

# Using the WWC Standards for Postsecondary Research Methods Courses

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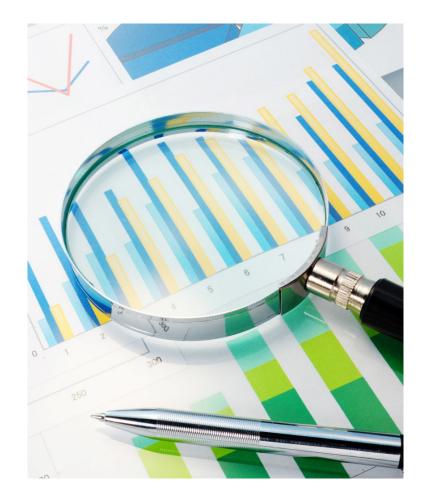
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# **Goals for This Webinar**

- Promote an understanding of relevant What Works Clearinghouse (WWC) resources and where to access them.
- Enhance the ability to integrate WWC resources into postsecondary research design and analysis courses.
- Support the integration of WWC resources into postsecondary research synthesis courses.



# **Webinar Topics**

- WWC group design standards and how they reflect current best methodological practice in causal research
- WWC resources available for teaching causal inference and internal validity in education and social science research
- Use of these resources in introductory and advanced postsecondary research methods courses
- Answers to questions about these resources, where to access the resources, and their possible use in methods courses

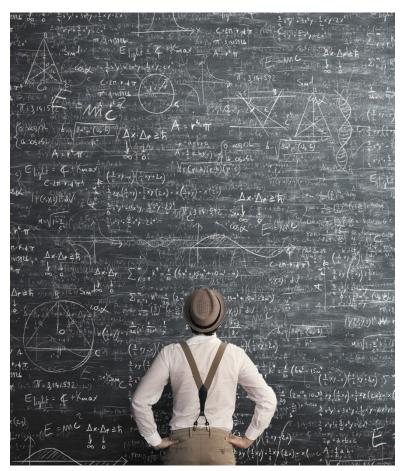
# Example of a Graduate Course Using WWC Evidence Standards

### **Course Process**

In spring 2017, nine master's degree students and four doctoral students at Boston College's Lynch School of Education participated in a semesterlong "program evaluation" course with an emphasis on causal inference to identify what interventions work in education and related fields.



# Example of a Graduate Course Using WWC Evidence Standards



### **Course Process**

- The goal was to teach students how to arrange their thinking and logically derive internal validity criteria using Standards 4.0 along with additional readings from the methodological literature.
- Students applied the Standards (along with the supplemental readings) to design impact evaluations to assess what education interventions have discernible effects.

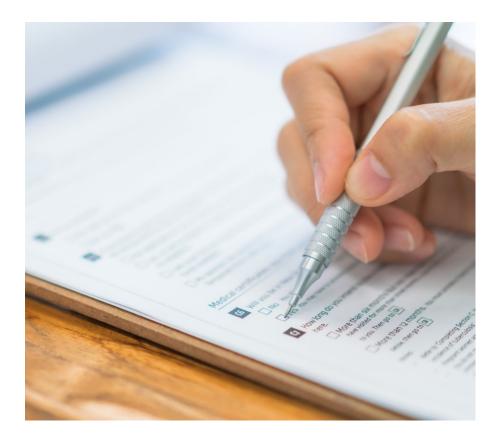
# Example of a Graduate Course Using WWC Evidence Standards

### **Course Outcomes**

- The Standards Handbook 4.0, along with WWC online resources, supplemented lectures and provided students with additional hands-on learning outside of class.
- At the end of the course, all 13 students chose to complete the WWC Certification Exam (rather than the instructor's end-of-course exam).



# Example of a Graduate Course Using WWC Evidence Standards



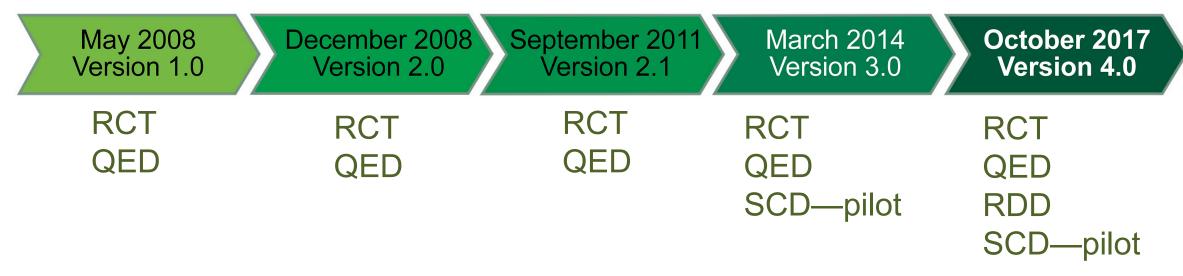
### **Course Outcomes**

- Eight students passed the exam and became certified either at the end of the semester or in the next semester.
- All students rated the online resources as credible, engaging, and useful for learning about the fundamentals of internal validity and causal inferences.

# WWC Group Design Standards and Best Methodological Practice in Causal Research



# WWC Procedures and Standards: Four Generations of Revision



**Vetting**. All versions have been externally peer reviewed. For Version 4.0, IES gathered input from the WWC Statistical, Technical, and Analysis Team; anonymous external peer reviewers; methodology experts; and the public.

RCT = randomized controlled trial. RDD = regression discontinuity design. SCD = single-case design. QED = quasi-experimental design.

# WWC Evidence Standards: Core Concepts and Abridged Definitions

- Design: The method by which intervention and comparison groups are assigned
- Attrition: A randomized sample member missing an outcome
- Equivalence: The similarity of analysis groups at baseline



Source: WWC Glossary of Terms. Retrieved from https://ies.ed.gov/ncee/wwc/Glossary.

