



## **Definition of Scientifically Based Research**

The following definition of scientifically based research (SBR) was developed by an expert working group convened by the American Educational Research Association (AERA) in June 2008. The SBR definition set forth below was supported by the AERA Council as a framework that offers sound guidance to members of Congress seeking to include such language in legislation. AERA provided this definition in response to congressional staff requests for an SBR definition that was grounded in scientific standards and principles. The request derived from an interest in averting the inconsistencies and at times narrowness of other SBR definitions used in legislation in recent years.

### **Alternate Definition of SBR**

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- I. The term “principles of scientific research” means the use of rigorous, systematic, and objective methodologies to obtain reliable and valid knowledge. Specifically, such research requires:
  - (A) development of a logical, evidence-based chain of reasoning;
  - (B) methods appropriate to the questions posed;



- (C) observational or experimental designs and instruments that provide reliable and generalizable findings;
  - (D) data and analysis adequate to support findings;
  - (E) explication of procedures and results clearly and in detail, including specification of the population to which the findings can be generalized;
  - (F) adherence to professional norms of peer review;
  - (G) dissemination of findings to contribute to scientific knowledge; and
  - (H) access to data for reanalysis, replication, and the opportunity to build on findings.
- II. The examination of causal questions requires experimental designs using random assignment or quasi-experimental or other designs that substantially reduce plausible competing explanations for the obtained results. These include, but are not limited to, longitudinal designs, case control methods, statistical matching, or time series analyses. This standard applies especially to studies evaluating the impacts of policies and programs on educational outcomes.
- III. The term “scientifically based research” includes basic research, applied research, and evaluation research in which the rationale, design, and interpretation are developed in accordance with the scientific principles laid out above. The term applies to all mechanisms of federal research support, whether field-initiated or directed.