### WWC review protocols: What's the point?

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### Learning goals for the webinar

During this webinar, you will learn about:

- Different types of WWC protocols
- The protocol development process
- The use of protocols in practice



## Different types of WWC protocols

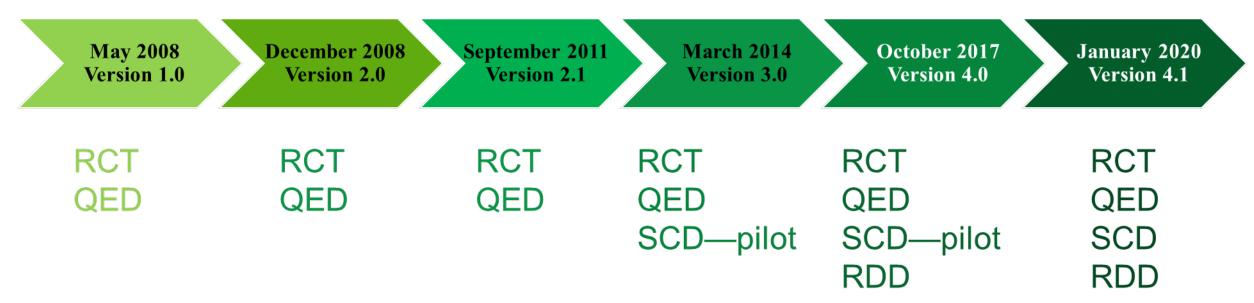


### What is a WWC review protocol?

- A WWC review protocol:
  - Defines the scope and parameters of the review, such as eligible interventions, settings, populations, and outcomes.
  - Presents topic-specific applications of the WWC design standards.
- Every WWC protocol corresponds with a specific version of the WWC standards and procedures that is available when the protocol is published.



### WWC handbook: Four generations of revisions



Vetting. All versions have been shared for public comment.

**Note. RCT** = randomized controlled trial. **QED** = quasi-experimental design.

**SCD** = single-case design. **RDD** = regression discontinuity design.



## WWC protocols developed or updated with the release of WWC handbooks

Protocol	Handbook Versions			
Development	May 2008 <b>(Version 1.0)</b>	March 2014 <b>(Version 3.0)</b>	October 2017 <b>(Version 4.0)</b>	
New	17	10	4	
Update	0	11	9	
Total	17	21	13	



### Most frequently updated WWC protocols

Topic Area	First Published as Version 1.0	Number of Updates	Currently Published as Version 4.0
Beginning Reading	2005	3	No
English Language Learners	2006	4	Yes
Review of Individual Studies	2008	4	Yes
Adolescent Literacy	2009	4	Yes



### What's new in Version 4.1 that impacts review protocols?

- The Educational Resources Information Center (ERIC) is now the initial source of studies for WWC reviews.
- Version 4.1 provides guidance on which manuscript takes precedence in WWC reviews when multiple manuscripts are available.
- Master's theses can be included in literature searches for reviews.



### Review criteria in WWC standards and Applied in WWC protocols

WWC Standards Handbook 4.1	WWC Review Protocols 4.0 $(n = 13)$	
Sets Default Criteria	Defines Topic-Specific Application	
Design	Eligibility Type	
Outcomes	Domains and Psychometrics	
Confounds	Examples	
Attrition	Boundaries	
Baseline Equivalence	Eligible Pretest Variables	
Assignment (Cluster versus Individual)	-	
Risk of Bias (Cluster Studies)	Joiners and Non-Response	
Missing Data	Acceptable Approaches	



### Three types of protocols



Protocols for Intervention Reports



Protocols for Practice Guides



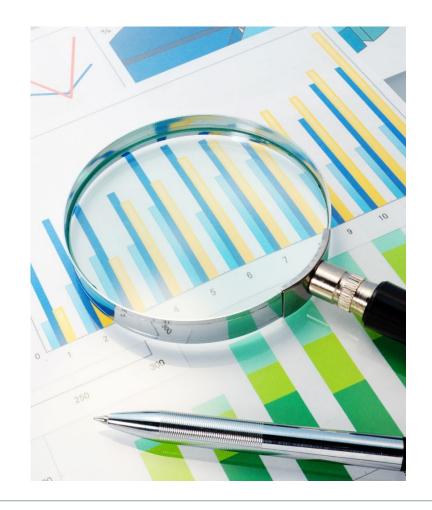
Reviews of Individual Studies Protocol



### Intervention reports



- An intervention report is a summary of findings of the highest-quality research on a specific program, practice, or policy in education.
  - The WWC searches for all research studies on an intervention, reviews each against evidence standards, and summarizes the findings of studies that meet standards.





