Key Ideas

• Constructing aims and objectives for educational research projects
• Using a research design template
• Linking education research objectives to research in your area of interest
• Involving students in this process
• The role education research projects play in developing your academic career
Constructing Education Research Aims and Objectives
Purpose Statements, Research Aim, and Research Hypotheses,

- Research Aim (Purpose): a declarative statement that advances the overall direction or focus for the study.
- Research Objectives: statements that narrow the purpose statement to specific questions that researchers seek to answer in their study.
- Research Hypotheses: Declarative statements in quantitative research in which the investigator makes a prediction or conjecture about the outcomes relationship.
Quantitative Aim Script Example

“The purpose (or Aim) of this study is to test _______ (the theory) by comparing _______(group 1) with _______ (group 2) in terms of _________ (dependent variable) for _________ (participants) at ___________ (the research site.)” *

Quantitative research questions

- Descriptive
  “How frequently do ______ (participants) ______ (variable) at _____ (research site)?”

- Relationships
  How does _______ (independent variable) relate to __________ (dependent variable) for ______(participants) at _____ (research site)?”

- Comparison
  “How does ______ (group1) differ from _______ (group 2) in terms of __________ (dependent variable) for ________ (participants) at _____ (research site)?”

Writing Research Hypothesis: Null Hypothesis

- **Null Hypothesis**
  “There is no significant difference between ___(independent variable, group 1) and ___(independent variable, group 2) in terms of ______ (dependent variable) for _____ (participants) at ________ (research site).”

- **Directional Research Hypothesis**
  “_______ (group 1, independent variable) at _______ (research site) will have _____ (higher or lower or greater or lesser) scores on (dependent variable) than (group 2 of independent variable).”

- **Non-Directional Research Hypothesis**
  There will be a difference between “_______ (group 1, independent variable) at _______ (research site) and (group 2 of independent variable) at _______ (research site).

Writing Qualitative Purpose statements

The purpose of this Qualitative Study will be to ________________ (understand; describe; develop; discover) the ________________(Central Phenomenon) for ________________ (participants) at (the site).

At this stage of the research, the ________________(Central Phenomenon) will be generally defined as ________________ (a general definition of the central concept)

Example Purpose Statement Script (Convergent Design)

- This mixed methods study will address [overall content aim]. A convergent parallel mixed methods design will be used, and it is a type of design in which qualitative and quantitative data are collected in parallel, analyzed separately, and then merged. In this study, [quantitative data] will be used to test the theory of [theory name] that predicts that [independent variables] will [positively, negatively] influence...

Example Purpose Statement Script (cont.)

• ...the [dependent variables] for [participants] at [the site]. The [type of qualitative data] will explore [the central phenomenon] for [participants] at [the site]. The reason for collecting both quantitative and qualitative data is to [the reason for mixing].

Writing a mixed methods purpose statement
Steps in the Research Process

• Determine a Working Title for the Project
• Describe the Background for your Study
• Describe the Problem or Issue you wish to Study
• Write a Study Aim or Purpose Statement
Steps in the Research Process (Continued)

• Determine your Research Approach
  – Quantitative
  – Qualitative
  – Mixed Methods
• Determine your Research Questions
Steps in the Research Process (Continued)

- Determine your Research Design
  - Test-Retest
  - Scores over time
  - Case Study
- Determine how you will analyze Your Data
- Determine how you will disseminate Your results
Linking Education Objectives to Your Existing Research
Identifying Education Research Topics

- Does your area of study indicate a knowledge deficit in your population?
- Is there a need for learning about a procedure or therapy for patients or health professions students?
- Satisfaction with a learning modality (not the best)
- Effectiveness – how to measure?
It could happen to you…

Impact of Adenosine Triphosphate Detection and Feedback on Hospital Room Cleaning

Philip W. Smith, MD; Elizabeth Beam, MSN, RN; Harlan Sayles, MS; Mark E. Rupp, MD; R. Jennifer Cavallari, RN; Shawn Gibbs, PhD; Angela Hewlett, MD, MS

Objective. To assess the effect of adenosine triphosphate (ATP) device measurement of hospital room cleaning and feedback of pooled results to environmental service workers (EVS) to improve cleaning efficacy.

Design. Nonrandomized controlled trial conducted over 20 months.

Setting. Three hospitals of varying size.

Participants. EVS workers, randomly selected on the basis of convenience sample of rooms.

Interventions. Environmental cleanliness composite scores were combined with layered educational interventions and used to provide feedback to EVS workers on specific hospital units. Trends in cleaning efficacy were observed after the interventions.

Results. Cleaning efficacy improved significantly with each intervention ($P < .05$) and decreased during the washout period.

Conclusions. The ATP detection device combined with educational feedback for EVS workers resulted in significant improvement in cleaning efficacy of the hospital room environment.

Infect Control Hosp Epidemiol 2014;35(5):564-569
Involving students in your research

• Process of research development
• IRB application
• Development of eLearning
• Data collection
• Data analysis
• Manuscript writing
What are We Doing Again? Designing Educational Research Objectives

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