# WWC Evidence Standards: Core Concepts and Abridged Definitions



- Confounds: A component of a study that is completely aligned with one of the study conditions
- Outcomes: Knowledge, skills, attitudes, and other desired benefits that are attained as a result of an activity

# WWC Resources for Teaching Causal Inference and Internal Validity in Methods Research Courses



# **Research Design Topics**

WWC resources can be used in the following types of courses with an emphasis on causal inference:

- Introduction to research design
- Advanced research design
- Research synthesis

Course content that includes these resources may be appropriate for honors-level undergraduate courses or graduate-level courses.

# **Research Design Courses**

### **Example course overview:**

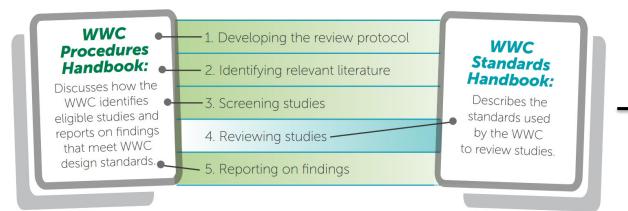
The purpose of the course is to provide students with an in-depth and fundamental understanding of research design standards for assessing validity of causal inferences about the effects of educational, social, and behavioral interventions. The course is designed to build understanding of basic research design and statistical concepts to assess the design and study implementation features that can threaten internal validity.



# Course Planning Matrix of WWC Resources



# Handbooks are the basis for instructional resources on the WWC website



### IES > WWC What Works Clearinghouse

#### Search

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#### WWC GROUP DESIGN STANDARDS ONLINE TRAINING

Overview					
Introduction					
Module 1: Group Designs					
Module 2: Attrition					
Module 3: Baseline Equivalence					
Module 4: Confounding Factors					
Module 5: Outcome Measures					
Module 6: Systematic Reviews					
Print Certificate					
Modules 7 through 9					
Modules 7 through 9					
Modules 7 through 9 WWC Resources					
-					
WWC Resources					
WWC Resources Slide Decks by Module					
WWC Resources Slide Decks by Module Transcripts by Module					
WWC Resources Slide Decks by Module Transcripts by Module Glossary					
WWC Resources Slide Decks by Module Transcripts by Module Glossary FAQs					
WWC Resources Slide Decks by Module Transcripts by Module Glossary FAQs Procedures and Standards Handbooks					
WWC Resources Slide Decks by Module Transcripts by Module Glossary FAQs Procedures and Standards Handbooks Review Protocols					
WWC Resources Slide Decks by Module Transcripts by Module Glossary FAQs Procedures and Standards Handbooks Review Protocols Study Review Guides					

Welcome to the What Works Clearinghouse (WWC) group design standards training. The
WWC offers this training to inform the public about the key elements of the WWC group
design standards, increase transparency of our review process, and promote the use of
rigorous, high-quality research.

#### ABOUT THE TRAINING

≡ MENU

This training series includes nine modules, each focused on a different aspect of the WWC group design standards and procedures. We recommend viewing the modules in numerical order. Start with the Introduction video, which describes the goals, topics, and organization of this training.

#### CERTIFICATE

If you view the first six modules on WWC standards in this training series, you will earn a certificate of completion. When you complete the Systematic Reviews module, choose the "Print Certificate" menu option on the left to receive your certificate.

#### GROUP DESIGN STANDARDS CERTIFICATION

Becoming certified in the WWC group design standards requires that you view all nine modules on the WWC Standards and Procedures and successfully complete a multiplechoice certification test. You will have four opportunities to take and pass the test, which includes 50 shorter multiple-choice questions and two multiple-part questions that simulate a review. When you successfully complete the test, you will be able to print a certificate as proof that you are certified in the WWC group design standards.

### Take the test

#### BECOMING A CERTIFIED REVIEWER FOR THE WWC

In addition to the certification test, trainees seeking to be certified reviewers for the WWC must complete additional tasks. Use the **Contact Us** form to contact the Help Desk if you are interested in pursuing this highest level of certification. Those who successfully complete this level of certification can be included in the list of certified reviewers on the WWC website, and the WWC or the Institute of Education Sciences may contact them to assist with review efforts.

To receive updates about new training content and/or certification options, please subscribe to the **WWC's Newsflash**.

WWC Topics		Online Training	<u>Slide</u> Deck	Transcripts	<u>Standards</u> <u>Briefs</u>	<u>Attrition</u> <u>Bias</u>	<u>Standards</u> <u>Handbook</u>	<u>Review</u> Protocols
Introduction to WWC Standards and Procedures:								
About the WWC: What it Does	<u>uded V</u>	-	•	<u>uded T</u>	-	-	-	-
About the WWC: A Closer Look	<u>fww V</u>	-	-	-	-	-	-	-
Demystifying the WWC: A Webinar for Developers and Researchers (2013)	dwwc V	-	-	dwwc T	-	-	-	-
Designing Strong Studies (2014)	dss V	-	-	<u>dss T</u>	-	-	-	-
Designing QEDs: Meeting WWC Standards without Random Assignment (2016)	<u>qed V</u>	-		<u>qed T</u>	-	-		-
Applying the WWC Standards to Postsecondary Research (2016)	<u>ps V</u>	-	-	<u>astpsr T</u>	-	-	-	-
Supporting Rigorous Research: Resources from the WWC (2017)		-	-	<u>SRR T</u>	-	-	-	-
Understanding Updated WWC Procedures and Standards (2017)		-	-	<u>uwps T</u>	-	-	-	-
Certificate Training:								
Introduction	-		<u>m0S</u>	<u>m0T</u>	-	-	Sect I	
Group Designs	-		<u>m1S</u>	<u>m1T</u>	-	-	Sect II.A	
Attrition	-		<u>m2S</u>	<u>m2T</u>	attrition	<u>attrb</u>		
Baseline Equivalence	-	<u>m0-m6</u>	<u>m3S</u>	<u>m3T</u>	<u>baseline</u>	-		protocols
Confounding Factors	-		<u>m4S</u>	<u>m4T</u>	<u>confounds</u>	-	Sect IV.B	
Outcome Measures	-		<u>m5S</u>	<u>m5T</u>	-	-	Sect IV.A	
Systematic Review	-		<u>m6S</u>	<u>m6T</u>	-	-	-	
Print Certificate	-	<u>certificate</u>	-	-	-	-	-	
Group Design Study Certification:								
Outcome Measures	-		<u>m7S</u>	<u>m7T</u>	-	-	Sect IV.A	
Cluster-Level Assignment	•	<u>m7-m9</u>	<u>m8S</u>	<u>m8T</u>	-	-	Sect II.B	protocols
Study Review Guide	-		<u>m9S</u>	<u>m9T</u>	-	-	-	
Certification Test	-	<u>test site</u>	-	-	-	-	-	