### Intervention report example



#### Fraction Face-Off!

Intervention Report | Primary Mathematics Topic Area

A Publication of the National Center for Education Evaluation at IES

WHAT WORKS CLEARINGHOUSE<sup>TM</sup> March 2020

NCEE 2020-005 U.S. DEPARTMENT OF EDUCATION

Understanding fractions is a critical skill for success in school and the workforce, and is often necessary for daily life tasks like distributing work or cooking a meal. Fractions are also an important precursor to other math courses, such as algebra. Fraction Face-Off: is a supplemental math program designed to support fourth-grade students who need assistance solving fraction problems. Teachers use program materials with individual students or small groups to promote understanding of the magnitude of fractions, to compare two fractions, to put three fractions in order, and to place fractions on a number line. The program includes 36 lessons, each with four activities: a warm-up problem, group work, a speed game to build fluency, and a worksheet to check

students' understanding. These lessons are designed to be taught three times a week for 12 weeks.<sup>2</sup>

This What Works Clearinghouse (WWC) report, part of the WWC's Primary Mathematics topic area, explores the effects of Fraction Face-Off? on mathematics outcome domains including geometry and measurement, number and operations, and general mathematics achievement. The WWC identified one study of Fraction Face-Off?, which meets WWC standards. The evidence presented in this report is from one study of the impact of Fraction Face-Off? on a racially and ethnically diverse group of fourthgrade students.

#### What Happens When Students Participate in Fraction Face-Off??3

The evidence indicates that implementing Fraction Face-Off!:

- May increase student achievement in geometry and measurement
- May increase student achievement in number and operations
- May increase student achievement in general mathematics achievement

Findings on Fraction Face-Off! from one study that meets WWC standards are shown in Table 1. For each outcome reviewed by the WWC, an effectiveness rating, the improvement index, and the number of studies and students that contributed to the findings are presented. The improvement index is a measure of the intervention's effect on an outcome. It can be interpreted as the expected change in percentile rank for an average comparison group student if that student had received the intervention.

Table 1. Summary of findings on Fraction Face-Off! from one study that meets WWC Standards

	Effectiveness rating	Study Findings	Evidence meeting WWC standards (version 4.0)	
Outcome domain		Improvement index (percentile points)	Number of studies	Number of students
Geometry and measurement	Potentially positive effects	+33	1	212
Number and operations	Potentially positive effects	+31	1	1,152
General mathematics achievement	Potentially positive effects	+24	1	1,152

Note: The improvement index can be interpreted as the expected change in percentile rank for an average comparison group student if that student had received the intervention. For example, an improvement index of +33 means that the expected percentile rank of the average comparison group student would increase by 33 points if the student received Fraction Face-Off. The improvement index values are generated by averaging findings from the outcome analyses that meet WWC standards, as reported by Fuchs et al. (2013). The outcomes in the geometry and measurement domain were only examined in one of the five student cohorts examined in the study and therefore are based on fewer students than the analyses in the number and operations and general mathematics achievement domains. Geometry and measurement outcomes reported in the study include two researcher-designed measures: 1) a fraction magnitude comparison test and 2) a fraction magnitude explanation test. Number and operations outcomes reported in the study include is researcher-designed measures: 1) a test of comparing and representing fractions; 2) a fraction number line test; 3) a test of fraction calculations; 4) a test of word problems requiring multiplication; 5) a test of word problems requiring addition; and 6) a test of word problems requiring fractions. General mathematics achievement outcomes reported in the study include a collection of selected items from the National Assessment of Educational Progress (NAEP). The effects of Fraction Face-Off are not known for other outcomes within the Primary Mathematics topic area, including data analysis, statistics, and probability, and algebra.





### Protocols for intervention reports

INTERVENTION REPORTS

- An intervention report protocol can be used for many intervention reports.
  - Used to review any program, practice, or policy that falls within the scope of that particular protocol.
- Example: The Adolescent Literacy protocol has been used for 32 different intervention reports published on the WWC website.

#### REVIEW PROTOCOL FOR ADOLESCENT LITERACY INTERVENTIONS VERSION 4.0 (DECEMBER 2018)

This protocol guides the review of research that informs the What Works Clearinghouse (WWC) intervention reports in the Adolescent Literacy topic area. The protocol is used in conjunction with the WWC Procedures and Standards Handbooks (version 4.0).

#### PURPOSE STATEMENT

Literacy skills are critical to understanding information presented in written or oral format and communicating effectively with others. These skills are important to students' success in school and later in life, including improved individual health and economic outcomes, increased civic engagement, and enhanced community well-being.

