

## Examples of strengths and weaknesses of various research methodologies

Methodology	Major strength	Major weakness
Correlational	Can be used to examine complex relations among many variables.	Can't draw conclusions about causality.
Experimental	Can draw conclusions about causality.	Often does not represent true learning environments in real classrooms.
Quasi-experimental	Can simulate an experiment in a true classroom setting.	More difficult to justify causal conclusions than in true experiments.
Qualitative	Can provide detailed, in-depth analyses of the contexts of learning environments.	Very time-consuming, both in terms of data collection and analysis.
Longitudinal	Can examine changes in variables over time.	Very costly, and subjects may drop out over the course of the study.
Cross-sectional	Efficient and rapid way to examine developmental differences.	Not nearly as accurate as longitudinal designs; cohorts may differ, and these differences may be mistaken for true developmental differences.
Design experiments	Occur in actual classrooms; experiments are constantly altered based on actual occurrences in the classrooms.	Very time-consuming; sometimes quite difficult to examine causality.
Microgenetic research	Allows for in-depth analyses of development in strategy usage over time.	Very time consuming; often uses very small samples.
Single-subjects	Provides detailed data about changes in a specific variable in one individual learner at a time; can be particularly useful in developing interventions for learners with special needs.	Difficult to generalize to larger populations.
Action research	Involves real classroom teachers investigating questions that are directly important to practicing educators.	Often does not meet the stringent criteria of other designs, and results may not be acceptable to the scientific community.