Institute of Education Sciences

WWC REPORTING GUIDE FOR STUDY AUTHORS

WHAT WORKS CLEARINGHOUSE™

NCEE WWC
U.S. DEPARTMENT OF EDUCATION

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The What Works Clearinghouse (WWC) identifies existing research on educational interventions, assesses the quality of the research, and summarizes and disseminates the evidence from studies that meet WWC standards. The WWC aims to provide enough information so educators can use the research to make informed decisions in their settings. This document guides study authors on how to describe their studies and report findings in a way that is clear and complete. This document also outlines specific reporting guidelines for randomized controlled trials and quasi-experimental studies, which are the two most common types of research designs in studies the WWC reviews. The WWC also reviews studies with single-case and regression discontinuity designs.

When designing studies, researchers should familiarize themselves with how studies can meet WWC standards by referring to the WWC version 4.1 handbooks and the Study Review Protocol. Additional resources for study authors and the WWC glossary are also available on the WWC website.

WHICH STUDIES DOES THE WWC REVIEW?

Studies must meet the following criteria to be eligible for review using the WWC version 4.1 handbooks:

- Examine the effect of an intervention focused on improving educationally relevant outcomes.
- Meet the eligibility requirements outlined in the Study Review Protocol.
- Be publicly available. If studies are not publicly available, authors can submit them to the Education Resources Information Center (ERIC) at eric.ed.gov.

WWC review protocols describe how research is identified and prioritized for review in certain topic areas. The WWC also reviews studies identified for other reasons, such as being cited in a federal grant competition.

WHAT INFORMATION SHOULD A STUDY HAVE FOR THE WWC TO REVIEW IT?

To facilitate a WWC study review, a study should report all information described in the following tables. If the WWC determines that a study might meet WWC standards and required information is not adequately documented, WWC reviewers may reach out to study authors for additional information.

The WWC may review a study even when some elements listed in the tables below are not available or unknown. However, the WWC encourages study authors to follow the Standards for Excellence in Education Research and to use transparent reporting practices in general. Also, the elements listed below are not intended to be exhaustive. The WWC may request additional data elements from study authors to complete its review of a study.

Table 1. Intervention and comparison conditions

Key Questions	Description
What happened in the intervention condition?	☐ Goals of the intervention, including intended outcomes and populations. ☐ The intervention's key components, such as curricula, instructional strategies, professional development,coaching, advising, mentoring, specialized courses, or other activities or strategies, and the extent to which each key component was implemented. ☐ The resources needed to implement the intervention—personnel and their qualifications, facilities, technology, student peers, and materials—and the cost of each. ☐ Delivery method—individual, small group, whole class, school. ☐ The timing of the start and end of the intervention. ☐ Intended and actual duration, frequency, and dosage.
What happened in the comparison condition?	☐ What the comparison group received or did in lieu of the intervention so that readers understand the contrast between the intervention and comparison groups. ☐ If the comparison group received another intervention, the same information above about the comparison intervention.

Table 2. Study sample and context

Key Questions	Description
What is the population of interest?	☐ The population to which the study findings should apply in other contexts. ☐ Steps taken to increase generalizability of findings, either via sampling or analysis.
Who participated in the study?	☐ Student grades, and ages for early childhood and adult learners and learners with disabilities. ☐ Student race, including American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or other Pacific Islander, White, and other. Some students may identify as belonging to multiple racial groups. ☐ Student ethnicity, as Hispanic/Latino or not Hispanic/Latino. ☐ Student sex, gender, or gender identity. ☐ Students with an individualized education program, individualized family service plan, or 504 plan, and disability type—autism spectrum disorder, emotional disturbance, intellectual disability, developmental delay, or other specific disability. ☐ Student English learner status—current, former, ever, never—and other English learner characteristics—language spoken at home, newcomer, long-term, English proficiency level. ☐ Student socio-economic status—free or reduced-price lunch, Pell Grant eligible, other. ☐ Other student characteristics—homeless, migrant, foster. ☐ Student achievement on a standardized measure before the start of the intervention—below grade level, on grade level, above grade level. ☐ Educator characteristics—years of experience and credentials.
Where did the study occur?	☐ Country or state(s), if in the United States. ☐ Urban, rural, suburban, or town setting. ☐ Number of schools, postsecondary institutions, or educational sites. ☐ School type—charter, parochial, public, or private—and format—in-person, online, before or after school. ☐ Postsecondary institution type—two-year, four-year, public, private. ☐ Other educational site—center, home-based. ☐ Classroom type, including general or inclusion, self-contained special education, and designated English language development. ☐ Other school, institution, or site characteristics—enrollment, Title I status, magnet, student characteristics.

