

Checklists for the Common Guidelines for Education Research and Development

This document includes a series of six checklists—one for each of the six types of research outlined in the *Common Guidelines for Education Research and Development*. The *Guidelines*, developed by the Institute of Education Sciences at the U.S. Department of Education and the National Science Foundation, explains those agencies’ shared expectations for education research and development. The checklists, created by EvaluATE, are distillations of key points from the *Guidelines*. The checklists are intended to support use of the *Guidelines*, enabling users to quickly reference a type of research and determine whether they are following guideline’s expectations. As such, they provide an overview and orientation to the *Guidelines*. **They do not replace that report nor do they expand or elaborate on the report’s content.** The checklists’ content has been extracted (usually verbatim) from the full report. All checklist users are strongly encouraged to read the complete *Guidelines*, available from http://bit.ly/nsf-ies_guide.

You may go directly to the checklist for each type of research by clicking on the links below:

1. **Foundational Research** to advance the frontiers of education and learning; develop and refine theory and methodology; and provide fundamental knowledge about teaching and/or learning
2. **Early-Stage or Exploratory Research** to investigate approaches to education problems to establish the basis for design and development of new interventions or strategies and/or to provide evidence for whether an established intervention or strategy is ready to be tested in an efficacy study
3. **Design and Development Research** to develop new or improved interventions or strategies to achieve well-specified learning goals or objectives, including making refinements on the basis of small-scale testing
4. **Efficacy Research** to determine whether an intervention or strategy can improve outcomes under “ideal” conditions (e.g., with more implementation support, highly trained personnel, and/or more homogenous participants than is typical)
5. **Effectiveness Research** to estimate the impacts of an intervention or strategy when implemented under conditions of routine practice (i.e., conditions similar to what would occur if a study were not being conducted)
6. **Scale-Up Research** to estimate the impacts of an intervention or strategy under conditions of routine practice *and* across a broad spectrum of populations and settings, sufficiently diverse to broadly generalize findings

TYPE 1: FOUNDATIONAL RESEARCH to advance the frontiers of education and learning; develop and refine theory and methodology; and provide fundamental knowledge about teaching and/or learning

Justification

Policy and/or Practical Significance

- Address important research questions related to education and learning
- Have clear implications for policy and/or practice (direct relationship to student outcomes not required)

Theoretical and Empirical Basis

- Outline the study's theoretical and empirical bases
- Explain why the research is needed
- Describe whether and how the study will
 - identify or explore important new constructs in education and learning
 - extend understanding of current constructs
 - explain understanding of relationships among the constructs under investigation and/or
 - extend research methodologies for advancing the evidence base to support improved policy or practice

Evidence

Project Outcomes

- Advances in theory, methodology, and/or understanding of important constructs in education
- Findings that could serve as basis for future studies

Research Plan

- Define the study's key conjectures or hypotheses, questions, and objectives—derived from the study's theoretical and empirical justifications
- Describe the study design in detail, including:
 - population of interest
 - sampling or selection methods
 - sample size
 - data analysis methods
- Describe plans for data management and analysis, curating, and sharing
- Describe plan for disseminating findings

For studies that include hypothesis testing:

- Identify the minimum relevant mean difference or relationship between variables and sample size required to ensure adequate statistical power to detect true differences or relationships of this magnitude or larger

For qualitative studies:

- Justify the sample size and selection plan

For studies analyzing secondary data:

- Describe the source and availability of data and sequence of modeling planned

For studies collecting primary data:

- Describe the instruments and protocols
- Provide evidence from literature to support assumptions that guide the sample design
- Describe strategies for ensuring validity and reliability of outcome measures
- Describe how findings will be triangulated

External Feedback

- Subject the study to a series of external, critical reviews of its design and activities via one or more of the following strategies:
 - Peer review of the proposed project
 - Ongoing monitoring and review by the grant making agency's personnel
 - External review panels or advisory boards proposed by the project and/or the agency
 - Third-party evaluator
 - Peer review of publications and conference presentations resulting from the project
- Ensure the external review is sufficiently independent and rigorous to influence the project's activities and improve the quality of its finding

TYPE 2: EARLY-STAGE OR EXPLORATORY RESEARCH to investigate approaches to education problems to establish the basis for design and development of new interventions or strategies and/or to provide evidence for whether an established intervention or strategy is ready to be tested in an efficacy study

