), or a single-case experimental design (SCD) are eligible for this review.

Types of Outcomes to Be Included

Outcomes in this topic area belong to nine domains: alphabetics, reading fluency, reading comprehension, general reading achievement, math, writing, science, social studies, and progressing in school. Academic skills may be measured by standardized achievement tests administered by researchers, standardized tests administered as part of school district or state testing programs, researcher- or teacher-developed materials, or review of school records.

Alphabetics. Outcomes in this domain belong to five constructs:

- *Phonemic awareness.* Phonemic awareness (or phoneme awareness; PA) refers to the understanding that the sounds of spoken language—phonemes—work together to make words, and phonemes can be substituted and rearranged to create different words. Phonemic awareness includes the ability to identify, think about, and work with the individual sounds in spoken words. Phonemic awareness helps children learn how to read and spell by allowing them to combine or blend the separate sounds of a word to say the word (e.g., "/c/ /a/ /t/—cat").

- *Phonological awareness.* Phonological awareness is a more encompassing construct than phoneme/phonemic awareness. Phonological awareness includes PA as well as awareness of larger spoken units, such as syllables and rhyming words. Tasks of phonological awareness might require students to generate words that rhyme, segment sentences into

words, segment polysyllabic words into syllables, or delete syllables from words (what is "cowboy" without "cow"?). Tasks that require students to manipulate spoken units larger than phonemes are simpler for beginners than are tasks requiring phoneme manipulation (Liberman, Shankweiler, Fischer, & Carter, 1974).

- *Letter-word identification.* Letter identification involves knowing the names of the letters of the alphabet. Word identification is the ability to read unknown, isolated words aloud.

- *Print awareness.* Print awareness refers to knowledge or concepts about print, such as (1) print carries a message; (2) there are conventions of print, such as directionality (left to right, top to bottom), differences between letters and words, distinctions between upper- and lowercase, and punctuation; and (3) books have some common characteristics (author, title, front/back).

- *Word attack (phonics).* Phonics refers to (1) the knowledge that there is a predictable relationship between phonemes (the sounds in spoken language) and graphemes (the letters used to represent the sounds in written language), (2) the ability to associate letters and letter combinations with sounds and blend them into syllables and words, and (3) the understanding that this information is used to decode or read words.

Reading fluency. Fluency is the ability to read text accurately, automatically, and with expression, while still extracting meaning from it.

Reading comprehension. Outcomes in this domain belong to two constructs:

- *Vocabulary development.* Vocabulary development refers to knowledge about the meanings, uses, and pronunciation of words, including receptive vocabulary (words understood) and expressive vocabulary (words used).

- *Reading and listening comprehension.* Reading comprehension refers to the understanding of the meaning of a passage and the context in which the words occur. Listening comprehension refers to the ability to understand spoken language.

General reading achievement. Outcomes that fall in the general reading achievement domain combine two or more of the previous domains (alphabetics, reading fluency, and reading comprehension) or provide some other type of summary score, such as a "total reading score" on a standardized reading test.

Mathematics outcomes. Interventions for students with learning disabilities may aim to improve achievement in math.

Writing achievement. Achievement in this area includes, but is not limited to, areas defined by the National Assessment of Educational Progress (NAEP) (http://nces.ed.gov/NationsReportCard/), which measures narrative writing (the production of stories or personal essays), informative writing (communication of information), and persuasive writing (seeking to influence the reader to take action or bring about change). Spelling outcomes are considered part of writing achievement.

Science achievement. Achievement in this area includes, but is not limited to, areas defined by NAEP, which measures knowledge of science facts; the ability to integrate this knowledge into

larger constructs; and the capacity to use the tools, procedures, and reasoning processes of science.

Social studies achievement. Achievement in this area includes, but is not limited to, areas defined by NAEP, which measures knowledge of US history, geography, economics, and civics.

Progressing in school. Interventions for students with learning disabilities may aim to promote progressing in school and reduce the incidence of a student being asked to repeat a grade. Because some districts use alternatives to grade retention—for example, summer school or extra tutoring—an intervention's effect on reducing participation in these services also may be considered.

