

A Glimpse on Research



What Research is Not

1. Research is not mere information gathering.
2. Research is not mere transportation of facts from one location to another.
3. Research is not merely rummaging for information.
4. Research is not a catchword used to get attention.

8 Distinct Characteristics of Research

1. Research originates with a question or problem.
2. Research requires clear articulation of a goal.
3. Research requires a specific plan for proceeding.
4. Research usually divides the principal problem into more manageable subproblems.

8 Distinct Characteristics of Research (cont...)

5. Research is guided by the specific research problem, question or hypothesis.
6. Research accepts critical assumptions.
7. Research requires the collection and interpretation of data in an attempt to resolve the problem that initiated the research.
8. Research is, by its nature, or more exactly, helical.

The Research Cycle

1. A questioning mind observes a particular situation and asks, Why? How come?
2. One question becomes formally stated as a problem.
3. The problem is divided into several simpler, more specific problems.
4. Preliminary data are gathered that appear to bear on the problem.

The Research Cycle (cont...)

5. Data seem to point to a tentative solution of the problem. A guess is made; a hypothesis or guiding question is formed.
6. Data are collected more systematically.
7. The body of the data is processed and interpreted.
8. A discovery is made; a conclusion is reached.

The Research Cycle (cont...)

9. The tentative hypothesis is either supported by the data or not supported; the question is partially or completely answered or not totally answered at all.
10. The cycle is complete.

Tools of Research



General Tools of Research

Array of means by which data can be collected and made meaningful

- Library and its resources
- Computers and software
- Techniques of measurement
- Statistics
- Human mind
- Language

Library and its resources

- Library catalogs
- Indexes and Abstracts
- Reference Librarian

Computers and software

A computer is not a miracle worker. It cannot do thinking for you. It can, however, be a fast and faithful assistant. When told exactly what to do, it is one of a researcher's best friends.

Take advantage of the Internet

- World wide web (W3)
- Email
- Newsgroups

Measurement as a Research Tool

Measurement is limiting the data of any phenomenon – substantial or insubstantial – so that those data may be interpreted and, ultimately, compared to an acceptable qualitative or quantitative standard.

Four scales of measurement

	Measurement scale	Characteristics	Statistical Possibilities
Non-interval scales	Nominal	- Measures in terms of names or designations of discrete units or categories	- Enables one to determine the mode, percentage values or chi-square
	Ordinal	- Measures in terms of values as “more” or “less” w/o specifying the size of intervals	- Enables one to determine the median, percentile rank, and rank correlation

Four scales of measurement (cont...)

Interval scales	Interval	- Measures in terms of equal intervals or degrees of difference but whose zero point is arbitrary	- Enables one to determine the mean, std. deviation, and product moment correlation; allows one to conduct most inferential statistics
	Ratio	- Measures in terms of equal intervals and an absolute zero point of origin	- Enables one to determine the geometric mean, and percentage variation; allows virtually any inferential statistics

Statistics as a Research Tool

Statistics gives us *information* about the data, but a conscientious researcher is not satisfied until the *meaning* of this information is revealed.

Primary Functions of Statistics

Descriptive statistics – summarizes the general nature of the data obtained

Inferential statistics - helps the researcher make decisions about the data

Human Mind Research Tools

After using statistics, human mind interprets the data to arrive at a logical conclusion

- Deductive logic
- Inductive reasoning
- Scientific method
- Critical thinking
- Collaboration with others

Deductive logic

If ... (premise 1)

And if (premise 2)

Then, ... (conclusion)

If premises are widely-accepted truths, logically, reasoning that proceeds from these premises toward conclusions must also be true.

Inductive Reasoning

In inductive reasoning, people use specific instances or occurrences to draw conclusions about entire classes of objects or events.

Scientific Method

A means whereby insight into the unknown is sought by (1) identifying a problem that defines the goal of one's quest; (2) stating a hypothesis that, if confirmed, resolves the problem; (3) gathering data relevant to the hypothesis; and (4) analyzing and interpreting the data whether they support the hypothesis.

Critical Thinking

Involves evaluating information or arguments in terms of their accuracy and worth.

- Verbal reasoning
- Argument analysis
- Decision-making
- Critical analysis of prior research

Collaboration with others

By bringing one or more professional colleagues onto the scene, the researcher brings that many more cognitive resources to bear on how to tackle the research problem and how to find meaning in the data obtained.

Language as a Research Tool

Learning the specialized terminology of your field is indispensable to conducting a research study, grounding it in prior theory and research and communicating your results to others.