## How to Use the Planning Matrix

2. Select a Resource Category

WWC Topics	<u>Webinar</u> <u>Videos</u>	<u>Online</u> Training	<u>Slide</u> <u>Deck</u>	Transcripts	<u>Standards</u> <u>Briefs</u>	
Introduction to WWC Standards and Procedures:						
About the WWC: What it Does	uded V	-	-	uded T	-	
About the WWC: A Closer Look	<u>fww V</u>	-	-	-	-	
Demystifying the WWC: A Webinar for Developers and Researchers (2013)	<u>dwwc V</u>	-	-	<u>dwwc T</u>	-	
Designing Strong Studies (2014)	<u>dss V</u>	-	-	<u>dss T</u>	-	
Designing QEDs: Meeting WWC Standards without Random Assignment (2016)	<u>qed V</u>	-	-	<u>qed T</u>	-	
Applying the WWC Standards to Postsecondary Research (2016)	<u>ps V</u>	-	-	<u>astpsr T</u>	-	
Supporting Rigorous Research: Resources from the WWC (2017)	<u>ssr V</u>	-	-	<u>SRR T</u>	-	
Understanding Updated WWC Procedures and Standards (2017)	<u>uwps V</u>	-	-	<u>uwps T</u>	-	3. Go to Resource Cell. Click on
Certificate Training:						acronym to view
Introduction	-		<u>m0S</u>	<u>m0T</u>		
	-		<u>m1S</u>	<u>m1</u>	-	VANA/C VA/abaita
Attrition	-		<u>m2</u>	<u>m2T</u>	attrition	
Baseline Equivalence	-	<u>m0-m6</u>	<u>m3S</u>	m3T	baseline	
Confounding Factors	-		<u>m4S</u>	<u>m4T</u>	contounds	Group Designs
Outcome Measures	-		<u>m5S</u>	<u>m5T</u>	-	Group Designs
Systematic Review	-		<u>m6S</u>	<u>m6T</u>	-	whatworks.ed.gov
Print Certificate	-	<u>certificate</u>	-	-	-	

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1. Select

a Topic



# Planning Introductory Courses



# Primary Goals of Introduction to Research Design Course Plan

- Develop strong and comprehensive skills to assess group design study quality
- Earn a WWC Certificate during the course
- Pursue Group Design Certification as part of the end-of-course assessment



# Research Design Course Topics and WWC Resources: Certification Path

Week	Topics	Online Training	Slide Deck	Transcripts	Standards Briefs	Standards Handbook
1	Module 0: Introduction and Overview	m0-m5	<u>m0S</u>	<u>m0T</u>	—	Sect I
2	Module 1: Group Designs		<u>m1S</u>	<u>m1T</u>	—	Sect II.A
3–4	Module 2: Attrition		<u>m2S</u>	<u>m2T</u>	<u>Attrition</u>	
5–6	Module 3: Baseline Equivalence		<u>m3S</u>	<u>m3T</u>	<b>Baseline</b>	
7	Module 4: Confounding Factors		<u>m4S</u>	<u>m4T</u>	Confounds	Sect IV.B
8 <sup>a</sup>	Module 5: Outcome Measures I		<u>m5S</u>	<u>m5T</u>	—	Sect IV.A

<sup>a</sup> Students who complete WWC online training modules 1–6 (labeled "m1–m6" in the planning matrix) can print a certificate.

# Research Design Course Topics and WWC Resources: Certification Path

Week	Topics	Online Training	Slide Deck	Transcripts	Standards Briefs	Standards Handbook
9	Module 7: Outcome Measures II	m7-m9	<u>m7S</u>	<u>m8T</u>	—	—
10–11	Module 8: Cluster-Level Assignment		<u>m8S</u>	<u>m8T</u>	—	—
12	Module 9: Study Review Guide		<u>m9S</u>	<u>m9T</u>	—	—
13–14	End-of-Course Review		—	—	—	—
15 <sup>b</sup>	Group Design Certification Test (GDCT)	<u>Test site</u>	—	—	—	—

<sup>b</sup> Students who complete online GDCT with 80% correct will receive Certification in Group Designs and will qualify to take the next step to become a WWC-certified reviewer.