Justification

Policy and/or Practical Significance

- Describe the practical education problem or issue on which the study is focused
- Provide a rationale for studying the problem
- Explain how the research will generate important knowledge to inform the development, improvement, or evaluation of education programs, policies, or practices

Theoretical and Empirical Basis

- Describe the theoretical or empirical rationale for the project, including citations of supporting evidence
- For research on existing interventions*, explain why it should be studied through early-stage or exploratory research rather than an efficacy study

Evidence

Project Outcomes

- Evidence regarding one or both of the following:
 - Malleable factors' association with education outcomes.
 - Whether malleable factors and conditions moderate and/or mediate the relationship between malleable factors and education outcomes.
- Explanation of relationship between factors and education outcomes in the form of one of the following:
 - Well-specified conceptual framework that supports a link between the malleable factors and education outcomes
 - Theoretical explanation for the factors' and conditions' moderation and/or mediation of the relationship between malleable factors and learner outcomes
- Determination based on empirical evidence and conceptual framework of whether there is a basis for pursuing a Design and Development project or an Efficacy study or whether further foundational/exploratory research is needed before proceeding to Efficacy or Effectiveness testing

Research Plan

- Define the study's hypotheses or research questions—derived from the study's theoretical and empirical justifications
- Describe the research design, demonstrating how it is appropriate for the hypotheses or research questions
- Justify the proposed context and sample for the study
- If secondary analyses are proposed*, describe data sources
- Describe data collection procedures and instruments, including evidence of and strategies for ensuring reliability and validity
- If applicable*, describe a plan to study the opportunities for interventions to address education challenges
- Describe data analysis procedures
- Describe reporting plan

External Feedback

- Subject the study to a series of external, critical reviews of its design and activities via one or more of the following strategies:
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 - Ongoing monitoring and review by the grant making agency's personnel
 - External review panels or advisory boards proposed by the project and/or the agency
 - Third-party evaluator
 - Peer review of publications and conference presentations resulting from the project
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TYPE 3: DESIGN AND DEVELOPMENT RESEARCH to develop new or improved interventions or strategies to achieve well-specified learning goals or objectives, including making refinements on the basis of small-scale testing

Justification

Policy and/or Practical Significance

- Specify the practical problem the intervention will address
- Justify the importance of the problem
- Describe how the intervention differs from existing practice
- Explain why the project has the potential to improve education outcomes or increase efficiencies in the education system or institutional setting

Theoretical and Empirical Basis

- Describe the theoretical or empirical justification for the intervention
- If the theoretical basis rests on evidence related to individual components, explain how combining these components in a new intervention is expected to achieve intended outcomes*
- Provide well-explicated theory of action or logic model for the intervention, including key components and their relationships, both theoretical and operational

Evidence

Project Outcomes

- Fully developed version of the design-research, including all materials necessary for implementation
- Well-specified theory of action, including evidence supporting or refuting key assumptions of the intervention's original theoretical basis
- Description of the major design iterations and resulting evidence to support key assumptions about the theory of action
- Description and empirical evidence of the adjustments to the theory of action and intervention design that resulted from design testing
- Measures with evidence of technical quality for assessing the implementation of the intervention under typical conditions
- Pilot data on the intervention's promise for generating intended education outcomes

Research Plan

- Describe method for developing the intervention to the point where it can be used by the intended end users
- Describe methods for collecting evidence on the feasibility of implementation by end users under typical conditions
- Describe method for obtaining pilot data on the intervention's promise for achieving intended outcomes

External Feedback

- Subject the project's design and activities to a series of external, critical reviews via one or more of the following strategies:
 - Peer review of the proposed project
 - Ongoing monitoring and review by the grant making agency's personnel
 - External review panels or advisory boards proposed by the project and/or the agency
 - Third-party evaluator
 - Peer review of publications and conference presentations resulting from the project

TYPE 4: EFFICACY RESEARCH to determine whether an intervention or strategy can improve outcomes under “ideal” conditions (e.g., with more implementation support, highly trained personnel, and/or more homogenous participants than is typical)

Justification

Policy and/or Practical Significance

- Describe the intervention to be tested
- Specify the practical problem the proposed intervention will address
- Justify the importance of the problem
- Describe how the intervention differs from other approaches to addressing the problem
- Explain why and how the intervention will be studied under ideal conditions rather than routine practice
- Identify the implementation settings and populations

