

Introduction to Educational Research

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Key concepts, purposes, and methodological foundations

1. What Is Educational Research?

Aspect	Description
Definition	Systematic inquiry aimed at generating knowledge about teaching, learning, and the educational environment.
Scope	Covers K-12 schools, higher education, informal learning, policy, curriculum, assessment, technology, and equity.
Goal	Improve practice, inform policy, and advance theory in education.

2. Why Conduct Educational Research?

Purpose	Examples
Problem-solving	Identify why a dropout rate is rising and test interventions.
Decision-making	Provide evidence for adopting a new digital platform.
Theory development	Test and refine learning theories (e.g., constructivism, self-determination).
Evaluation	Assess effectiveness of a curriculum reform or teacher-training program.
Advocacy & equity	Document disparities and propose inclusive practices.

3. Core Principles

- Systematic** – Follow a logical, transparent process.
 - Empirical** – Base conclusions on observable, verifiable data.
 - Ethical** – Protect participants, obtain consent, ensure confidentiality.
 - Rigorous** – Use appropriate designs, sampling, and analysis to ensure validity and reliability.
 - Context-sensitive** – Recognize the influence of cultural, institutional, and historical factors.
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4. Research Paradigms

Paradigm	Ontology (Nature of Reality)	Epistemology (Nature of Knowledge)	Typical Methods
Positivist / Post-positivist	Objective, measurable reality	Knowledge through observation & testing	Experiments, quasi-experiments, surveys
Constructivist / Interpretivist	Multiple, socially constructed realities	Knowledge co-constructed with participants	Interviews, focus groups, case studies
Critical / Transformative	Reality shaped by power relations	Knowledge as a tool for emancipation	Action research, participatory methods
Pragmatic	Practical reality; "what works"	Knowledge judged by usefulness	Mixed-methods, design-based research

5. Research Designs Overview

Design	When to Use	Strengths	Limitations
Experimental (randomized control)	Test causal effects of an intervention	High internal validity	May lack ecological realism
Quasi-experimental (non-random groups)	Field settings where randomization is impossible	More realistic contexts	Threats to internal validity
Descriptive / Correlational	Explore relationships, prevalence, attitudes	Large samples, breadth of data	No causal inference
Case Study	In-depth examination of a single case or small set	Rich, contextual insight	Limited generalizability
Action Research	Practitioner-driven improvement cycles	Immediate relevance, empowerment	May sacrifice rigor if not carefully planned
Design-Based Research (DBR)	Iterative development of educational innovations	Bridges theory & practice	Complex, time-intensive

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6. The Research Process (Step-by-Step)

1. Identify & Define the Problem

- Review literature, observe practice, note gaps.
- Formulate a clear research question(s) (e.g., “How does formative feedback affect writing proficiency in 9th-grade English?”).

2. Conduct a Literature Review

- Summarize existing knowledge, theories, and methods.