# Primary Goals of Alternative and More Flexible Course Plan



- Develop strong and comprehensive skills to assess group design study quality
- Perhaps earn a WWC Certificate with additional work beyond the course
- Perhaps pursue Group Design Certification with additional work beyond the course

# **Research Design Course Topics and WWC Resources:** Flexible Path

Week	Торіс	Online Training	Slide Deck	Transcripts	Standards Briefs	Standards Handbook
1	Introduction and Overview					
2–4ª	Context for Assessing Study Quality	Instructor discretion and flexibility on introducing internal validit				al validity
5	Module 1: Group Designs	m0–m5	<u>m1S</u>	<u>m1T</u>	—	Sect II.A
6–7	Module 2: Attrition		<u>m2S</u>	<u>m2T</u>	Attrition	
8–9	Module 2: Baseline Equivalence		<u>m3S</u>	<u>m3T</u>	Baseline	—
10	Module 4: Confounding Factors		<u>m4S</u>	<u>m4T</u>	Confounds	Sect IV.B
11 <sup>b</sup>	Module 5: Outcome Measures I		<u>m1S</u>	<u>m5T</u>	—	Sect IV.A
12–13	Missing Data	Coming soon	_	—	—	Sect II.C
14–15	Review and End-of-Course Assessment	Instructor discretion and flexibility on end-of-course assessment				ent

<sup>a</sup> Recommend including the WWC Introduction to Group Designs Module (mo1) when setting this context in case students want to earn a WWC Certificate during the course. <sup>b</sup> Students who complete WWC online training modules 1–5 (m0–m5) can print a Certificate of Completion if they complete an additional module 6 (m6) on systematic reviews.



# Planning Advanced Courses

# Advanced Research Design Courses: Example Course Plan

Week	Торіс	Online Training	Slide Deck	Transcripts	Standards Briefs	Standards Handbook	Webinar Videos	Webinar Transcripts
1	Introduction to Causal Inference	—	—	—	—	—	<u>dssV</u>	<u>dss T</u>
2	Experimental Research Designs	m0-m1	<u>m0S</u> <u>m1S</u>	<u>m0T</u> <u>m1T</u>	attrition attrb	Sect II.A	—	
3	Quasi-Experimental Research Designs	m2-m6	<u>m2S</u> - <u>m6S</u>	<u>m2T</u> - <u>m6T</u>	<u>baseline</u>	Sect II.A	<u>qedV</u>	<u>qedT</u>
4	Clustered Research Designs	m7-m9	<u>m7S</u> <u>m8S</u> <u>m9S</u>	<u>m8T</u> <u>m9T</u>		Sect II.B		
5	Regression Discontinuity Designs	_	—	—	—	Sect III	—	

# Advanced Research Design Courses: Example Course Plan

Week	Торіс	Data from Individual Studies	Standards Briefs	Standards Handbook	Procedures Handbook	Reporting Guides
6	Missing Data Analysis	—	—	Sect II.C Appendix B Appendix C	—	—
7	Intervention Fidelity	<u>Data</u>	—	—	—	—
8	Instrumental Variable Analysis	—	—	Sect II. D Appendix D	Appendix G	
9	Non-Design Threats to Validity	—	Confounds	Sect IV	_	
10	Reporting Standards	—		—	—	How To-GD How To-RDD

# Advanced Research Design Courses: Relevant WWC Resources

Week	Торіс
1	Introduction to Causal Inference
2	Experimental Research Designs
3	Quasi-Experimental Research Designs
4	Clustered Research Designs
5	Regression Discontinuity Designs
6	Missing Data Analysis
7	Intervention Fidelity
8	Instrumental Variable Analysis
9	Non-Design Threats to Validity
10	Reporting Standards

ES : WWC What Work Clearingho	IS EMENU Search Go
WC GROUP DESIGN STANDARDS	ONLINE TRAINING
Overview Introduction	Welcome to the What Works Clearinghouse (WWC) group design standards training. The WWC offers this training to inform the public about the key elements of the WWC group design standards, increase transparency of our review process, and promote the use of rigorous, high-quality research.
Module 1: Group Designs	ABOUT THE TRAINING
Module 2: Attrition	This training series includes nine modules, each focused on a different aspect of the WWC group design standards and procedures. We recommend viewing the modules in numerical order. Start with the Introduction video, which describes the goals, topics, and
Module 3: Baseline Equivalence	organization of this training.
Module 4: Confounding Factors	CERTIFICATE
Module 5: Outcome Measures	If you view the first six modules on WWC standards in this training series, you will earn a certificate of completion. When you complete the Systematic Reviews module, choose the "Print Certificate" menu option on the left to receive your certificate.
Module 6: Systematic Reviews	GROUP DESIGN STANDARDS CERTIFICATION
Print Certificate	Becoming certified in the WWC group design standards requires that you view all nine
Modules 7 through 9	modules on the WWC Standards and Procedures and successfully complete a multiple- choice certification test. You will have four opportunities to take and pass the test, which includes 50 shorter multiple-choice questions and two multiple-part questions that
WWC Resources	simulate a review. When you successfully complete the test, you will be able to print a certificate as proof that you are certified in the WWC group design standards.
Slide Decks by Module	Take the test
Transcripts by Module	BECOMING A CERTIFIED REVIEWER FOR THE WWC
Glossary	In addition to the certification test, trainees seeking to be certified reviewers for the WWC
FAQs	must complete additional tasks. Use the <b>Contact Us</b> form to contact the Help Desk if you
Procedures and Standards Handbooks	are interested in pursuing this highest level of certification. Those who successfully
Review Protocols	complete this level of certification can be included in the list of certified reviewers on the WWC website, and the WWC or the Institute of Education Sciences may contact them to
Study Review Guides Standards Briefs	assist with review efforts.
Assessing Attrition Bias	To receive updates about new training content and/or certification options, please
WWC Help Desk	subscribe to the WWC's Newsflash.