This review focuses on literacy interventions designed for use with students in grades 4–12, with a primary focus on increasing English language reading or writing skills. The following research questions guide this review:

- Among interventions intended to provide literacy instruction, which ones improve literacy skills (alphabetics, reading fluency, comprehension, writing, and general literacy achievement) among students in grades 4–12?
- Are some interventions more effective than others for developing certain types of literacy skills?
- Are some interventions more effective for certain types of students or when delivered in certain types of settings?

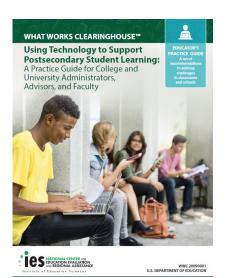
#### KEY DEFINITION

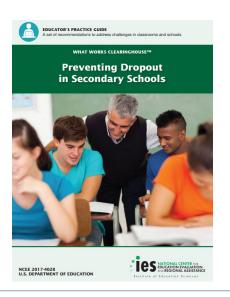
Literacy intervention. In this review, a literacy intervention is defined as a replicable instructional program (one that can be reproduced in another setting) that is delivered to students, includes clearly delineated literacy learning goals for students, and is designed to directly affect student English language reading or writing achievement. Furthermore, the intervention must be delivered in classrooms or academic settings (such as an afterschool program or summer school) with a primary focus on improving English literacy skills (such as English language arts classes).



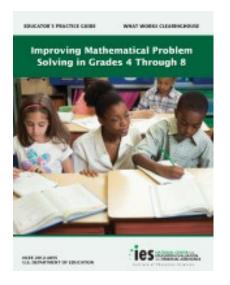
### Practice guides

- Practice guides present recommendations for educators to address specific challenges in their classrooms and schools.
- Practice guides focus on educational challenges, while intervention reports focus on specific programs or practices.











### Practice guide protocols



- Each practice guide has its own protocol.
- Practice guide protocols may overlap in scope with intervention report protocols:

### Teaching Mathematics to Young Children Practice Guide Protocol

• Includes mathematics programming for prekindergarten and kindergarten students

## **Elementary School Mathematics Interventions Protocol**

 Mathematics interventions for kindergarten through fifth grade

• Practice guides tailor sample, outcomes, etc., for the practice guide goals.



### Reviews of individual studies protocol (RISP)



- The WWC also reviews individual studies outside of intervention reports or practice guides:
  - Studies receiving significant media attention.
  - Studies funded by the U.S. Department of Education.
  - Studies reviewed as part of a grant competition.
- Individual study reviews are guided by the RISP.
- The RISP provides a single set of procedures to review individual studies.
  - Important for grant competitions to ensure a fair assessment of evidence provided by all grantees.



### Reviews of individual studies protocol (RISP)



- The RISP covers a much larger set of programs, practices, and policies than the other protocols.
- The RISP includes a larger set of outcomes than other protocols—59 outcome domains in eight broad outcome categories. For example:
  - Educational attainment, short term and long term
  - Social-emotional learning and behavior
  - Labor market outcomes, short term and long term

### The protocol development process



### Who writes protocols, and what is the process?

- Protocols for intervention reports and single-study reviews:
  - Review team leaders
  - External content experts
- Protocols for practice guides:
  - Review team leaders
  - Panel of at least six members, including at least two practitioners
- Review team leaders write the protocol in consultation with:
  - Content experts (topic areas)
  - Panel chair (practice guides)
- Writers and contributors are approved by IES.



### Developing a protocol: Process and key considerations

## Protocol development can be triggered by:

- Release of a new version of the Standards
- New topic approved by IES

## Protocol development starts with:

- Template (internally developed)
- Past protocols (as examples)

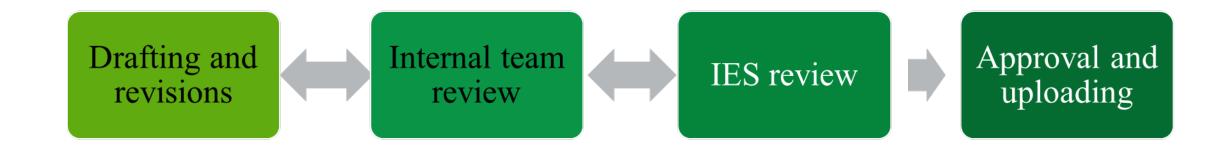
## Protocol development focuses on:

- Purpose
- Interventions
- Populations
- Outcome domains
- Literature searches
- Topic-specific applications of standards





### What is the process for protocol approval?





### What are the key criteria for protocol approval?

- Topic area, purpose, and questions are clearly written and well-described
- Aligned with state-of-the-art in the field of inquiry:
  - Substantively
  - Methodologically
- Topic-specific applications of standards are appropriate and consistent



### Meet the protocol template!\*

- Why a template?
  - Provides a single set of guidance to all review teams about what should be included in each protocol.
  - Standardizes sections and content across protocols.
  - Standardization makes protocols easier to use for reviewers.
- What is in the template?
  - A template outline providing headers for each section.
  - Accompanying guidance describing the content to be included in each section of the template and references to default approaches in the handbooks, with document and page number references.

