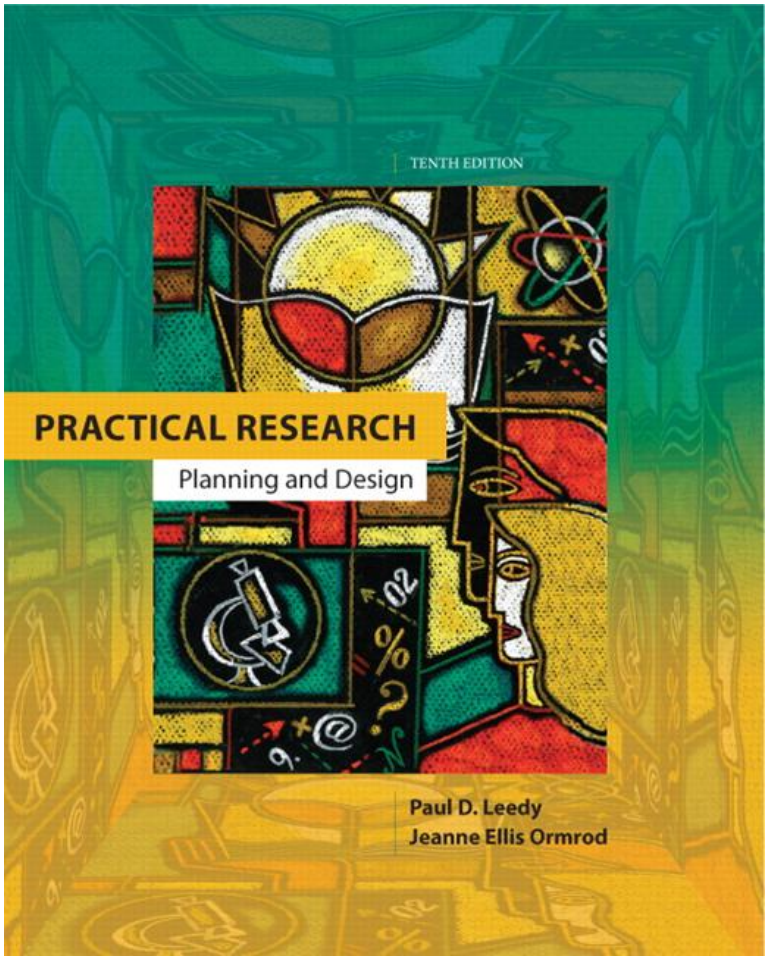
Practical Research

Planning and Design

Tenth Edition

Paul D. Leedy
Jeanne Ellis Ormrod



Chapter 1

The Nature and Tools of Research

Research is:

A systematic process of collecting, analyzing, and interpreting information (data) to increase understanding of a phenomenon about which we are interested or concerned.

What Research Is Not:

- Merely gathering information
- Merely rummaging around for hard-to-locate information
- Merely transporting facts from one location to another

Characteristics of Research

- Originates with a question or problem
- Requires clear articulation of a goal
- Requires a specific plan for proceeding
- Usually divides the principal problem into more manageable subproblems
- Is guided by the specific research problem, question, or hypothesis
- Requires a specific plan for proceeding
- Accepts certain critical assumptions
- Requires the collection and interpretation of data
- Is, by its nature, cyclical or helical

Hypothesis:

- A logical supposition, a reasonable guess, an educated conjecture

- Provides a tentative explanation for a phenomenon under investigation

- May direct thinking to possible sources of information necessary to resolve the research problem and its subproblems.

Assumptions:

- Self-evident truths
- The bedrock upon which a study must rest

Articulating assumptions is vitally important to the quality of the study

Research Tools

- specific mechanisms or strategies used to collect, manipulate, or interpret data

Research Methodology

- the general approach the researcher takes in carrying out the research project. This approach dictates the particular tools the researcher selects.

Six Tools of Research

1. The library and its resources
2. Computer technology
3. Measurement
4. Statistics
5. Language
6. The human mind

Library and Its Resources

- Access to microforms, compact disks, online databases
- Fast and efficient means of locating and accessing information on virtually any topic
- Access to library holdings around the world

Systems for Classification of Knowledge

- Dewey Decimal system: Classifies knowledge according to 10 basic areas of human knowledge, each divided decimally. The principal classification system in public libraries and probably the most generally accepted system worldwide.