# Advanced Research Design Courses: Relevant WWC Resources

Week	Торіс	IES: WWC Clearinghouse EMENU Search Go					
1	Introduction to Causal Inference	HANDBOOKS AND OTHER RESOURCES					
2	Experimental Research Designs	Procedures and Standards Handbooks Review Protocols Supplemental Materials Webinars					
3	Quasi-Experimental Research Designs	Current Standards       The WWC Handbooks provide a detailed description of the standards and procedures of the WWC.         Version 4.0       Version 4.0 of the Handbooks contain the standards currently in use by the WWC for reviewing					
4	Clustered Research Designs	Version 4.0         studies. Some reviews may continue to be conducted using the Version 3.0 Procedures and Standards Handbook.					
5	<b>Regression Discontinuity Designs</b>	Current Standards Version 4.0, October 2017					
6	Missing Data Analysis	」 WWC Version 4.0 Procedures Handbook (800 KB)					
7	Intervention Fidelity						
8	Instrumental Variable Analysis						
9	Non-Design Threats to Validity						
10	Reporting Standards						



# **Advanced Research Design Courses: Relevant WWC Resources**

Week	Торіс	IES : WWC What Works EMENU Search Go
1	Introduction to Causal Inference	HANDBOOKS AND OTHER RESOURCES
2	Experimental Research Designs	
3	Quasi-Experimental Research Designs	Procedures and Standards Handbooks         Review Protocols         Supplemental Materials         Webinars           The WWC provides additional resources for understanding the WWC standards and procedures. Listed below are documents and         Item to the WWC provides additional resources for understanding the WWC standards and procedures. Listed below are documents and
4	Clustered Research Designs	webinars to help researchers, policymakers, and practitioners learn more about the standards and procedures the WWC uses in its work.
5	Regression Discontinuity Designs	<ul> <li>Reporting Guide for Study Authors: Group Design Studies provides guidance to study authors about how to describe group design studies and report their findings in a way that is clear, complete, and transparent.</li> <li>Reporting Guide for Study Authors: Regression Discontinuity Design Studies provides guidance to study authors about how to</li> </ul>
6	Missing Data Analysis	<ul> <li>describe regression discontinuity design studies and report their findings in a way that is clear, complete, and transparent.</li> <li>Process Briefs explain how the WWC does different aspects of its work.</li> <li>Standards Briefs provide explanations of the rules the WWC uses to evaluate the quality of studies for practitioners, researchers,</li> </ul>
7	Intervention Fidelity	and policymakers.  Understanding WWC Intervention Reports That Summarize Single-Case Design Research  A Closer Look at the What Works Clearinghouse Review Process and Key Resources
8	Instrumental Variable Analysis	Assessing Attrition Bias
9	Non-Design Threats to Validity	
10	Reporting Standards	

### **Research Synthesis Courses**



WWC resources can also be used in research synthesis courses focused on systematic reviewing or meta-analysis methods for synthesizing causal research evidence.

Content may be appropriate for honors-level undergraduate courses or graduate-level courses.

# **Research Synthesis Courses**

### **Example course overview:**

The purpose of this course is to provide students with a comprehensive understanding of systematic reviewing and meta-analysis methods used to synthesize results from multiple primary research studies assessing the effects of educational or social service interventions. The course is designed to familiarize students with current best practices in evidence synthesis, with particular emphasis on formulating research questions appropriate for evidence synthesis, conducting systematic literature reviews, systematically collecting study-level data, and quantitatively synthesizing effect sizes using meta-analytic techniques.

# **Research Synthesis Courses: Example Course Plan**

Week	Торіс	Data from Individual Studies	E-Brochures	Procedures Handbook	Review Protocols	Process Briefs	Webinar Videos
1	Introduction to Research Synthesis	Making of	Making of	Sect I		—	—
2	Problem Formulation and Protocol Development			Sect II Appendix C	Protocols	Screening	<u>fww V</u>
3	Effect Size Metrics		—	Appendix E Appendix F	—	—	—
4	Systematic Literature Searching		_	Section III Appendix B	Protocols	—	—
5	Data Extraction and Quality Appraisal	<u>Data</u>		Sect IV Sect V Appendix D		<u>Review</u>	—

# **Research Synthesis Courses: Example Course Plan**

Week	Торіс	Data from Individual Studies	Procedures Handbook	Review Protocols	E-Brochures	Webinar Videos
6	Fixed- and Random-Effects Meta-Analysis	<u>Data</u>	—	—	—	—
7	Assessing and Exploring Heterogeneity	<u>Data</u>	—	—	—	
8	Publication and Small Study Bias	<u>Data</u>	Appendix B	Protocols	_	_
9	Grading of Evidence	—	Sect II	Protocols	—	Evidence V
10	Reporting Standards		Sect VI	—	<u>Reporting</u>	—

Week	Торіс	IES : WWC What Works EMENU Search Co
1	Introduction to Research Synthesis	HANDBOOKS AND OTHER RESOURCES
2	Problem Formulation and Protocol Development	Procedures and Standards Handbooks Review Protocols Supplemental Materials Webinars
3	Effect Size Metrics	Current Standards         The WWC Handbooks provide a detailed description of the standards and procedures of the WWC.           Version 4.0         Version 4.0 of the Handbooks contain the standards currently in use by the WWC for reviewing studies. Some reviews may continue to be conducted using the Version 3.0 Procedures and
4	Systematic Literature Searching	Prior Standards Standards Handbook. Current Standards Version 4.0, October 2017
5	Data Extraction and Quality Appraisal	WWC Version 4.0 Standards Handbook (3.1 MB)
6	Fixed- and Random-Effects Meta-Analysis	년 WWC Version 4.0 Procedures Handbook (800 KB)
7	Assessing and Exploring Heterogeneity	
8	Publication and Small Study Bias	
9	Grading of Evidence	
10	Reporting Standards	

