

What are We Doing Again? Designing Educational Research Objectives

Beth Beam, PhD, RN

Ronald Shope, PhD

Corri Hanson, PhD, RD, LMNT, FAND

Ann Anderson-Berry, PhD, MD



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.)” *

From Creswell, J. 2015). *Educational research planning, conducting and evaluating quantitative and qualitative research (Fifth Edition)*. Upper Saddle River, NJ: Pearson. p. 123.



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, group2) in terms of _____ (dependent variable) for _____ (participants) at _____ (research site).”
- **Directional Research Hypothesis**
“_____ (group1, 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 “_____ (group1, independent variable) at _____ (research site) and (group 2 of independent variable) at _____ (research site).”

From Creswell, J. 2015). *Educational research planning, conducting and evaluating quantitative and qualitative research (Fifth Edition)*. Upper Saddle River, NJ: Pearson. p. 125-126.



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)

Based on Creswell, J. 2018. *Qualitative inquiry and research design choosing among the five approaches*. Thousand Oaks, CA: Sage. P. 132.



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...
 - The intent
 - The design
 - The quantitative purpose statement

- Taken from Creswell, J. and Plano Clark, V. 2018. *Designing and conducting mixed methods research*. Thousand Oaks, CA : Sage 155.



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].

The qualitative purpose statement

The reason for mixing

From Creswell, J. and Plano Clark, V. 2018. *Designing and conducting mixed methods research*. Thousand Oaks, CA : Sage 155.





Writing a mixed methods purpose statement



Research Design Template



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



University of Nebraska
Medical Center



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...

INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY MAY 2014, VOL. 35, NO. 5

ORIGINAL ARTICLE

Impact of Adenosine Triphosphate Detection and Feedback on Hospital Room Cleaning

Philip W. Smith, MD;^{1,2} Elizabeth Beam, MSN, RN;³ Harlan Sayles, MS;² Mark E. Rupp, MD;¹
R. Jennifer Cavalieri, RN;¹ Shawn Gibbs, PhD;² Angela Hewlett, MD, MS^{1,2}

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 ($P < .01$) 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



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