\*The new protocol template is currently under review with IES.\*\*

\*\*But it's going to be great when you see it.



### REVIEW PROTOCOL FOR PROTOCOL TITLE VERSION X.Y (MONTH YEAR)

This review protocol guides the review of research that informs the What Works Clearinghouse (WWC) [Insert Protocol Title] topic area. The review protocol is used in conjunction with version 4.1 of the WWC Standards Handbook and WWC Procedures Handbook.

IMPORTANCE OF THE PROBLEM

Text.

TYPES OF INTERVENTIONS/TYPES OF PRACTICES

Text.

HOW THE INTERVENTION(S) OR PRACTICES MIGHT WORK

Text.

TARGET POPULATION CHARACTERISTICS

Text.

RELATIONSHIP TO OTHER WWC TOPIC AREAS (OPTIONAL)

Text.

KEY DEFINITIONS (OPTIONAL)

Text.

ELIGIBILITY CRITERIA

Eligible populations

Text.

Eligible research

Text.

Eligible interventions

Text

Scoring systems for intervention reports (optional)

Text.

Eligible outcomes





#### Review Protocol Development Guide March 2020

What Works Clearinghouse

NCEE 2020 U.S. DEPARTMENT OF EDUCATION

A Publication of the National Center for Education Evaluation at IES

All What Works Clearinghouse (WWC) study reviews are guided by the WWC Standards Handbook, the WWC Procedures Handbook, and a review protocol. The Standards Handbook sets forth the rules against which studies are judged, and the Procedures Handbook outlines the basic steps and processes used by the WWC for systematic reviews. Both documents are supplemented by a review protocol that outlines how some specific standards and procedures are implemented for a particular review, and that protocol defines the parameters of the review. This guide was created to help teams develop WWC review protocols for intervention reports and practice guides.

#### GENERAL GUIDANCE

Write the protocol in a way that is understandable to decision makers, individuals who implement the intervention(s) or practices, and individuals—such as the parents of participating children—who might be affected by the intervention(s) or practices reviewed under the protocol. However, the protocols are intended as supplemental documents to the WWC Standards and Procedures handbooks; they should not reexplain issues or redefine terms covered in the handbooks but should direct users to the appropriate references in the handbooks when necessary.

#### TITLE

Succinctly state the focus of the review in the title. Most WWC protocols currently include the phrase "review protocol" or "evidence review protocol" in their titles. Protocol authors should attempt to incorporate one of these unless doing so makes the title unwieldy. In addition, the title or heading should include the version of the WWC Standards and Procedures governing the protocol.

#### IMPORTANCE OF THE PROBLEM

Concisely introduce the general goals of the intervention(s) or practices that will be reviewed using this protocol, including implications for current practice and policy. In addition, describe the goals of the review and the questions it will address. Review protocols for practice guides should describe the intended audience.

#### TYPES OF INTERVENTIONS/TYPES OF PRACTICES

Briefly describe the types of interventions or practices, if the protocol is used for a practice guide, that will be reviewed using this protocol. The description should be broad enough to cover all of the different types of interventions and practices that might be reviewed. Do not attempt to provide an operational definition of eligible interventions or practices here, as this will be addressed later.



### Sections of the protocol template

### REVIEW PROTOCOL FOR PROTOCOL TITLE VERSION X.Y (MONTH YEAR)

This review protocol guides the review of research that informs the What Works Clearinghouse (WWC) [Insert Protocol Title] topic area. The review protocol is used in conjunction with version 4.1 of the wWC Standards Handbook and WWC Procedures Handbook.

#### IMPORTANCE OF THE PROBLEM

Text.

TYPES OF INTERVENTIONS/TYPES OF PRACTICES

Text

HOW THE INTERVENTION(S) OR PRACTICES MIGHT WORK

Text.

TARGET POPULATION CHARACTERISTICS

Text

RELATIONSHIP TO OTHER WWC TOPIC AREAS (OPTIONAL)

Text.

KEY DEFINITIONS (OPTIONAL)

Taxt

ELIGIBILITY CRITERIA

Eligible populations

Text.

Eligible research

Text.

Eligible interventions

Text.

- Protocols begin with big picture information about the goals of the review:
  - What is the important problem these intervention address
  - Types of interventions or practices being reviewed
  - Why they are important
  - How they work, and
  - Who they are for.