## **Research Synthesis Courses: Relevant WWC Resources**

Week	Торіс
1	Introduction to Research Synthesis
2	Problem Formulation and Protocol Development
3	Effect Size Metrics
4	Systematic Literature Searching
5	Data Extraction and Quality Appraisal
6	Fixed- and Random-Effects Meta-Analysis
7	Assessing and Exploring Heterogeneity
8	Publication and Small Study Bias
9	Grading of Evidence
10	Reporting Standards

IES : WWC What Works Clearinghous		> Search Go
HANDBOOKS AND OTHER RESO	URCES	
Procedures and Standards Handbooks	Review Protocols Supplemental Materials Web	inars

### Table B.1. Sample Search Terms for WWC Literature Searches

Keywords	Related Search Terms
Intervention	Approach, curricul*, educational therapy, homework, improvement, instruct*, practice, program, remedial, school*, strategy, success*, teach*, treatment
Outcomes	Alphabetics, aural learning, comprehension, fluency, language, letter identification, lexicography, literacy, phonemic, phonetics, phonics, phonological, print awareness, print knowledge, readability, reading, verbal development, vocabulary, vocalization, word recognition
Population	Adolescent*, eighth grade, elementary school, eleventh grade, fifth grade, fourth grade, grade 4, grade 5, grade 6, grade 7, grade 8, grade 9, grade 10, grade 11, grade 12, high school, junior high, K–12, middle grades, middle school, ninth grade, seventh grade, sixth grade, student*, summer school, tenth grade, twelfth grade
Study design	ABAB design, affect*, assignment, causal, comparison group, control*, counterfactual, effect*, efficacy, evaluation*, experiment*, impact*, matched group, meta analysis, meta-analysis, posttest, post-test, pretest, pre-test, QED QES, quasi-experimental, quasiexperimental, random*, RCT, RDD, regression discontinuity, simultaneous treatment, SCD, single case, single subject, treatment, reversal design, withdrawal design

## **Research Synthesis Courses: Relevant WWC Resources**

Week	Торіс
1	Introduction to Research Synthesis
2	Problem Formulation and Protocol Development
3	Effect Size Metrics
4	Systematic Literature Searching
5	Data Extraction and Quality Appraisal
6	Fixed- and Random-Effects Meta-Analysis
7	Assessing and Exploring Heterogeneity
8	Publication and Small Study Bias
9	Grading of Evidence
10	Reporting Standards

IES : WWC What Works Clearinghous	e EMENU	> Search Co
HANDBOOKS AND OTHER RESO	JRCES	
Procedures and Standards Handbooks	Review Protocols Supplemental Materials Webinars	

### Table B.2. General Sources: Electronic Databases

Database	Description
Academic Search Premier	The multidisciplinary full text database contains peer-reviewed full text journals for more than 4,600 journals, including nearly 3,900 peer-reviewed titles and indexing and abstracts for more than 8,500 journals.
EconLit	The American Economic Association's electronic database is the world's foremost source of references to economic literature. There are more than 1.1 million records available.
Education Research Complete	The world's largest and most complete collection of full text education journals, ERC provides indexing and abstracts for more than 2,300 journals and full text for approximately 1,400 journals and 550 books and monographs.
E-Journals	The E-Journals database provides article-level access for thousands of e-journals available through EBSCOhost and EBSCO Subscription Services.
ERIC	Funded by the U.S. Department of Education, the Education Resource Information Center provides access to education literature and resources, including information from journals indexed in the Current Index of Journals in Education and Resources in Education Index. ERIC provides ready access to education literature to support

# **Research Synthesis Courses: Relevant WWC Resources**

Week	Торіс
1	Introduction to Research Synthesis
2	Problem Formulation and Protocol Development
3	Effect Size Metrics
4	Systematic Literature Searching
5	Data Extraction and Quality Appraisal
6	Fixed- and Random-Effects Meta-Analysis
7	Assessing and Exploring Heterogeneity
8	Publication and Small Study Bias
9	Grading of Evidence
10	Reporting Standards

HANDBOOKS AND OTHER RESOURCES	HANDBOOKS AND OTHER RESO	URCES	
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$$g = \frac{\omega(y_i - y_c)}{\sqrt{\frac{(n_i - 1)s_i^2 + (n_c - 1)s_c^2}{n_i + n_c - 2}}}$$

$$d_{Cox} = \omega \frac{LOR}{1.65}$$

$$g = \omega t \sqrt{\frac{n_i + n_c}{n_i n_c}}$$

1 + 1

 $g = \omega_{\sqrt{\frac{F(n_i + n_c)}{F(n_i + n_c)}}}$ 

$$SD_{Cluster} = SD_{Student} * sqrt (ICC)$$

Week	Торіс	IES : WWC Clearinghouse EMENU : Search Co
1	Introduction to Research Synthesis	HANDBOOKS AND OTHER RESOURCES
2	Problem Formulation and Protocol Development	Procedures and Standards Handbooks Review Protocols Supplemental Materials Webinars
3	Effect Size Metrics	Figure IV.1. Computation of the WWC Improvement Index
4	Systematic Literature Searching	Comparison Distribution
5	Data Extraction and Quality Appraisal	of \$cores → Intervention
6	Fixed- and Random-Effects Meta-Analysis	Distribution of Scores
7	Assessing and Exploring Heterogeneity	Probability
8	Publication and Small Study Bias	
9	Grading of Evidence	-3 $-2.5$ $-2$ $-1.5$ $-1$ $-0.5$ $0.5$ $p.5$ $1$ $1.5$ $2$ $2.5$ $3Standard DeviationsComparison Percentile$
10	Reporting Standards	1 5 10 20 34 50 66 80 90 95 99 Improvement Index = +16