Table 3. Study pre-registration and conflicts of interest

Key Questions	Description
Was the study pre-registered?	☐ Was the study pre-registered in a recognized study registry, with confirmatory research questions and analysis plans clearly stated? ☐ Was the study executed as intended? When deviations occurred, were they documented and justified?
Were conflicts of interest reported?	☐ Was the source of funding for the study disclosed? ☐ Did any study author work for the organization that developed the intervention?

Table 4. Study design and measures

Key Questions	Description
What was the study design?	☐ Was the study design a randomized controlled trial (RCT), quasi-experimental design (QED), regression discontinuity design (RDD), or single-case design (SCD)?
Which measures were used?	☐ What were the names and versions of the baseline—or pretest—and outcome measures used in the study, and what constructs did they measure? ☐ Who designed the measures—state test, researcher, assessment company? ☐ When were the measures collected? ☐ What were the data collection procedures, and did they differ for the intervention and comparison groups? ☐ What was the reliability of the measures?

SPECIFIC REPORTING GUIDELINES FOR RANDOMIZED CONTROLLED TRIALS AND QUASI-EXPERIMENTAL STUDIES

Some information the WWC collects and uses to complete its reviews of randomized controlled trials and quasi-experimental studies is specific to those study designs. Tables 5 to 8 list reporting guidelines for these study designs.

Table 5. Sample formation and analysis

Key Questions	Description
How were the intervention and comparison groups formed?	☐ How were participants recruited and assigned to the intervention and comparison groups? ☐ Were participants assigned as individuals—students or teachers—or in clusters—classes, schools, or districts? ☐ For RCTs, when and how was random assignment conducted? • What was the random assignment process, including the timeline of obtaining study consent if applicable? • Was random assignment conducted within strata—by school type, grade level, or student background characteristics?
Which participants were included in the analysis?	☐ What were the reasons participants or clusters were not included in the analysis, such as eligibility rules, missing data, or other decisions the researchers made? ☐ For RCTs, did any participants join the study after random assignment? If so, (a) when did participants know the results of the random assignment? (b) when did the participants join the study? and (c) were data on the participants who joined used in the analysis to estimate the effects of the intervention?
What was the method to estimate the effects of the intervention?	☐ Which analytic methods were used to estimate the effects of the intervention or compare outcomes for the intervention and comparison groups (see Table 7)? ☐ Which covariates did the analysis control for, and when were the covariates measured? ☐ What level of data was analyzed—students, classes, schools—and, if applicable, how did the analysis account for any clustering of participants within clusters? ☐ If participants had different chances of being assigned to the intervention or comparison group, did the analysis control for the probability of assignment? ☐ If any participants with missing data were included in the analysis, which imputation or other analytic methods were used to address the missing data?

