Workshop on Research Methodology
Step-by-Step

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Reference

Research Methodology
A step-by-Step Guide for Beginners
Second Edition
by
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University of Western Australia

Sage Publications Inc.
2455 Teller Road, Thousand Oaks, California 91320
What is Research?
Some Simple Definitions

• A careful systematic study and investigation in some field of knowledge, undertaken to establish facts or principles.
• A structured inquiry that utilizes acceptable scientific methodology to solve problems and creates new knowledge that is generally applicable.
What is Research?
Some Simple Definitions (Contd.)

• A systematic investigation to find answers to a problem

• A *systematic process of inquiry* in order to discover, interpret or revise facts, events, behaviors, or theories, or to make practical applications with the help of such facts, laws or theories

• The term "research" is also used to describe the *collection of information* about a particular subject, and is usually associated with the output of science and the scientific method.
Research as a Way of Thinking

It is a habit

• of questioning what you do
• of systematically examining observed information to find answers
• of using methods tested for validity and reliability
Research as a Process

Research is one of the ways to find answers to your questions. However, the process has to satisfy the following:

• Should be within a framework of a set of principles of one of the approaches of research
• Must use procedures, methods and techniques which have been tested for their validity and reliability
• Must be designed to be unbiased and objective
Types of Research

Three View Points

- Application
  - Pure
  - Applied

- Objectives
  - Descriptive
  - Correlative

- Inquiry Mode
  - Quantitative
  - Exploratory
  - Explanatory
  - Qualitative
Characteristics of Research

- Controlled
  - Establishing causality
- Rigorous
  - Methods and procedures used need to be relevant, appropriate and justified
- Systematic
  - Certain sequence has to be followed. Can not be in a haphazard way.
- Valid and Verifiable
  - Results are correct and repeatable
- Empirical
  - Conclusions drawn are based on hard evidence
- Critical Scrutiny
  - Methods, procedures and results must withstand critical scrutiny by others
Research Process (Methodology) Eight Step Model

- Formulating a research problem  (Deciding)
- Conceptualizing the research design
- Constructing an instrument for data collection  (Planning)
- Selecting a sample
- Writing a research proposal
- Collecting data
- Processing Data  (Doing)
- Writing a research report
Research Process (Methodology) Eight Step Model

• Formulating a research problem (Deciding)
  Decide what you want to find out about?
  Reviewing the literature
  Identifying variables
  Constructing hypotheses
Research Process (Methodology)  
Eight Step Model

- Conceptualizing the Research Design  
  Research Design  
  study design  
  sampling  
  measurement  
Selecting a study Design  
  Experimental or non-experimental  
  Before and after study  
  Status Study  
  Trend study
Research Process (Methodology)  
Eight Step Model

• Constructing an instrument for data collection

Selecting a method of data collection
  Primary Sources
    Observation
    Interview
    Questionnaire
  Secondary Sources
    Publications
    Earlier Research
    Mass Media
Research Process (Methodology)
Eight Step Model

• Constructing an instrument for data collection
  Collecting using attitudinal scales
  Open ended and closed ended questions
Research Process (Methodology)
Eight Step Model

- Constructing an instrument for data collection
  Establishing the validity and reliability of your research instrument
  Types of validity
    Based on statistical procedures
    How good an indicator it is
    By comparison
Research Process (Methodology)  
Eight Step Model

- Constructing an instrument for data collection
- Establishing the validity and reliability of your research instrument

- Reliability
  - Ability of the instrument to produce consistent measurement
  - Test and re-test
Research Process (Methodology) Eight Step Model

• Selecting a sample
  A trade off between accuracy and resources
  Probability and statistics concept
  True value Vs estimate
  Sample size
  Inference
Research Process (Methodology)
Eight Step Model

• Writing a research proposal
  Content and format
  Operational plan to obtain answers to research questions
Research Process (Methodology)
Eight Step Model

- Collecting Data
  Variables to be sampled
  Procedures
  Location
  Sampling interval
  Ethical issues
Research Process (Methodology) 
Eight Step Model

- Processing and Displaying Data
  - Editing
  - Coding
  - Framework and methods of analysis of data
  - Statistics and computers
  - Output formats, types of graphs, tables etc.
Research Process (Methodology) 
Eight Step Model

- Writing a research report

Communicates the findings to the supervisor, general public, peers etc.
Referencing
Bibliography
Introduction
Methodology or Methods
Results and Discussion
Conclusions
Why learn Research Methodology?

• To become better researchers ourselves
  Need disciplinary knowledge
  Can get involved in competitive research projects

• To help students to initiate research way of thinking and to acquire research skills
  Improves motivation of students
  Improves retention
  Faculty can engage students better
Involving Students in Research

• In order to do this, first instructors have to become familiar with sound research methodology.

• Here the intent is not to make students researchers overnight.

• The intent is rather to teach students research way of thinking and skills.
How to help students develop research Skills?

There are two alternatives:

1. Involving the students directly in a real research project that the faculty is conducting. Here the student will be directly involved in a discovery or applied research or parts of it and learn research skills.
How to help students develop research Skills? (Contd.)

There are two alternatives (Contd.):

2. Construct (develop) an instructional project for the students so that they will have the opportunity to go through all or some of the steps involved in research methodology. Here it is not a real discovery or applied research; but students will still go through the research experience. Remember the faculty needs to put in lot of time in developing a project of this type beforehand. The faculty knows the answers.