Imagine for a moment that you are driving along a country road. In a field to your left, you see something with following characteristics:

- Black and white in color, in a splotchy pattern
- Covered with a short, bristly substance
- Appended at one end by an object similar in appearance to a paintbrush
- Appended at the other end by a lumpy thing with four pointy objects sticking upward (two soft and floppy, two hard and curved around)
- Held up from the ground by four spindly sticks, two at each end

Techniques on Effective Writing

1. Say what you mean to say.
2. Keep your primary objective in writing your paper in mind at all times, and focus your discussion accordingly.
3. Provide an overview of what you will be talking about.
4. Organize your ideas into general and more specific categories and use headings and subheadings to guide your readers through the discussion of these categories.

Techniques on Effective Writing (cont...)

5. Provide transitional phrases, sentences or paragraphs to aid readers follow your train of thought.
6. Use concrete examples to make abstract ideas more understandable.
7. Use appropriate punctuation.

Techniques on Effective Writing (cont...)

8. Use figures and tables when such mechanisms can more effectively present or organize your ideas and findings.
9. At the conclusion summarize what you've said.
10. Anticipate that you will have multiple drafts

The Research Problem



The Problem: The Heart of the Research Process

The problem or question is the axis around which the whole research effort evolves. The statement of the problem must be stated with utmost precision ; it should be divided into more manageable subproblems. Such approach clarifies the goals and directions of the entire research effort.

Research Projects

Basic research – projects which can advance human beings' theoretical conceptualization about a particular topic

Applied research – informs human decision making about practical problems.

Situations to avoid when considering a problem for research purposes

1. Research projects should not be a ruse for achieving self-enlightenment.
2. A problem whose sole purpose is to compare two sets of data is not a suitable research problem.

Situations to avoid when considering a problem for research purposes

3. Calculating a coefficient of correlation between two sets of data to show a relationship between them is not acceptable as a problem for research.
4. Problems that result in a yes or no answer are not suitable problems for research.

Finding a Legitimate Problem

1. Look around you.
2. Read the literature.
3. Attend professional conferences
4. Seek the advices of experts.
5. Choose a topic that intrigues and motivates you.
6. Choose a topic that others will find interesting and worthy of attention.

Stating the Research Problem

1. State the problem clearly and completely.
2. Think through the feasibility of the project that the problem implies.
3. Say precisely what you mean.
4. Edit your work.

Subproblems vs. Pseudosubproblems

- Most research problems are too large or too complex to be solved without subdividing them
- A researcher must distinguish subproblems that are integral part of the main problem from things that look like problems but are nothing more than procedural issues.

Characteristics of subproblems

1. Each subproblem should be a completely researchable unit.
2. Each subproblem must be clearly tied to the interpretation of the data.
3. The subproblem must add up to the totality of the problem.
4. Subproblems should be small in number.

The Setting of the Problem

In every research endeavor , the researcher should eliminate any possibility of misunderstanding by:

1. Stating the hypotheses and/or research question
2. Delimiting the research
3. Defining the terms
4. Stating the assumptions.

Stating the hypothesis and/or research question

A hypothesis or research question provides a position from which the researcher may initiate an exploration of the problem or subproblem and also acts as a checkpoint against which to test the findings that the data reveal.

Null Hypothesis and Research Hypothesis

- ✓ We often set out to disprove an opposite hypothesis.
- ✓ When we hypothesize that there will be *no* difference between groups, *no* relationship between variables, or *no* patterns in the data, we are forming a null hypothesis.
- ✓ We support a research hypothesis by showing statistically that its opposite is not true.

Delimitation of Research

- ✓ What the researcher intends to do is stated in the problem. What he/she is not going to do is stated in the *delimitations*. The limits of the problem should be carefully bounded for a research effort.
- ✓ Only a researcher who thinks carefully about the problem and its focal center can distinguish between what is relevant and what is not to the problem.

Defining Terms

- ✓ The definition must interpret term as *it is used in relation to the researcher's project.*
- ✓ The researcher must be careful to avoid circular definitions.

Stating the Assumptions

- ✓ In research, we try to leave nothing to chance in the hope of preventing any misunderstanding.
- ✓ All assumptions that have a material bearing on the problem should be openly set forth.
- ✓ If others know the assumptions a researcher makes, they are better prepared to evaluate the conclusions that results from these assumptions.

Importance of the Study

In research reports, researchers frequently set forth their reasons for undertaking the study.

Review of Related Literature



Re-view



To look again what others have done in the past, that are similar, though not necessarily identical to one's own area of investigation.

Benefits of a literature review

1. It can offer new ideas, perspectives, and approaches that may not have occurred to you.
2. It can inform you about other researchers who conduct work in this area.
3. It can show you how others have handled methodological and design issues in studies similar to your own.

Benefits (cont...)

