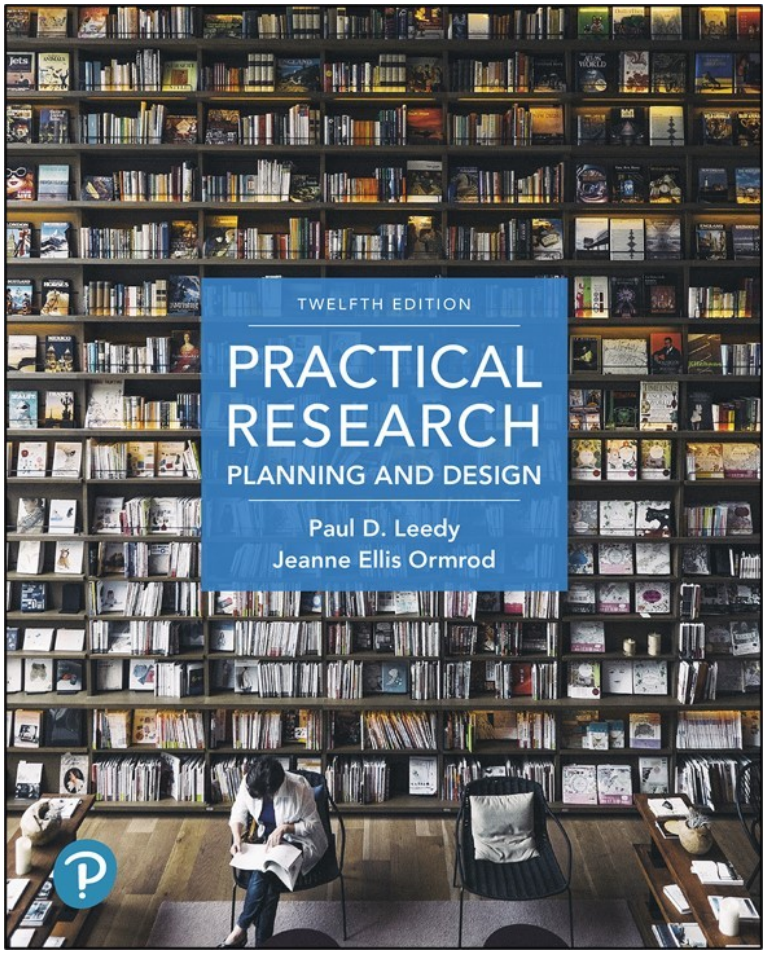
Practical Research: Planning and Design

Twelfth Edition



Chapter 2

The Problem: The Heart of the Research Process

Finding Research Projects

- Research projects can be one of two types:
  - Basic research
  - Applied research

Basic Research

- Enhances basic knowledge of
  - Physical world
  - Biological world
  - Psychological world
  - Social world
- Sheds light on historical, cultural, or aesthetic phenomena

Applied Research

- Addresses issues that have immediate relevance to current practices, procedures, and policies
  - Human decision making about practical problems
  - Questions in one's immediate work environment (action research)

Identifying a Suitable Research Problem

- Address an important question
- The answer should make a difference
- Advance the frontiers of knowledge by
  - leading to new ways of thinking
  - suggesting possible applications
  - paving the way for further research in the field

When Considering A Research Problem

- Select a research problem
  - for more than self-enlightenment
  - to do more than compare two sets of data
  - to contribute something new
  - to identify and interpret a relationship
  - that has more than a yes/no answer

Finding a Legitimate Research Problem

- Look around you
- Read the literature
- Seek the advice of experts
- Attend professional conferences
- Choose a topic that intrigues and motivates you
- Choose a topic that others will find interesting and worthy of attention
- Be realistic on what you can accomplish

Writing a Purpose Statement

- Describe your problem or question clearly and completely
- Think through the feasibility of the project that your purpose statement implies
- Say precisely what you mean
  - Absolute honesty and integrity are the rule
- Reflect an open mind about the solution
- Edit your work

Dividing the Research Problem into Subproblems

- Most problems are too big to tackle with just one question
- Identify subproblems
  - A small number of completely researchable units
    - Subproblems usually consist of more specific questions that are easier to address and resolve

Subproblems Vs. Pseudo-Subproblems

- Some problems that arise are simply procedural in nature. Those problems are called pseudo-subproblems.
- Pseudo-subproblems require decisions to be made before resolving the research problem and its subproblems.
- With each pseudo-subproblem you must decide if it can be solved with common sense and creativity or if you need to acquire more knowledge to address the problem.

Characteristics of Subproblems

- Should be a researchable issue in its own right
- Must be clearly tied to the interpretation of data
- Must add up to the totality of the problem
- Should be small in number

Identifying Subproblems

- Take a paper-and-pencil approach
  - Write down the problem
  - Critically examine for topics that require in-depth treatment. Draw a box around each topic
  - Make sure the text you've boxed has a need for data interpretation
  - Reorganize the ideas into a graphic that helps to identify the overall research design
- Use brainstorming/mind-mapping software
  - Construct graphic networks of interrelated concepts, terms, and principles

Delineating the Problem

- Every problem has a setting to establish
  - Identify a general theoretical or conceptual framework
  - State a **priori** hypotheses, if appropriate
  - Identify general concepts and specific variables
  - Define the terms
  - State the underlying assumptions
  - Identify delimitations and limitations, if applicable
    - These comprise the setting of the problem