### Sections of the protocol template

**ELIGIBILITY CRITERIA** 

Eligible populations

Text.

Eligible research

Text.

Eligible interventions

Text.

#### TOPIC-SPECIFIC IMPLEMENTATION OF THE WWC STANDARDS

Attrition threshold

Text.

Assessing baseline equivalence

Text.

Statistical adjustment for baseline equivalence

Text.

Assessing baseline equivalence using an earlier assessment or earlier cohort

Text.

- The next sections of the protocol include the details of the criteria.
  - Reviewers consult these sections when conducting reviews.
  - Primary researchers reference these sections to understand how their own study may be evaluated by the WWC.
- The final section of protocol is the Literature Search Procedures section.



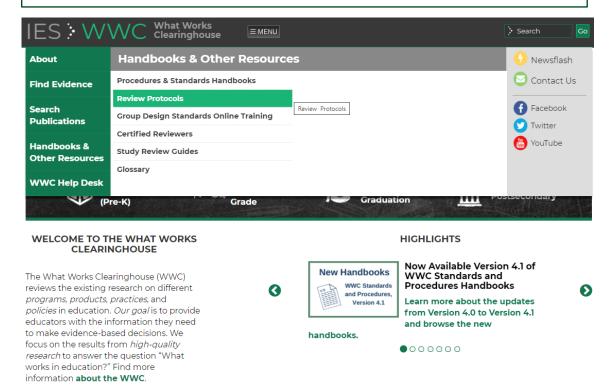
### The use of protocols in practice



**Step 1:** Go to <a href="https://ies.ed.gov/ncee/wwc/">https://ies.ed.gov/ncee/wwc/</a> and select "Review Protocols"

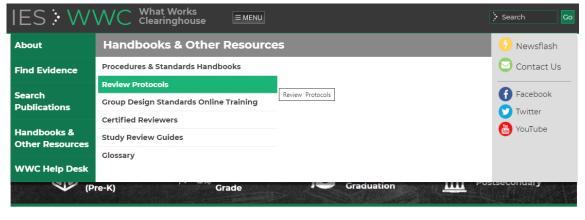


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**Step 1:** Go to <a href="https://ies.ed.gov/ncee/wwc/">https://ies.ed.gov/ncee/wwc/</a> and select "Review Protocols."



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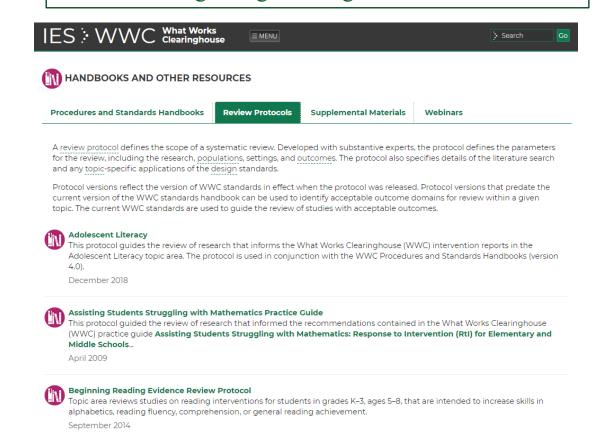
#### WELCOME TO THE WHAT WORKS CLEARINGHOUSE

The What Works Clearinghouse (WWC) reviews the existing research on different programs, products, practices, and policies in education. Our goal is to provide educators with the information they need to make evidence-based decisions. We focus on the results from high-quality research to answer the question "What works in education?" Find more information about the WWC.

#### HIGHLIGHTS

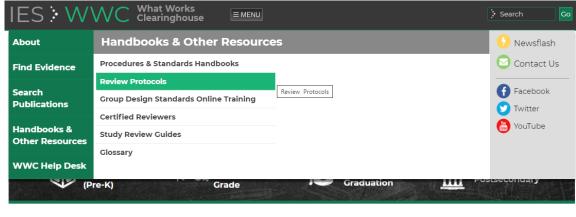


**Step 2:** On the "Review Protocol" page, click on the link for the Beginning Reading Protocol.





**Step 1:** Go to <a href="https://ies.ed.gov/ncee/wwc/">https://ies.ed.gov/ncee/wwc/</a> and select "Review Protocols."



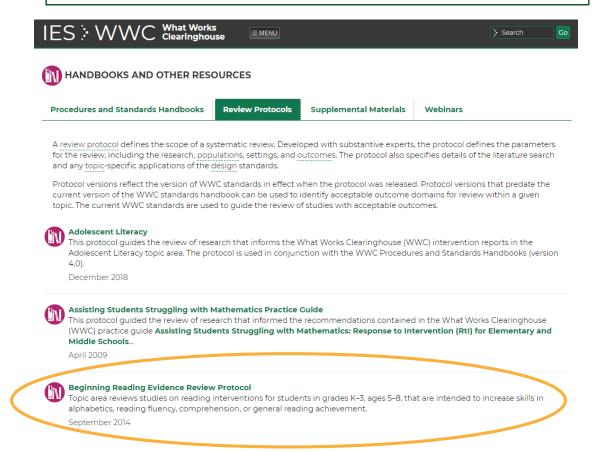
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#### HIGHLIGHTS