4. It can reveal sources of data that you may not have known existed.
5. It can introduce you to measurement tools that other researchers have developed and used effectively.
6. It can reveal methods of dealing with problem situations that may be similar to difficulties you are facing.

Benefits (cont...)

7. It can help you interpret and make sense of your findings, and ultimately, help you tie your results to the work of those who have preceded you.
8. It will bolster your confidence that your topic is worth studying, because you find others have invested considerable time, effort, and resources in studying it.

Strategies for Locating Related Literature

Major starting points:

- ✓ Library catalog
- ✓ Indexes and abstracts in the library's reference section
- ✓ Online databases

Using the Library Catalog

- ✓ A good textbook can give you a good general overview of a topic, including important concepts, theoretical perspectives, and critical references.
- ✓ Use only books with recent copyright dates.
- ✓ The most effective way to locate helpful books is through the library catalog.

Using Indexes, Abstracts and Other General References

The journals in the library's periodical section is another indispensable resource.

Index- lists of articles and research reports in certain specified areas

Abstract –summary of an article or a research study

Using Online Databases

- Online databases allow searches of many thousands of journals and other sources like books, chapters in edited books, dissertations, government documents, technical reports and newspapers.
- Enormous collections of citations or abstracts related to various subjects and disciplines

Other strategies:

- ✓ Looking at government publications
- ✓ Surfing the net
- ✓ Using the citations and reference lists of those who have gone before you

Synthesizing the Literature

- ✓ In a good literature review, the researcher doesn't merely report the related literature. He/She *evaluates, organizes, synthesizes* what others have done.
- ✓ As you read about others' work and evaluate their methods and conclusions, *never take other people's conclusions at face value; determine whether their conclusions are justified based on the data presented.*

Synthesizing the Literature

- ✓ In addition to evaluating what you read, organized the ideas you've encountered during your review.
- ✓ The most important thing is to synthesize what you've learned from review. Pull together the diverse perspectives and research results you've read into cohesive whole.

Techniques for Writing a Cohesive Review

1. Be clear in your thinking.
2. Develop a plan.
3. Emphasize relatedness.
4. Give credit where credit is due.
5. Review the literature. Don't reproduce it.

Techniques (cont...)

6. Summarize what you said.
7. Remember that your first draft will almost certainly NOT be your last draft.
8. Ask others for advice and feedback.

Works cited samples

Scholarly Project

- *The Avalon Project: Articles of Confederation, 1781*. Co-Directors William C. Fray and Lisa A. Spar. 1996. Yale Law School. 2 Dec. 2003
<www.yale.edu/lawweb/avalon/artconf.htm>.

Professional Site

- *Guide to Grammar and Writing*. Capital Community College. 4 April 2004
<www.ccc.commnet.edu/grammar/>.

Personal Site

- Jascot, John. Home page. 1 Dec. 1997. 38 Jan. 2004
<www.ccc..commnet.edu/faculty/~jascot/jascot.htm>.

Course Website

- Darling, Charles. Introduction to Literature. Course Website. Jan. 2004–May 2004. Dept. of Humanities, Capital Community College. 20 May 2004
<www.webct.ctdlc.org>.

Research Project Planning



Research Design

- A general strategy in solving a research problem
- Before the construction of a building, architects develop a meticulous plan to ensure success. Architectural and research planning requires a conceptualization of the overall organization of the project and the detailed specs of the steps to be carried out

Basic Format of a Research Process

-
1. In the researcher's mind, a question is posed that has no known resolution.
 2. The researcher converts the question to a clearly stated research problem.
 3. The researcher states a temporary hypothesis or series of hypothesis.
 4. The researcher seeks the literature for ideas that shed light on the problem and for strategies that may help to address it.

Basic Format (cont...)

5. The researcher collects data that potentially relate to the problem.
6. The researcher arranges the data into a logical organizational structure.
7. The researcher analyzes and interprets the data to determine the meaning.
8. Either the data seems to resolve the research problem or they do not.

General Criteria for a Research Project

- ✓ Universality
- ✓ Replication
- ✓ Control
- ✓ Measurement

Nature of Data in Research

Research seeks thru data to discover the underlying truth, yet its an endless pursuit

- Primary data – most valid
- Secondary data – derived from the primary data

Validity of Measurement Instruments

Face validity – extent to which it's
measuring a particular characteristic

Content validity – extent to which a
measurement instrument is a
representative sample of the domain
being measured

Validity (cont...)

Criterion validity – extent to which the results of an assessment instrument correlate with another, presumably related measure

Reliability of Measurement Instruments

Interrater reliability – extent to which two or more individuals evaluating the same product or performance give identical judgments.

Internal consistency reliability – all the items within a single instrument yield similar results.

Reliability (cont...)