Identifying a Relevant Theoretical or Conceptual Framework

- **Theoretical Framework**: A preexisting or newly proposed set of concepts and principles that, in combination, might shed light on cause-and-effect and certain other relationships within the phenomenon under investigation
- **Conceptual Framework**: Key concepts and inter-concept connections that, taken as a whole, provide a helpful “lens” through which the researcher looks at certain processes and can impose some sort of meaning

Stating Hypotheses

- Hypotheses are intelligent, reasonable guesses about how a research problem or question might be resolved.
- Hypotheses that a researcher poses in advance, usually in conjunction with the overall research problem or question and its subproblems, are known as a **priori** hypotheses.
- Remember that researchers aren't setting out to prove their hypotheses.
- Ultimately, a **priori** hypotheses are nothing more than tentative propositions set forth to assist in guiding the investigation of a research problem or question.

Distinguishing between Research Hypotheses and Null Hypotheses in Quantitative Research

- Research hypotheses are simply educated guesses that researchers hope their data might support.
- Remember that researchers don't set out to **prove** a hypothesis. Instead, they set out to cast doubt on- and therefore to **reject-** an opposite hypothesis.
- This hypothesis is known as the **null hypothesis**.
- The null hypothesis is not usually an a **priori** hypothesis, but it is used during statistical analyses.

Identifying the General Concepts and Possibly Also Specific Variables That are the Focus of the Investigation (1 of 7)

- Explicit identification of variables at the beginning of a study is most common in quantitative research, especially in experimental studies
- Identification of variables helps the researcher choose
  - an appropriate research design
  - an appropriate statistical analysis

Identifying the General Concepts and Possibly Also Specific Variables That are the Focus of the Investigation (2 of 7)

- Variable: any quality or characteristic in a research investigation that has two or more possible values
  - Independent variable
    - researcher studies this variable as a possible cause of something else (may manipulate)
  - Dependent variable
    - potentially influenced by the independent variable, that is, may **depend** on the independent variable

Identifying the General Concepts and Possibly Also Specific Variables That are the Focus of the Investigation (3 of 7)

Example:

- The consistency of ice cream (dependent variable – DV) depends on the temperature at which it's stored (independent variable – IV)
- High temperatures cause ice cream to melt, whereas low temperatures cause ice cream to be solid

Identifying the General Concepts and Possibly Also Specific Variables That are the Focus of the Investigation (4 of 7)

- Mediating variables help explain why an independent variable has a particular effect on a dependent variable
  - Independent variable influences mediating variable, which in turn influences the dependent variable

Identifying the General Concepts and Possibly Also Specific Variables That are the Focus of the Investigation (5 of 7)

- For example
  - confidence level → effort → performance
    - confidence level (IV) influences effort (mediator)
    - effort (mediator) influences performance quality (DV)
    - high confidence → more effort → great performance
    - low confidence → less effort → okay performance

Identifying the General Concepts and Possibly Also Specific Variables That are the Focus of the Investigation (6 of 7)

- Moderating variables influence the nature & strength of relationship between IV and DV

Identifying the General Concepts and Possibly Also Specific Variables That are the Focus of the Investigation (7 of 7)

- For example:
  - family income during childhood → problems later in life
    - low income + high maternal warmth → fewer problems
    - low income + low maternal warmth → more problems
    - high income + low maternal warmth → more problems
  - income (IV) does NOT influence maternal warmth (moderator)

Defining Terms (1 of 2)

- Each term should be defined as it will be used by the particular researcher
  - Operational definition: the definition of a characteristic or variable in terms of how it will be measured in the research study

Defining Terms (2 of 2)

- Examples
  - self-confidence = score on a self-report questionnaire that has items such as “I can usually achieve what I set out to do” and “I think of myself as a smart person”
  - popularity = number of peers who specifically identify an individual as being a desirable social partner

Stating Assumptions

- All assumptions that have a material bearing on the problem should be openly and unreservedly set forth
- A statement of the assumptions is necessary for others to evaluate the conclusions of the study
- A statement of the assumptions reveals what the researcher may be taking for granted with respect to the problem

Identifying Delimitations

- Delimitations are statements about what the researcher is not going to do.
- The researcher must distinguish between what is and what is not relevant to the problem.
- For example, “I am interested in characteristics of X. I am not going to worry about influences on X.”

Identifying Limitations

- The researcher must acknowledge weaknesses (limitations) that might cast doubt on results and conclusions
- For example:
  - "My sample is small and possibly not representative"
  - "I have certain personal biases, such as X and Y, that may affect my observations and interpretation"

Writing the First Chapter or Section of a Research Proposal

- In the first section of a proposal, you should outline:
  - The problem and its setting
  - Subproblems
  - Theoretical and/or conceptual framework
  - A **priori** hypotheses
  - Variables and key concepts
  - Assumptions, delimitations, and limitations
  - The importance of the study

Evaluating Your Proposed Research Project

- In order to adequately evaluate your proposed research project, make sure you do the following:
  1. Conduct a thorough literature review
  2. Think concretely about how you will conduct the subsequent steps you must take in your project
  3. Discuss your research problem or question with others
  4. Remember that your project will take time- lots of time.
  5. Remember that the first drafts of whatever you write will almost certainly NOT be your last ones

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