Educational Research Methodology Framework
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Research Phases and Steps	Attributes / Key Questions
Research Question(s)	**What do you want to investigate and why?**
Review the academic literature (lit review) on your research topic to better understand the existing knowledge base related to it.	All educational research attempts to better understand (meaning-making) a particular phenomenon and the nature of relationships among variables through a systematic, inquiry-based, scientific analysis and interpretation of data.
Define the specific research topic.	The topic area of the research project.
Define the specific research aim.	The purpose and scope of the research project.
Define the specific research question(s) you want to answer.	The specific research question(s) you want to answer.
Define the specific research objective(s).	The question put in the form of specific research objectives.
Develop a written research plan/proposal.	Your *research plan* should describe how you propose to conduct the research; it includes the following sections: introduction/topic, purpose/scope, lit review, research question(s), research strategy, research methods (participants/sample, data collection instruments, data analysis procedures), and conclusions.
In a research study everything begins and ends, and is aligned to, with the specific research question(s) you want to answer.	
Research Perspective (researcher(s) *worldview* & assumptions)	**What worldview guides your investigation of the research question(s)?**
Philosophies (view on the nature of reality and knowledge).	
Positivism (objective reality, socially independent).	Interprets reality mainly via value-free, scientific test data.
Realism (objective reality, socially dependent).	Interprets reality mainly via senses and social conditioning.
Interpretivism (subjective reality, socially constructed).	Interprets reality mainly via symbols/meaning/values/roles.
Pragmatism (multiple realities/views acceptable).	Best research design depends mainly on the nature of research question.
Approaches (problem-solving reasoning).	
Deductive (mainly a positivist approach).	Conclusion deduced from empirical facts; typically tests hypothesis/theory.
Inductive (mainly an interpretivist approach).	Conclusion inferred from empirical facts; typically builds hypothesis/theory.
Research Design (research strategy used)	**How will you answer the research question(s)?**
Strategies (research design *strategy* for collecting and analyzing data; the strategy most appropriate depends on research questions).	Strategy used will determine what type(s) of data will be collected (Quant: random or nonrandom sampling; Qual: purposive sampling).
Quantitative (uses sampling and *statistics* with logic & theory).	Focus is mainly on controlled context to *test* hypotheses. Quantitative designs operate on continuum from descriptive to relational to predictive to cause-effect using descriptive and inferential statistics. Scientific experiments entail: make observations, form questions, test hypothesis, interpret data, draw conclusions.
Survey, correlational, causal-comparative, experimental (single subject, quasi, true: to test null hypothesis), and meta-analysis (research about previous research).	
Qualitative (uses sampling and *coding* with logic & theory).	
Grounded theory (emerged from sociology).	Focus on real life context to build hypothesis or theory.
Ethnography (emerged from anthropology).	Focus on real life context and personal stories via their cultural context.
Phenomenology (emerged from philosophy & psychology).	Focus on real life context to explain personal meaning of person/group.
Narrative inquiry (multidisciplinary).	Focus on real life context and meaning from stories told by the individual.
Historical research (multidisciplinary).	Focus on the examination of a past event, activity, person, subject, place, etc.
Quantitative or Qualitative or Mixed.	
Case study research (multidisciplinary).	Focus on real life context (defined by unit of analysis, not by methodology).
Action research (emerged from organizational behavior).	Focus on organizational context to create change (research by actors for actors).
Evaluation research (multidisciplinary).	Focus on the merit of a program, policy, process, need, activity, etc.
Assessment research (multidisciplinary).	Focus on student learning and development to improve educational outcomes.
Mixed methods research (multidisciplinary).	Combine quantitative and qualitative methods: includes exploratory research.
Methods (techniques and procedures – see below).	(what) and explanatory research (how, why) and the triangulation of methods.
Mono (1 data collect. technique and 1 analysis procedure).	
Multiple (>1 data collect. techniques and analysis procedures).	
Timeframe.	
Cross-sectional.	Study a particular phenomenon at a particular time.
Longitudinal.	Study change and development over a period of time.
Research Analysis (data methods used)	**Who (sample), what (data), when, where, how (techniques/procedures), and why will you collect/analyze data relevant to the research question(s)?**
Techniques (data *collection* techniques: participants / instruments)	
Quantitative Data.	Collects mainly numeric data from sample for *statistical* analysis. Random sampling: random, simple, stratified, cluster, systematic; nonrandom sampling: convenience, purposive, quota). Random sampling with controls is preferred.
Surveys (questionnaires, interviews, observations), Tests (scores), Documents/Records/Artifacts.	
Qualitative Data.	Collects mainly nonnumeric data from sample for *conceptual* analysis (which purposive sampling method to use – intensity, homogenous, criterion, snowball, or random purposive – depends on the nature of the study).
Surveys (questionnaires, interviews / focus groups, observations), Documents/Records/Artifacts.	
Procedures (data *analysis* procedures).	
Quantitative Data (data analyzed *statistically* by researcher(s) using statistics, tables, charts).	Analyzes mainly *numeric and categorical data.* Analyzes independent and dependent variables across different scales: nominal (categorical), ordinal (ranked), and interval/ratio. Tests: descriptive stats (frequencies, percentages, X, SD) & inferential stats (correlation, regression, t, ANOVA, Chi-square, etc.).
Qualitative Data (data analyzed *conceptually* by researcher(s) using codes, categories, themes).	Analyzes mainly *non-numeric data* (words, images, videos) that are usually coded through thematic analysis, then translated into overarching themes.
Research Conclusions (researcher(s) *interpretation* of the data)	**What have you learned from your research?**
Explain your findings (results of the data analysis).	What results did your analysis reveal? Are they reliable and valid?
Discussion (researcher(s) reflection on the findings).	How did you interpret the results and why (e.g., relative to existing theory)?
Draw your main conclusions (key points).	*Your answer(s) to your research question(s).*
Discuss the implications for future research.	Based on your conclusions, what are the implication for future research?

Sources: Fraenkel et al (2009) *How to design and evaluate research…*; Gay et al (2009) *Educational research…*; Saunders et al (2009). *Research methods….*