### **Step 2:** On the "Review Protocol" page, click on the link for the Beginning Reading Protocol.





Step 3: On the "Beginning Reading Evidence Review Protocol" page, choose the version from the "Select Document Version" dropdown.



Beginning Reading Evidence Review Protocol



The following research questions guide this review:

- Among interventions intended to provide literacy instruction, which ones improve literacy skills (alphabetics, reading fluency, comprehension, and general reading achievement) among students in grades K-3?
- Are some interventions more effective than others for certain types of literacy skills?
- · Are some interventions more effective for certain types of students, particularly students who have historically lagged behind in reading and/or literacy achievement?



**Step 3:** On the "Beginning Reading Evidence Review Protocol" page, choose the version from the "Select Document Version" dropdown.



Beginning Reading Evidence Review Protocol

# Content Details What is a Protocol? This review focuses on beginning reading interventions designed for use with students in c focus on increasing literacy skills. Select Document Version • Version 3.0 - September 2014 (237 KB) Version 2.1 - August 2012 (432 KB) Version 2.0 - May 2012 (427 KB) Version 1.0 - September 2006 (120 KB)

The following research questions guide this review:

- Among interventions intended to provide literacy instruction, which ones improve literacy skills (alphabetics, reading fluency, comprehension, and general reading achievement) among students in grades K-3?
- Are some interventions more effective than others for certain types of literacy skills?
- Are some interventions more effective for certain types of students, particularly students who have historically lagged behind in reading and/or literacy achievement?

#### **Step 4:** Read or download the PDF.

#### REVIEW PROTOCOL FOR BEGINNING READING INTERVENTIONS VERSION 3.0 (SEPTEMBER 25, 2014)

#### PURPOSE STATEMENT

This review focuses on beginning reading interventions designed for use with students in grades K-3 (or ages 5-8), with a primary focus on increasing literacy skills.

The following research questions guide this review:

- Among interventions intended to provide literacy instruction, which ones improve literacy skills (alphabetics, reading fluency, comprehension, and general reading achievement) among students in grades K-3?
- · Are some interventions more effective than others for certain types of literacy skills?
- Are some interventions more effective for certain types of students, particularly students who have historically lagged behind in reading and/or literacy achievement?

#### KEY DEFINITIONS

Beginning reader. Beginning readers are defined as students in grades K-3 in classes with a primary focus on improving literacy skills (such as English/Language Arts classes).

**Reading intervention.** In this review, a reading intervention is defined as a replicable (i.e., can be reproduced) instructional program that is delivered to students, clearly delineates literacy learning goals for students, and is designed to directly affect student reading achievement.

#### PROCEDURES FOR CONDUCTING THE LITERATURE SEARCH

The WWC Procedures and Standards Handbook, version 3.0, discusses the procedures for conducting a literature search in Section II: Developing the Review Protocol and Identifying Relevant Literature (p. 4) and in Appendix B: Policies for Searching and Prioritizing Studies for Review.



### How do WWC reviewers use protocols?

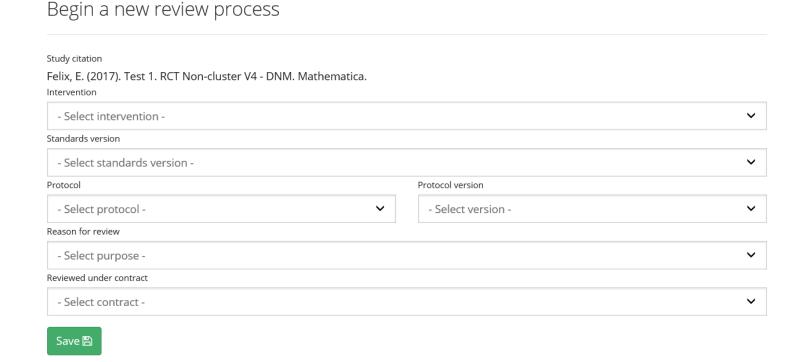
WWC Web-Based Study Review Process		
WWC Review Role	Description	
Review Team Leaders	Create protocol and oversee review process	
Coordinators	Assist review team leadership in managing review process	
Screeners	Assess the study for eligibility based on protocol	
Reviewers	Review studies using the WWC protocol and handbook	
Reconcilers	Resolve discrepancies between reviewers	

Source: Based on WWC Web-Based Study Review Guide: User Guide (updated June 2018).