Other information about or requirements for outcomes include the following:

Over alignment of outcomes. Outcome measures can be over aligned with an intervention if the measure includes some of the same materials that are used in the intervention or the measure is administered to the treatment group as part of the intervention. Outcome measures that are determined to be over aligned with an intervention will not be included in determining the intervention's ratings.

Timing of outcome measurement. Most studies of interventions for students with learning disabilities do not involve an appreciable lag between the end of the intervention and measurement of the outcome. Typical lags can range from days to several weeks. Accordingly, we define one (1) day or more post-intervention as an appropriate time for administering the outcome measure(s). The outcome measurement closest to the end of the intervention will be considered the primary outcome. Later follow-up measurements, when available, will be included in report appendices.

Reliability. The reliability of outcome measures in an RCT, RDD, or QED study (internal consistency, temporal stability/test-retest reliability, and inter-rater reliability) will be assessed using the following standards determined by the WWC: internal consistency, minimum of 0.60; temporal stability/test-retest reliability, minimum of 0.40; and inter-rater reliability, minimum of 0.50 (percent agreement, correlation, Kappa). Each outcome measure must meet at least one of these standards. If the reliability of each outcome measure is not specified in the research article, data from the test or scale's publisher or other sources including an author query may be used to establish the reliability of an outcome measure.

According to WWC standards, SCD studies must demonstrate reliability of outcomes through an inter-observer agreement (IOA). Outcomes that involve written responses need not meet the SCD IOA requirement if the principle investigator (PI) determines that the responses can be scored by a single coder with a high degree of reliability. Examples of outcomes that would not require IOA are written responses to a spelling test or a math test. An example that would require IOA is coding of a written paragraph intended to demonstrate the quality of the student's narrative writing.

Attrition in RCTs and RDDs[2]

Cluster-level attrition. As described in the *WWC Procedures and Standards Handbook, version 2.0,* the WWC is concerned about overall and differential attrition from the intervention and comparison groups for RCTs/RDDs, as both contribute to the potential bias of the estimated effect of an intervention. The attrition bias model developed by the WWC will be used in determining whether a study meets WWC evidence standards (see Appendix A of the *Handbook*).

When the combination of overall and differential attrition rates causes an RCT/RDD study to fall in the green area on the diagram shown below, the attrition will be considered "low" and the level of bias acceptable. For RCTs/RDDs with combinations of overall and differential attrition rates in the red area, the attrition will be considered "high" with the potential for high levels of bias, and therefore must demonstrate equivalence.

Subcluster attrition. Many RCTs/RDDs reviewed by the WWC are based on designs with multiple levels. A common example is students clustered within classrooms or schools. A study must pass the existing attrition standard at two levels. As described above, the study must pass at the cluster level. Second, the study must pass at the subcluster level, using the same attrition boundary described above, *with attrition based only on the clusters still in the sample.* That is, the denominator for the subcluster attrition calculation includes only sample members at schools or classrooms that remain in the study.