Theoretical and Empirical Basis

- Justify the research through one or more of the following:
 - Empirical evidence of the promise of the intervention from a well-designed and implemented pilot study
 - Empirical evidence from an Early-Stage research study supporting the intervention’s theory of action
 - Evidence that the intervention is widely used even though its efficacy has not been established
 - If the study is a replication of a study with a different population:*
 - Evidence of positive impacts from a previous well-designed and implemented efficacy study
 - Justification for studying the intervention with a new population

Evidence

Project Outcomes

- Descriptions of the study goals, design and implementation, data collection and quality, and analysis and findings¹
- Reliable estimates of the intervention’s average impact
- If possible*, estimates for sample subgroups (e.g., by setting, population group, or cohort)
- Documentation of implementation of the intervention and the counterfactual condition in sufficient detail for readers to judge applicability of the findings
- Discussion of the implications of the findings for the intervention’s theory of action
- If favorable impacts are found*, description of the intervention’s organizational supports, tools, and procedures that were key features of implementation
- If no favorable impacts are found*, discussion of possible reasons

Research Plan*

- Identify and justify the following:
 - Study design used to estimate the intervention’s causal impact on the outcomes of interest
 - Key outcomes of interest and minimum size impact that would have policy or practical relevance

¹ As outlined in the What Works Clearinghouse Reporting Guide at <http://ies.ed.gov/ncee/www/documentsum.aspx?sid=235>

- Study setting(s) and target population(s)
- Sample, including the power it provides for detecting impact
- Data collection plan, including information about
 - Procedures
 - Measures
 - Evidence on and strategies for ensuring reliability and validity
 - Plans for collecting data on implementation, comparison group practices, and study context
- Analysis plan
- Reporting plan

*The Guidelines includes the following additional guidance regarding the design of Efficacy, Effectiveness, and Scale-Up Research:

- Use designs that will yield impact estimates with strong causal validity and that, for example, could meet What Works Clearinghouse standards without reservations (see <http://ies.ed.gov/ncee/wwc/>).
- Generally and when feasible, include random assignment to treatment and comparison groups.
- Use quasi-experimental designs, such as matched comparison groups or regression discontinuity designs only when there is direct compelling evidence demonstrating the implausibility of common threats to internal validity.
- Study sample size and allocation to condition should be such that the minimum true impact detectable size with 80 percent power and a 95 percent confidence interval is no larger than the minimum relevant size impact for policy or practice. If that is not the case, provide a rationale for conducting the study despite its not meeting this standard.
- Primary outcome measures should include student outcomes sensitive to the performance change the intervention is intended to bring about, student outcomes not strictly aligned with the intervention, and student outcomes of practical interest to educators and policymakers.
- Outcomes should be pre-specified, have been demonstrated as reliable and valid for the intended purposes, and based on data-collection methods that have been shown to yield reliable data.
- Measure the strength and qualities of implementation to address whether the intervention's impact estimates may be linked to how it was implemented.
- Measure comparison group practices and/or conditions to support a clear characterization of the contrast between the intervention and comparison condition. Identify the measures, their validity and reliability, and how data will be collected.
- Specify analytic models that reflect the sample design and maximize the likelihood of obtaining unbiased, efficient estimates of average impacts and the confidence intervals around those impacts.
- Describe additional analyses conducted to explore variability in the intervention's impacts and possible implications for the theory of change (e.g., subgroup analyses (expected in Effectiveness and in Scale-up Studies); exploration of co-variation in impact estimates and fidelity of implementation or intervention contrasts; and evidence of possible moderator and mediator effects).

External Feedback

- Subject the project to a series of external, critical reviews of its design and activities via one or more of the following strategies:
 - Peer review of the proposed project
 - Ongoing monitoring and review by the grant making agency's personnel
 - External review panels or advisory boards proposed by the project and/or the agency
 - Third-party evaluator
 - Peer review of publications and conference presentations resulting from the project
- Ensure the external review is sufficiently independent and rigorous to influence the project's activities and improve the quality of its findings

TYPE 5: EFFECTIVENESS RESEARCH to estimate the impacts of an intervention or strategy when implemented under conditions of routine practice (i.e., conditions similar to what would occur if a study were not being conducted)

Justification

Policy and/or Practical Significance

- Describe the intervention to be tested
- Specify the practical problem the intervention will address
- Justify the importance of the problem
- Describe how the intervention differs from other approaches to addressing the problem
- Explain why and how the intervention will improve education outcomes or increase efficiencies in the education system
- Explain why the intervention will be studied under typical, rather than ideal conditions
- Identify the implementation setting(s) and population(s)