Week	Торіс	IES : WWC What Works EMENU : Search
1	Introduction to Research Synthesis	HANDBOOKS AND OTHER RESOURCES
2	Problem Formulation and Protocol Development	Procedures and Standards Handbooks Review Protocols Supplemental Materials Webinars
3	Effect Size Metrics	A review protocol defines the scope of a systematic review. Developed with substantive experts, the protocol defines the parameters for the review, including the research, populations, settings, and outcomes. The protocol also specifies details of the literature search and any topic-specific applications of the design standards.
4	Systematic Literature Searching	Protocol versions reflect the version of WWC standards in effect when the protocol was released. Protocol versions that predate the current version of the WWC standards handbook can be used to identify acceptable outcome domains for review within a given
5	Data Extraction and Quality Appraisal	topic. The current WWC standards are used to guide the review of studies with acceptable outcomes.
6	Fixed- and Random-Effects Meta-Analysis	
7	Assessing and Exploring Heterogeneity	
8	Publication and Small Study Bias	
9	Grading of Evidence	
10	Reporting Standards	

Week	Торіс	https://ies.ed.gov/ncee/wwc/StudyFindings						
1	Introduction to Research Synthesis	IES : WWC Clearinghouse EMENU Search Co						
2	Problem Formulation and Protocol Development	DATA FROM INDIVIDUAL STUDIES The review of individual studies underlies all What Works Clearinghouse (WWC) products, from reports on a single study to a systematic review of all studies on an intervention. The WWC provides the capability for users to extract data resulting from WWC reviews for every						
3	Effect Size Metrics	study that meets standards.         The WWC provides this extraction tool as part of our open data approach to increase transparency. The continually updated dataset provides:         • Greater transparency for WWC reviews, allowing users to replicate WWC findings and reports         • Comprehensive information to encourage research questions beyond those asked by the WWC         • Detailed study findings to allow for meta-analysis         • Contextual information for the examination of what works for whom and under what conditions         • A pre-merged file containing data from all findings, studies, and intervention reports, with new publicly available data, including         • The Level 1 unit of analysis         • An indicator of "multisite"         • Topic areas         • Posting date         • ESSA evidence tiers         Use the filters below for the pre-merged file to download targeted data from intervention reports, studies, and findings. Users can filter by WWC study rating, topics, protocols, interventions, ESSA ratings, standards versions, and outcome domains. Users may also choose to download data from intervention reports, the filters are for use with the merged file.						
4	Systematic Literature Searching							
5	Data Extraction and Quality Appraisal							
6	Fixed- and Random-Effects Meta-Analysis							
7	Assessing and Exploring Heterogeneity							
8	Publication and Small Study Bias	All Ratings (4) • Behavior • All Protocols •						
9	Grading of Evidence	All Interventions →     All ESSA Ratings →     All Standards Versions →						
10	Reporting Standards	Behavior - Download the Intervention Reports, Findings and Studies data to the separate files						
		Download Merged File						

Week	Торіс	IES > WWC who	at Works aringhouse	≡ MENU		Search Go
1	Introduction to Research Synthesis		L STUDIES			
2	Problem Formulation and Protocol Development	Export 😵	50931	252 Too Good for Drugs and Violence (TGFD & V)	Character Education	E F roto( I j_Outcome_Domain V 1 Knowledge, attitudes, & values
3	Effect Size Metrics	Your export should download shortly as a zip archive (approximately 2 MB).	50931 50931 50931 50931	252 Too Good for Drugs and Violence (TGFD & V) 252 Too Good for Drugs and Violence (TGFD & V) 252 Too Good for Drugs and Violence (TGFD & V) 252 Too Good for Drugs and Violence (TGFD & V)	Character Education Character Education	1 Knowledge, attitudes, & values 1 Knowledge, attitudes, & values 1 Knowledge, attitudes, & values 1 Knowledge, attitudes, & values
4	Systematic Literature Searching	This download will include data files for study and findings review data and a data	50931 50931 50932 50932	252 Too Good for Drugs and Violence (TGFD & V) 252 Too Good for Drugs and Violence (TGFD & V) 252 Too Good for Drugs and Violence (TGFD & V) 252 Too Good for Drugs and Violence (TGFD & V)	Character Education Character Education	1 Knowledge, attitudes, & values 1 Knowledge, attitudes, & values 1 Knowledge, attitudes, & values 1 Knowledge, attitudes, & values
5	Data Extraction and Quality Appraisal	dictionary. Consult the READ ME file before	50932 50932 50932 50932 50932 50932	252 Too Good for Drugs and Violence (TGFD & V) 252 Too Good for Drugs and Violence (TGFD & V) 252 Too Good for Drugs and Violence (TGFD & V) 252 Too Good for Drugs and Violence (TGFD & V) 252 Too Good for Drugs and Violence (TGFD & V)		1 Knowledge, attitudes, & values 1 Knowledge, attitudes, & values 1 Knowledge, attitudes, & values 1 Knowledge, attitudes, & values 1 Knowledge, attitudes, & values
6	Fixed- and Random-Effects Meta-Analysis	importing the files to Excel.	50936 50936 50936 50936 50936	251 Too Good for Drugs (TGFD) 251 Too Good for Drugs (TGFD)	Character Education Character Education Character Education Character Education Character Education	I Ribwedge, attitudes, & values     I Behavior     Behavior     Knowledge, attitudes, & values
7	Assessing and Exploring Heterogeneity	OK	50936 50936 50937 50937	251 Too Good for Drugs (TGFD) 251 Too Good for Drugs (TGFD)	Character Education Character Education Character Education Character Education Character Education	Knowledge, attitudes, & values
8	Publication and Small Study Bias		50937 50937 50937 50937 50937	251 Too Good for Drugs (TGFD) 251 Too Good for Drugs (TGFD)	Character Education Character Education Character Education Character Education Character Education	Knowledge, attitudes, & values
9	Grading of Evidence					
10	Reporting Standards	-				