---
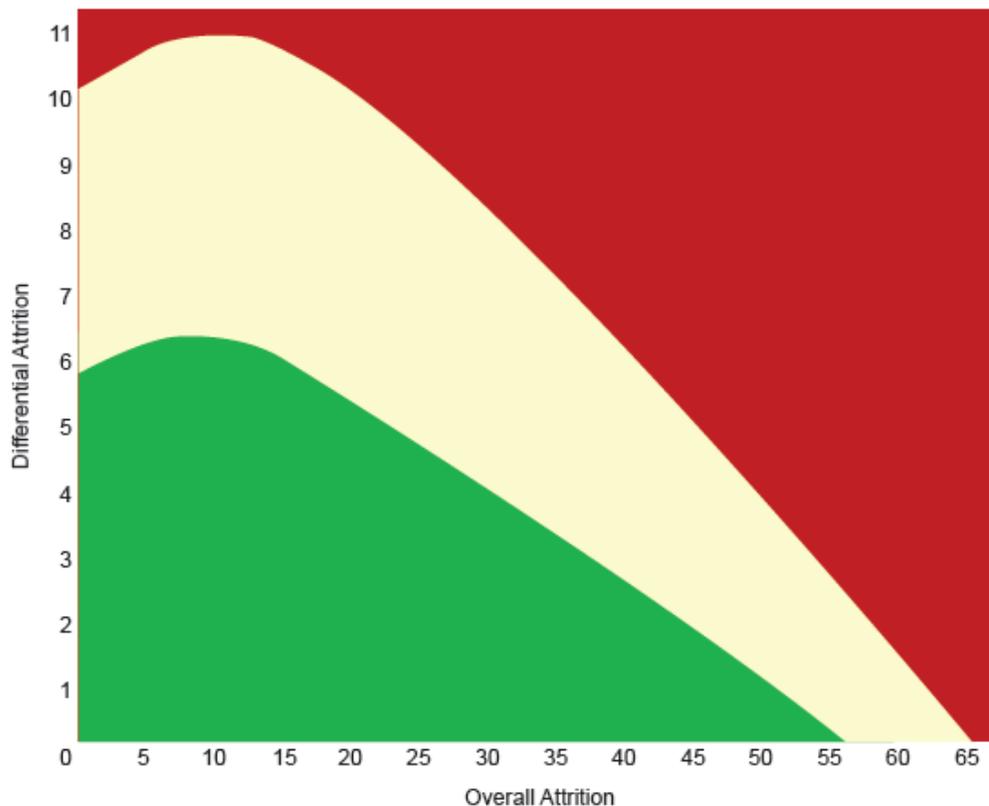
[2] See the *WWC Procedures and Standards Handbook* for other design elements that factor into the rating of a regression discontinuity study.

Highest Level of Differential Attrition Allowable to Meet the Attrition Standard Under the Liberal Attrition Standard

Overall Attrition	Allowable Differential Attrition		Overall Attrition	Allowable Differential Attrition
0	10.0		34	7.4
1	10.1		35	7.2
2	10.2		36	7.0
3	10.3		37	6.7
4	10.4		38	6.5
5	10.5		39	6.3
6	10.7		40	6.0
7	10.8		41	5.8
8	10.9		42	5.6
9	10.9		43	5.3
10	10.9		44	5.1
11	10.9		45	4.9
12	10.9		46	4.6
13	10.8		47	4.4
14	10.8		48	4.2
15	10.7		49	3.9
16	10.6		50	3.7
17	10.5		51	3.5
18	10.3		52	3.2
19	10.2		53	3.0
20	10.0		54	2.8
21	9.9		55	2.6
22	9.7		56	2.3
23	9.5		57	2.1
24	9.4		58	1.9
25	9.2		59	1.6
26	9.0		60	1.4
27	8.8		61	1.1
28	8.6		62	0.9
29	8.4		63	0.7
30	8.2		64	0.5
31	8.0		65	0.3
32	7.8		66	0.0
33	7.6		67	-

Group Equivalence in RCTs/RDDs with High Attrition and QEDs

If the study design is an RCT/RDD with high levels of attrition or a QED, the study must demonstrate baseline equivalence of the intervention and comparison groups for the analytic sample. 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. Pre-intervention characteristics can include the outcome measure(s) administered prior to the intervention or other measures within that domain that are not the same as, but are highly related to, the outcome measure(s). For the students with learning disabilities review, the variable on which studies must demonstrate equivalence is the pretest of the outcome measure or a pretest measure that is not the same as, but is highly correlated with, the outcome measure. This applies to all outcomes for a given study. Additionally, even when groups are equivalent on pretest measures, baseline differences on certain characteristics likely indicate that the comparison group is not an adequate representation of what would have happened to the intervention group without the intervention. In a QED or high-attrition RCT study, the learning disabilities review will examine the following characteristics for baseline equivalence when they are reported in the study:

- Percentage of students from low socioeconomic status (SES) families

- Percentage of Latino, Caucasian, and African-American students

- Percentage of students with learning disabilities

Large reported differences between intervention and comparison groups on these characteristics are evidence that the groups were drawn from different populations, and QEDs and high-attrition RCTs will not meet WWC evidence standards.