Table 6. Descriptive statistics for the analytic sample - for each measure

	Intervention condition—analytic sample					Comparison condition—analytic sample				
Measure	Number of individuals	Number of clusters, if applicable	Unadjusted mean	Adjusted mean	Unadjusted standard deviation	Number of individuals	Number of clusters, if applicable	Unadjusted mean	Adjusted mean	Unadjusted standard deviation
Baseline measure 1				*Not applicable*					*Not applicable*	
Outcome measure 1				*If findings adjust for covariates*					*If findings adjust for covariates*	

Consider the following guidance when providing the descriptive statistics in Table 6:

- Report the statistics in Table 6 for the *analytic sample*. Generally, the analytic sample will include the same participants for the outcome and baseline measures and will exclude any participants who left the study. One exception is when the study uses methods to address missing data. In this case, exclude any imputed values from these descriptive statistics. Another exception is cluster-assignment studies where participants for the baseline measure may be different from those for the outcome measure, such as when baseline data come from an earlier cohort.
- Table 6 should include rows for each outcome and baseline measure, though not all studies will include baseline measures.
- For all baseline and outcome measures, provide the raw, unadjusted standard deviations calculated using data at the individual–not cluster–level. The standard deviations may come from the sample or a population of interest, such as a district, state, or nationwide. Provide the unadjusted means for each baseline measure as well.

The **analytic sample** includes the participants from the intervention and comparison groups used in the analysis to estimate the effects of the intervention. The analytic sample may differ for each outcome measure, time period, or analytic approach in the study.

Table 7. Study results - for each outcome measure

Element	For each outcome measure, provide:
Impact estimate	A measure of the impact of the intervention relative to the comparison group. This can include the following: • Unstandardized regression coefficient for the intervention indicator and standard error • Adjusted difference in means, such as when using analysis of covariance (ANCOVA) • Unadjusted difference in means
Test statistic	The test statistic associated with the impact estimate can include the following: • *t* for a regression coefficient or difference in means • *F* for the intervention factor in an analysis of variance (ANOVA) • *F* for the full model in an analysis of covariance (ANCOVA)
Statistical significance	The *p*-value associated with the impact estimate test statistic.
Effect size	The WWC reports effect sizes in terms of Hedges' *g*, which is based on the adjusted means and the unadjusted standard deviations and includes an adjustment for studies with small samples. Describe whether the effect sizes in the study use this same calculation or another calculation.
Cluster-level variation for cluster-assignment studies	The intraclass correlation coefficient (ICC) describes to what extent the participants' outcomes vary across clusters. Provide the ICC at the level at which clusters were assigned to the intervention or comparison group, if applicable.
Relationship with the baseline measure	The correlation between the outcome measure and the baseline measure and the R^2 from a regression or ANCOVA analysis, if applicable.

Table 8. Attrition and nonresponse - only needed for studies with random assignment

#	Count of individuals or clusters	Intervention condition	Comparison condition
	When individuals are randomly assigned to conditions		
1	Number of individuals randomly assigned		
2	Number of individuals in the analytic sample		
	When clusters are randomly assigned to conditions		
3	Number of clusters randomly assigned		
4	Number of clusters in the analytic sample		
5	Number of individuals in remaining (#4) clusters before random assignment, if known		
6	Number of individuals in remaining (#4) clusters within six weeks after random assignment, if known		
7	Number of individuals in remaining (#4) clusters at a later point in time but before outcomes data are collected, if known		

The WWC defines attrition as the loss of participants–in an individual-level RCT–or clusters–in a cluster-level RCT–after random assignment. Additionally, in cluster-assignment RCTs, the WWC defines nonresponse as the loss of individuals from within clusters. To assess attrition and nonresponse of individuals in RCTs, the WWC will compare the counts in Table 8 to the sample used in the analysis to estimate the effects of the intervention in Table 6.

Consider the following guidance when providing the counts in Table 8:

- The count in #1 should include all individuals, not only those included in the analytic sample.
- The counts in #5 to #7 should include all individuals in the remaining clusters–clusters in the analytic sample–not only the individuals included in the analytic sample. However, when the analysis includes only some individuals based on a characteristic that could not be affected by the intervention (such as grade level or a baseline test score), these counts should exclude individuals who do not share that same characteristic. For example, if the study assigned high schools to conditions, but only analyzed students in grade 10, then these counts should include only grade 10 students.
- If sample sizes differ across outcomes, complete Table 8 for each outcome measure.