Week	Торіс	IES: WWC What Works Clearinghouse		ENU							[	🔆 Search	Go
1	Introduction to Research Synthesis		5										
2	Problem Formulation and Protocol Development	JB f_Outcome_Measure Perceptions of social and resistance skills Perception of emotional competence	JD ▼ f_Period ▼	JE f_Sample_D Grades 9 - 12 Grades 9 - 12	JH <b>f_Ou</b> ▼ f 100 100	JI _Ou ▼ f_ 100 100	JL Inte • f 4.07 4.09	JM _Co ▼ f 3.73 3.79	JN Int • 0.56 0.52	JO <b>C</b> • f 0.67 0.59	0.56	JQ _Effect_Size_ v f 0.54855948 0.537422858	JR f_Impro ▼ 21 21
3	Effect Size Metrics	Positive attitudes towards non-violence Perceptions of assertiveness/efficacy skills Perceptions of parental negative attitudes towards substance use	2	Grades 9 - 12 Grades 9 - 12 Grades 9 - 12 Grades 9 - 12 Grades 9 - 12	100 100 100 69	100 100 100 69	3.97 4.17	3.55 3.98 3.33	0.77 0.72	0.78	0.54 0.26	0.539868867 0.261068817 0.540123243	21 21 10 21 17
4	Systematic Literature Searching	Intentions for marijuana (no intentions) Intentions for fighting (no intentions) Perceptions of social and resistance skills Perceptions of emotional competence		Grades 9 - 12 Grades 9 - 12 Grades 9 - 12	64 151 151	64 151 151	4.08	3.77 3.72	0.58 0.62	0.61	0.47 0.52 0.5	0.519539726 0.502535926	18 20 19
5	Data Extraction and Quality Appraisal	Positive attitudes towards nonviolence Perceptions of assertiveness and efficacy Perceptions of goal setting and decisionmaking skills Intentions for marijuana (no intentions)		Grades 9 - 12 Grades 9 - 12 Grades 9 - 12 Grades 9 - 12	151 151 151 98	151 151 151 98	3.78 4.18 3.59	3.52 3.94 3.43	0.79 0.7 0.93		0.29 0.18 0.47	0.330374773 0.299004198 0.182040351	13 11 7 18
6	Fixed- and Random-Effects Meta-Analysis	Intentions for fighting (no intentions) Personal and social skills Prosocial behaviors Inappropriate behaviors	Follow-up	Grades 9 - 12 Grades 3-4 Grades 3-4 Grades 3-4	75 525 525 525	75 525 525 525	3.75 3.82 4.04	3.51 3.46 4.04	0.83 0.86 1.04	0.72 0.78 1.18	0.13 0.31 0.44 0	0.308679403 0.438189094 0	5 12 17 0
7	Assessing and Exploring Heterogeneity	Emotional competency skills (follow-up) Social and resistance skills Goal setting and decision making skills	Follow-up	Grades 3-4 Grades 3-4 Grades 3-4	467 467 467 3	467 467 467	4 3.59 4.33	3.95 3.54 4.21	0.63	0.61 0.64 0.71	0.08 0.17	0.081901235 0.078674338 0.166516451	3 3 7
8	Publication and Small Study Bias	Intentions for drinking Intentions for marijuana Resistance skills Peers disapprove use		Grade 6 Grade 6	3 3 3 3	3 3 3 3	4.36 3.73	4.15 3.47	0.75 0.98	0.82 1.07	0.18 0.23 0.27 0.26	0.213800336 0.202731548	9 11 10
9	Grading of Evidence	Prosocial peers Locus of control	Follow-up Follow-up		3	3	4.58 4.37	4.5 4.25	0.74 0.63	0.86 0.72	0.1 0.18	0.079775945 0.141907222	4
10	Reporting Standards												

# **Research Synthesis Courses: Relevant WWC Resources**

Week	Торіс	IES : WWC What Works Clearinghouse	🔆 Search
1	Introduction to Research Synthesis	B DATA FROM INDIVIDUAL STUDIES	
2	Problem Formulation and Protocol Development	N     S     T     U     V       i_Delivery_Meth     i_Ethnicit     i_Ethnicit     i_Gender     i_Gender_       1     13.38     86.61     52     47.99       1     13.38     86.61     52     47.99	
3	Effect Size Metrics	1         13.38         80.01         52         47.39           1         13.38         86.61         52         47.99           1         13.38         86.61         52         47.99	
4	Systematic Literature Searching	113.3886.615247.99113.3886.615247.99113.3886.615247.99	
5	Data Extraction and Quality Appraisal	113.3886.615247.99113.3886.615247.99113.3886.615247.99	
6	Fixed- and Random-Effects Meta-Analysis	113.3886.615247.99113.3886.615247.99113.3886.615247.99	
7	Assessing and Exploring Heterogeneity	1         13130         131311         1313111         1313111         1313111	
8	Publication and Small Study Bias	110.0189.9849.0150.98110.0189.9849.0150.98	
9	Grading of Evidence	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	
10	Reporting Standards	1         10.01         89.98         49.01         50.98           1         10.01         89.98         49.01         50.98           1         10.01         89.98         49.01         50.98	
		1 10.01 89.98 49.01 50.98	

1

10.01

89.98

49.01

50.98



# Questions about these resources, how to access them, and their possible use in methods courses?



# Contact

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WWC Help Desk: <a href="https://ies.ed.gov/ncee/wwc/help">https://ies.ed.gov/ncee/wwc/help</a>