Groups are considered equivalent if the reported differences in pre-intervention characteristics of the groups are less than or equal to 0.25 of the pooled standard deviation in the sample, regardless of statistical significance. If differences are greater than 0.05 standard deviations and less than or equal to 0.25 of the pooled standard deviation in the sample, the analysis must control analytically for the individual-level pre-intervention characteristic(s) on which the groups differ. Pre-intervention differences greater than 0.25 standard deviations for *any* of the listed characteristics within a domain mean that the study does not meet standards. In addition, if there is evidence that the populations were drawn from very different settings (such as rural versus urban versus suburban, or small schools versus medium schools versus large schools), the PI may decide that the environments are too dissimilar to provide an adequate comparison.

Statistical and Analytical Issues

RCT studies with low attrition do not need to use statistical controls in their analyses, although statistical adjustment for well-implemented RCTs is permissible and can help generate more precise effect size estimates. For RCTs, the effect size estimates will be adjusted for differences in pre-intervention characteristics at baseline (if available) using a difference-in-differences method if the authors did not adjust for pretest (see Appendix B 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.

The WWC prefers studies 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 adjusted post-intervention means are not reported, they will be requested from the authors.

The statistical significance of group differences will be recalculated if (1) the study authors did not calculate statistical significance, (2) the study authors did not account for clustering when there is a mismatch between the unit of assignment and unit of analysis, or (3) the study authors did not account for multiple comparisons when appropriate. Otherwise, the review team will accept the calculations provided in the study.

When a misaligned analysis is reported (i.e., the unit of analysis in the study is not the same as the unit of assignment), the statistical significance of the effect sizes computed by the WWC will incorporate an adjustment for clustering. The default intraclass correlation used for the students with learning disabilities review is 0.20 for all outcomes. For an explanation of the clustering correction, see Appendix C of the *Handbook*.

When multiple comparisons are made (i.e., 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 D of the *Handbook* for the formulas the WWC uses to adjust for multiple comparisons.

All standards apply to overall findings as well as to analyses of subsamples.

LITERATURE SEARCH METHODOLOGY

The literature search strategy for the WWC Students with Learning Disabilities review has two components. The review team first conducts a keyword search to identify interventions with studies that may be eligible for review. The team also conducts focused intervention searches to ensure that all potentially eligible studies of the identified interventions are found. Each type of search is described below.

Keyword Search

Primary Objective. To prioritize interventions for review by identifying interventions with potentially eligible studies and assessing the likely extent of studies on each intervention. The focus will be on breadth rather than depth. Subsequent searches will focus on the selected interventions and be designed to capture ALL potentially eligible studies, including any that the keyword search did not identify.

Search Strategy. The following keywords are meant to capture literature that falls within the scope of the protocol. Given the objective stated above, targeted outcomes and study design terms are included to focus the search on identifying literature that will support an intervention report. The keyword list is followed by a list of databases that are searched.

- *Keywords that identify studies concerned with learning disabilities:* learning disabilities, learning disorder, dyslexia, neurologically impaired, high-incidence disabilities, mild handicap, executive functioning disorder, and information processing disorder.

- *Keywords that identify studies with reading outcomes:* reading achievement, reading outcome, reading skills, reading ability, reading instruction, decoding skills, word attack, oral reading fluency, listening comprehension, reading comprehension, vocabulary, word recognition skills, phonics, phonemic awareness, phonological awareness, letter identification, letter naming, print awareness, and alphabetic principle.

- *Keywords that identify studies with math outcomes:* math achievement, math outcomes, math ability, math instruction, math skill, arithmetic, pre-algebra, algebra, geometry, pre-calculus, trigonometry, calculus, remedial math, and supplemental math.

- *Keywords that identify studies with writing outcomes:* writing achievement, writing outcomes, writing ability, writing instruction, writing skill, spelling achievement, spelling outcomes, spelling ability, spelling instruction, and spelling skill.

- *Keywords that identify studies with science outcomes:* science achievement, science outcomes, science ability, science instruction, science skill, physical science achievement, physical science outcomes, physical science instruction, biology achievement, biology outcomes, biology instruction, chemistry achievement, chemistry outcomes, chemistry instruction, physics achievement, physics outcomes, and physics instruction.