Theoretical and Empirical Basis:

- Provide empirical evidence of the intervention's efficacy, as demonstrated by one or more of the following:
 - Statistically significant and substantively important impact estimates from either
 - One study that includes multiple sites or settings²
 - Two studies that include one site or setting²
 - Evidence that the intervention is widely used even though its efficacy has not been established

Evidence

Project Outcomes

- Descriptions of the study goals, design and implementation, data collection and quality, and analysis and findings³
- Reliable estimates of the intervention's average impact.
- If possible*, estimates for sample subgroups (e.g., by setting, population group, or cohort)
- Documentation of implementation of the intervention and the counterfactual condition in sufficient detail for readers to judge applicability of the findings
- Discussion of the implications of the findings for the intervention's theory of action
- If favorable impacts are found*, description of the intervention's organizational supports, tools, and procedures that were key features of implementation
- If no favorable impacts are found*, discussion of possible reasons

Research Plan*

- Identify and justify the following:
 - Study design used to estimate the intervention's causal impact on the outcomes of interest
 - Key outcomes of interest and minimum size impact that would have policy or practical relevance
 - Study setting(s) and target population(s)
 - Sample, including the power it provides for detecting impact
 - Data collection plan, including information about
 - Procedures
 - Measures

² Studies must meet guidelines for evidence for impact studies (i.e., Efficacy, Effectiveness, and Scale-Up Research)

³ As outlined in the What Works Clearinghouse Reporting Guide at <http://ies.ed.gov/ncee/wwc/documentsum.aspx?sid=235>

- Evidence on and strategies for ensuring reliability and validity
- Plans for collecting data on implementation, comparison group practices, and study context
- Analysis plan
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- Outcomes should be pre-specified, have been demonstrated as reliable and valid for the intended purposes, and based on data-collection methods that have been shown to yield reliable data.
- Measure the strength and qualities of implementation to address whether the intervention's impact estimates may be linked to how it was implemented.
- Measure comparison group practices and/or conditions to support a clear characterization of the contrast between the intervention and comparison condition. Identify the measures, their validity and reliability, and how data will be collected.
- Specify analytic models that reflect the sample design and maximize the likelihood of obtaining unbiased, efficient estimates of average impacts and the confidence intervals around those impacts.
- Describe additional analyses conducted to explore variability in the intervention's impacts and possible implications for the theory of change (e.g., subgroup analyses (expected in Effectiveness and in Scale-up Studies); exploration of co-variation in impact estimates and fidelity of implementation or intervention contrasts; and evidence of possible moderator and mediator effects).

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- Ensure the external review is sufficiently independent and rigorous to influence the project's activities and improve the quality of its findings

TYPE 6: SCALE-UP RESEARCH to estimate the impacts of an intervention or strategy under conditions of routine practice *and* across a broad spectrum of populations and settings, sufficiently diverse to broadly generalize findings

Justification

Policy and/or Practical Significance

- Describe the intervention to be tested
- Specify the practical problem the intervention will address
- Justify the importance of the problem
- Describe how the intervention differs from other approaches to addressing the problem
- Explain why and how the intervention will improve education outcomes or increase efficiencies in the education system
- Explain why the intervention will be studied under typical conditions with a broad sample, rather than ideal or routine conditions
- Identify the implementation setting(s) and population(s)

Theoretical and Empirical Basis

- Provide empirical evidence of the intervention's efficacy, as demonstrated by one or more of the following:
 - Statistically significant and substantively important impact estimates from either
 - One study that includes multiple sites or settings⁴
 - Two studies that include one site or setting⁴

Evidence

Project Outcomes

- Descriptions of the study goals, design and implementation, data collection and quality, and analysis and findings⁵
- Reliable estimates of the intervention's average impact.
- If possible*, estimates for sample subgroups (e.g., by setting, population group, or cohort)
- Documentation of implementation of the intervention and the counterfactual condition in sufficient detail for readers to judge applicability of the findings
- Discussion of the implications of the findings for the intervention's theory of action
- If favorable impacts are found*, description of the intervention's organizational supports, tools, and procedures that were key features of implementation
- If no favorable impacts are found*, discussion of possible reasons

Research Plan*

- Identify and justify the following:
 - Study design used to estimate the intervention's causal impact on the outcomes of interest
 - Key outcomes of interest and minimum size impact that would have policy or practical relevance
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