### Protocols and the Online Study Review Guide (OSRG)

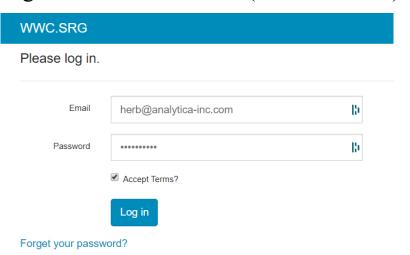
- All official WWC reviews conducted within the OSRG
- When a new study review begins, the Coordinator selects the study and:
  - Intervention
  - Standards Version
  - Protocol Version
  - Review Purpose
  - o Contract
- The Coordinator assigns the study as a Task
  - Screen not shown here







2. Logs into the online SRG (at WWC.SRG).



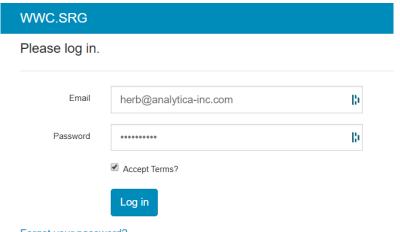


3. And sees the assigned task(s) on the "My Tasks" dashboard and assigned protocol.

#### My tasks.



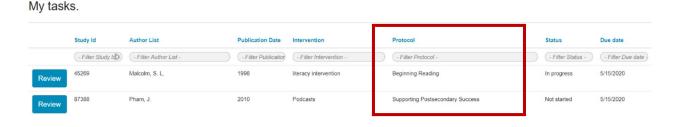
2. Logs into the online SRG (at WWC.SRG).



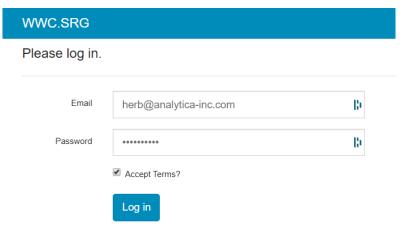
Forget your password?



3. And sees the assigned task(s) on the "My Tasks" dashboard and assigned protocol.

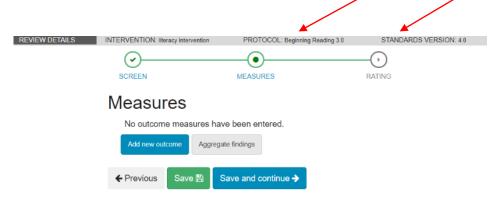


2. Logs into the online SRG (at WWC.SRG).



Forget your password?

4. Reviewer can begin the review by screening the study for eligibility based on assigned WWC protocol and standards.





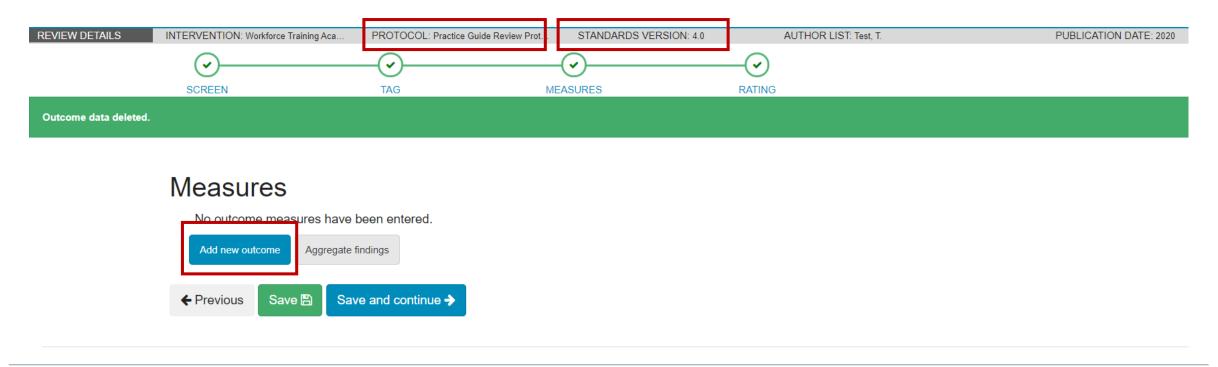
#### Protocols and the OSRG

- Selecting the protocol will predetermine OSRG:
  - Outcome domains
  - Attrition boundaries
- Selecting the protocol will not determine OSRG:
  - o Eligibility criteria
  - Exceptions to attrition standards
  - Outcome measure standards
  - Whether or which joiners or non-responders pose a risk of bias



### Limited by the protocol: Outcome domains and measures

In the OSRG, studies are reviewed by the reported results for each outcome measure eligible under the protocol. To begin the study review, reviewers select "add a new outcome" to the OSRG.