- *Keywords that identify studies with social studies outcomes:* social studies achievement, social studies outcomes, social studies ability, social studies instruction, social studies skills, history achievement, history outcomes, history instruction, economics

achievement, economics outcomes, economics instruction, geography achievement, geography outcomes, geography instruction, civics achievement, civics outcomes, and civics instruction.

- *Keywords that identify studies with progressing in school outcomes:* progressing in school, retention, and flunking.

The keywords that identify studies concerned with learning disabilities will be linked together with OR in a search so that they identify all articles that focus on any of the terms. Similarly, the keywords that identify studies that measure outcomes will be linked together with OR in a search so that they identify all articles that focus on any of the outcomes. The two sets of search terms will then be linked together with AND in a search, so that they identify all articles that focus on learning disabilities and have relevant outcomes.

The keyword list for students with learning disabilities must be sufficiently comprehensive to capture the breadth of the topic. Unlike many other WWC topic areas, this one has a breadth of outcomes (reading, math, writing, science, social studies) and interventions, many of which have synonyms that must be used in the searches to adequately capture all potentially relevant literature. The best way to capture the breadth of the topic is to include a comprehensive set of search terms. This includes, for example, searching for variations of words (e.g., "disab," to capture studies including the words "disability" and "disabled") to ensure that our search is as inclusive as possible.

Databases

The search will be conducted using the following databases:

- *Academic Search Premier.* This multidisciplinary 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.

- *Business Source Corporate.* This database contains full text from nearly 3,000 quality business and economics magazines and journals (including full text of many only abstracted in other sources we search). Information in this database dates as far back as 1965.

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

- *Cochrane Central Register of Controlled Trials.* Cochrane Central Register of Controlled Trials is a bibliography of controlled trials identified by contributors to the Cochrane Collaboration and others, as part of an international effort to hand search the world's journals and create an unbiased source of data for systematic reviews.

- *Cochrane Database of Systematic Reviews.* Cochrane Database of Systematic Reviews contains full-text articles, as well as protocols focusing on the effects of health care. Data are often combined statistically (with meta-analysis) to increase the power of the findings of numerous studies, each too small to produce reliable results individually.

- *Cochrane Methodology Register*. The Cochrane Methodology Register (CMR) is a bibliography of publications that report on methods used in the conduct of controlled trials. It includes journal articles, books, and conference proceedings that are taken from the MEDLINE database and from hand searches. The database contains studies of methods used in reviews and more general methodological studies that could be relevant to anyone preparing systematic reviews. CMR records contain the title of the article, information on where it was published (bibliographic details), and sometimes a summary of the article. CMR is produced by the UK Cochrane Centre, on behalf of the Cochrane Methodology Review Group.

- *Database of Abstracts of Reviews of Effects.* Database of Abstracts of Reviews of Effects (DARE) includes abstracts of published systematic reviews on the effects of health care from around the world, which have been critically analyzed according to a high standard of criteria. This database provides access to quality reviews in subjects for which a Cochrane review may not yet exist.

- *Dissertation Abstracts.* Dissertation Abstracts is a definitive subject, title, and author guide to virtually every US dissertation accepted at an accredited institution since 1861. Selected master's theses have been included since 1962. In addition, since 1988, the database includes citations for dissertations from 50 British universities that have been collected by and filmed at the British Document Supply Centre. Beginning with Volume 49, Number 2 (Spring 1988), citations and abstracts from Section C, Worldwide Dissertations (formerly European Dissertations) have been included in the file. Abstracts are included for doctoral records from July 1980 (Dissertation Abstracts International, Volume 41, Number 1) to the present. Abstracts are included for master's theses from spring 1988 (Masters Abstracts, Volume 26, Number 1) to the present.

- *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 to the present. EconLit covers virtually every area related to economics.

- *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.

- *EJS E-Journals.* *E*-Journals from EBSCO host® provide article-level access for thousands of E-Journals available through EBSCO's Electronic Journal Service (EJS).

- *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.

- *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 more than 30 languages. More than 60,000 records are added each year.