Equivalent forms reliability – two different versions of the same instrument yield same results.

Test-retest reliability – the same instrument yield same results on two different occasions.

Linking Data and Research Methodology

- ✓ To extract meaning from the data, we employ a research methodology.
- ✓ Data and methodology are interdependent.
- ✓ Different research problems lead to different research designs and methods, which in turn result in the collection of different data types and different interpretations of those data.

Linking Data (cont...)

- ✓ Many kinds of data may be suitable only for a particular methodology. *The data dictate the research method.*

Quantitative and Qualitative Approaches

Question	Quantitative	Qualitative
What is the purpose of the research?	<ul style="list-style-type: none">• To explain and predict• To confirm and validate• To test theory	<ul style="list-style-type: none">• To describe and explain• To explore and interpret• To build theory

Quantitative and Qualitative Approaches (cont...)

Question	Quantitative	Qualitative
What is the nature of the research process?	<ul style="list-style-type: none">• Focused• Known variables• Established guidelines• Predetermined methods• Somewhat context-free• Detached view	<ul style="list-style-type: none">• Holistic• Unknown variables• Flexible guidelines• Emergent methods• Context-bound• Personal view

Quantitative and Qualitative Approaches (cont...)

Question	Quantitative	Qualitative
What are the data like, and how are they collected?	<ul style="list-style-type: none">• Numeric data• Representative, large sample• Standardize instruments	<ul style="list-style-type: none">• Textual and/or image-based data• Informative, small sample• Loosely-structured or nonstandardized observations and interviews

Quantitative and Qualitative Approaches (cont...)

Question	Quantitative	Qualitative
How are data analyzed to determine their meaning?	<ul style="list-style-type: none">• Statistical analysis• Stress on objectivity• Deductive reasoning	<ul style="list-style-type: none">• Search for themes and categories• Acknowledgment that analysis is subjective and potentially biased• Inductive reasoning

Quantitative and Qualitative Approaches (cont...)

Question	Quantitative	Qualitative
How are findings communicated?	<ul style="list-style-type: none">• Numbers• Statistics, aggregated data• Formal voice, scientific style	<ul style="list-style-type: none">• Words• Narratives, individual quotes• Personal voice, literary style

Ethical Issues in Research

- ✓ Protection from harm
- ✓ Informed consent
- ✓ Right to privacy
- ✓ Honesty with professional colleagues

Protection from Harm

Researchers should not expose research participants to undue physical or psychological harm.

Informed Consent

- ✓ Research participants should be told of the nature of the study to be conducted and given the choice of participating or not.
- ✓ *Any participation of the study should be voluntary.*

Informed Consent Form

- A brief description of the nature of the study
- Description of what participant will involve, terms and duration
- Statement indicating that participation is voluntary
- List of risks a participant may encounter
- Confidentiality of responses
- Researcher's information
- Offer to provide detailed information upon its completion
- A place for the participant to sign and date the letter

Right to Privacy

Under no circumstances should a research report be presented in a way that others become aware of how a particular participant responded or behaved.

Honesty with Professional Colleagues

-
- Any use of another person's idea or words demand full acknowledgement, otherwise it constitutes plagiarism and theft
 - Honest researchers do not hesitate to acknowledge their indebtedness to others

Plagiarism

Using someone else's ideas or phrasing and representing those ideas or phrasing as our own, either on purpose or through carelessness, is a serious offense known as plagiarism. "Ideas or phrasing" includes written or spoken material, of course — from whole papers and paragraphs to sentences, and, indeed, phrases — but it also includes statistics, lab results, art work, etc.

Writing the Research Proposal



Characteristics of a Proposal

1. A proposal is a straightforward document
2. A proposal is not a literary production
3. A production is clearly organized.

In professional writing, headings and subheadings are the single most commonly used strategy to express the overall organizational scheme.

Organizing a Research Proposal

- I. The problem and its setting
 - A. Statement of the problem and subproblems
 - B. The hypothesis
 - C. The delimitations
 - D. The definition of terms
 - E. The assumptions
 - F. The importance of the study

Organizing a Research Proposal (Cont.)

II. The review of the related literature

III. The data and the treatment of the data

A. The data needed and the means for obtaining the data

B. The research methodology

**C. The specific treatment of the data for each
subproblems**

1. Subproblem 1

a. The data needed to address the problem

b. The treatment of the data

2. Subproblem 2 (Same format fo Sub 1)

Organizing a Research Proposal (Cont.)

IV. The qualifications of the researcher
and any assistants

V. An outline of the proposed study
(Steps to be taken, timeline, etc)

VI. References

VII. Appendices

“ All research converge in one destination, the enhancement of human knowledge.” LEEDY

Thank you!!!

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