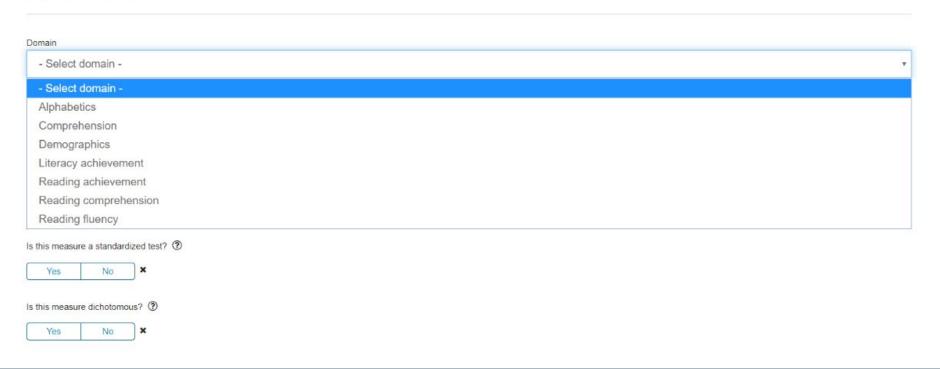




### Limited by the protocol: Outcome domains and measures

#### Beginning Reading Review Protocol

#### Add measure.

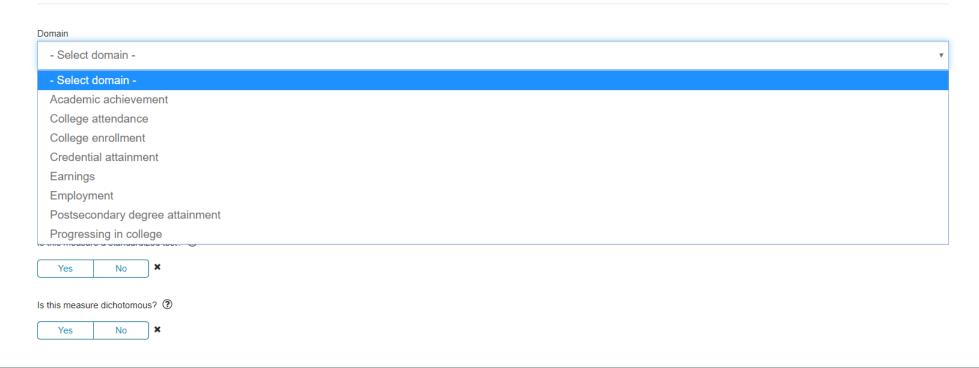




### Limited by the protocol: Outcome domains and measures

Practice Guide Review Protocol for Workforce Development at Community Colleges

#### Add measure.





# Which protocol should researchers use?

Researchers should use RISP 4.0 for these reasons:

- 1. RISP addresses fundamental methodological considerations relevant to any protocol
  - E.g., confounds, attrition, baseline equivalence
- 2. RISP can help identify which of the study's findings may be eligible for a WWC review
- 3. Because outcome domains in RISP are aligned to other protocols, RISP can help identify a topic area protocol better suited for the intervention



# Questions?





## Have questions? Contact us: <a href="https://ies.ed.gov/ncee/wwc/help">https://ies.ed.gov/ncee/wwc/help</a>



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#### Recommended resources

WWC Handbooks: Procedures and Standards

https://ies.ed.gov/ncee/wwc/protocols#procedures

WWC Protocols:

https://ies.ed.gov/ncee/wwc/protocols

WWC Web-Based Study Review Guide:

https://ies.ed.gov/ncee/wwc/StudyReviewGuide

Video about Who Works on the WWC (WWC Team Roles):

https://www.youtube.com/watch?v=A4rToe9 YCw

WWC Online Study Review Guide for RCTs and QEDs:

https://ies.ed.gov/ncee/wwc/wwcsrgpublic/Account/Login?ReturnUrl=%2Fncee%2Fwwc%2Fwwcsrgpublic%2F

WWC Study Review Guide for Group Designs:

https://ies.ed.gov/ncee/wwc/Docs/ReferenceResources/wwc public srg userguide 022018.pdf

Reporting Guide for Study Authors: Group Designs https://ies.ed.gov/ncee/wwc/Document/235