- ***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.

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

"Fugitive" or "Grey" Literature

In addition to the keyword search, the review team seeks to identify other relevant studies through the following approaches:

- Public submissions via the WWC website and materials submitted directly to WWC staff

- Solicitations made to key researchers by the review team

- Checking websites summarizing research on programs for children and youth (see Appendix), 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)

- Searches of the websites of all the developers of relevant interventions or practices for any research or implementation reports

References resulting from these searches will be screened and sorted by intervention.

Intervention Search

Primary Objective. To identify ALL effectiveness studies conducted for a specific intervention identified in the keyword search.

Search Strategy

- Conduct standard library searches of the intervention name.[3] To ensure that the studies are relevant to students with learning disabilities, in addition to the intervention name, the search will include the following keywords: learning disabilities, learning disorder, dyslexia, neurologically impaired, high-incidence disabilities, mild handicap, executive

---

[3] A standard library search consists of searching titles and abstracts in each of the databases described above.

functioning disorder, information processing disorder, at-risk, reading problems, and reading difficulties.[4]

- Scan references to identify possible synonyms for the intervention in the literature. Conduct standard library searches of these terms.

- Once some potentially eligible studies are identified, request full text and review the reference lists to cross-check search results. Similarly, review relevant literature reviews. Revise search terms as needed.

- Identify seminal researchers associated with the intervention. Conduct full-text searches of the researcher name combined with the intervention name.

- Identify seminal studies of the intervention and conduct searches of the associated citation.

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

References

Liberman, I. Y., Shankweiler, D., Fischer, F. W., & Carter, B. (1974). Explicit syllable and phoneme segmentation in the young child. *Journal of Experimental Child Psychology (18)*2, 201–212.

---

[4] A review of earlier intervention searches confirmed that requiring one of these keywords did not exclude any reviewable studies but appropriately excluded many studies that did not have students with learning disabilities samples.

APPENDIX: WEBSITES TO BE SEARCHED

Abt Associates
Alliance for Excellent Education
American Enterprise Institute
American Institutes of Research
American Speech-Language-Hearing Association (ASHA)
American Youth Policy Forum
Appalachian Education Laboratory (Edvantia)
Best Evidence Encyclopedia
Broad Foundation (Education)
Brookings Institution
Carnegie Corporation of New York
Center for Comprehensive School Reform and Improvement
Center for Data-Driven Reform in Education
Center for Research and Reform in Education
Center for Research in Educational Policy (CREP)
Center for Social Organization of Schools
Center on Education Policy
Center on Instruction
Chapin Hall Center for Children at the University of Chicago
Congressional Research Service (via OpenCRS.org)
Council for Exceptional Children
Council for Learning Disabilities
Education Resources Institute
Government Accountability Office (GAO)
Harvard Family Research Project
Harvard Graduate School of Education
Heritage Foundation
Hoover Institution
Institute for Higher Education Policy
Institute for Public Policy and Social Research (IPPSR)
Johns Hopkins University School of Education
Learning Disabilities Association of America
Learning Point Associates
Mathematica Policy Research homepage
MDRC
Mid-continent Research for Education and Learning
National Association of State Boards of Education
National Association of State Directors of Special education
National Center for Learning Disabilities
National Center on Secondary Education and Transition
National Dissemination Center for Children with Disabilities
National Dissemination Center for Children with Disabilities (NICHCY)
National Governors' Association
National Institute for Early Education Research (NIEER)
National Reading Panel
Northwest Regional Education Lab
Pacific Resources for Education and Learning (PREL)

Policy Studies Associates
PolicyArchive
Promising Practices Network
Public Education Network
Public Policy Research Institute at Texas A&M University
Public/Private Ventures (PPV)
RAND
Regional Education Lab Appalachia
Regional Educational Laboratory Northeast and Islands
Southeast Regional Education Lab (included in the SERVE Center)
Southwest Educational Development Laboratory (SEDL)
SRI
Thomas B. Fordham Institute
U.S. Department of Education (includes Institute for Education Sciences, National Center for Special Education Research, etc.)
Urban Institute
WestEd (includes REL West)