- Library of Congress system: Classifies knowledge by alphabetical categories. The principle classification system used in college & university libraries.

Computer Technology as a Research Tool

- Tools to calculate, compare, search, retrieve, sort, and organize data
- Software to analyze quantitative and qualitative data
- Storage of large amount of information
- Word processing
- Communication

Measurement as a Tool of Research

Measurement: limiting the data of any phenomenon—substantial or insubstantial—so that those data may be interpreted and, ultimately, compared to a particular qualitative or quantitative standard.

- *Substantial measurements* = those things being measured that have physical substance.

- *Insubstantial measurements* = exist only as concepts, ideas, opinions, feelings, or other intangible entities.

Measurement

Requires valid and reliable instruments

- to measure physical characteristics – rulers, scales, speedometers, etc.
- to measure the impact of social and psychological phenomena – tests and questionnaires.

Statistics as a Tool of Research

- Main Functions of Statistics:
  1. describe the data
  2. draw inferences from the data

- Descriptive Statistics summarize the general nature of the data obtained.

- Inferential Statistics help the researcher make decisions about the data.

Language as a Tool of Research

- A tool to communicate and think more effectively
- Words have multiple meaning. Clarity is essential in research writing.
- Knowing two or more languages in valuable.
- Following guidelines for research writing is essential.
- Using features of word processing makes revisions more efficient.

Language as a Tool of Research

Words enhance thinking by:

- reducing the world's complexity,

- allowing abstraction of the environment,

- enhancing the power of thought,

- facilitating generalization and inference drawing in new situations.

Communicating Effectively Through Writing

- Say exactly what you mean.
- Keep your primary objective in mind at all times.
- Provide an overview of what you will be discussing.
- Organize ideas into general and more specific categories by using headings and subheadings.
- Use transitional phrases, sentences, or paragraphs to help readers follow your train of thought.

Communicating Effectively Through Writing

- Use concrete examples to make abstract ideas more understandable.
- Use appropriate punctuation.
- Use figures and tables for clarification.
- At the end of chapters and major sections, summarize what you've said.
- Anticipate having to write multiple drafts.

The Human Mind as a Tool of Research

- Critical Thinking
- Deductive Logic
- Inductive Reasoning
- The Scientific Method
- Theory Building

Critical Thinking

Evaluating arguments in terms of their accuracy and worth.

May take a variety of forms:

- verbal reasoning
- argument analysis
- decision making
- critical analysis of prior research

Deductive Logic

Begins with one or more premises—statements or assumptions that the researcher initially takes to be true.

Valuable for generating research hypotheses and testing theories.

Inductive Reasoning

Begins with an observation of a specific event to draw conclusions about entire classes of objects or events (i.e., observe a sample and then draw conclusions about the population from which the sample has been taken).

The Scientific Method: The means whereby insight into the unknown is sought by

1. identifying a problem that defines the goal of one's quest;
2. positing a hypothesis that, if confirmed, resolves the problem;
3. gathering data relevant to the hypothesis; and
4. analyzing and interpreting the data to see whether they support the hypothesis and resolve the research question.

Theory Building: is based on facts rather than naïve beliefs and subjective impressions about the world:

- involves thinking actively and intentionally about the phenomena at hand,
- yields hypotheses to be tested,
- tends to be a slow process,
- usually involves collaboration with others.

Collaboration with Other Minds

- Bringing a variety of perspectives, backgrounds, and areas of expertise may reduce theoretical biases
- Collaboration may increase effectiveness of approaches to tackle the research problem and to find meaning in the data
- Collaboration may be accomplished through the use of e-mail attachments, listservs, and webpages.

Exploring research in your field

- Knowledge of research methodologies and appropriate ways to collect and analyze data is essential for keeping up with advances in your field
- A **juried** (or *refereed)* research report has been judged by experts in the field and deemed to be of sufficient quality and importance to warrant publication.
- A **nonjuried** (or *nonrefereed)* report appears in a journal or on the Internet screening by experts. Some nonjuried reports are excellent, but others may not be.