

Chapter 1

The Nature and Tools of Research

The purpose of this chapter is to get students to think critically about what constitutes research. To further familiarize students with the research literature, try this exercise. It will help them understand what research is and the many forms it may take.

Ask students to bring copies of one or two research articles they've read recently to class. This will create a pool of articles to work with. Chances are the pool will include review articles, meta-analyses, theoretical pieces, and empirical studies employing both quantitative and qualitative methodologies. To the extent that the class includes students from a variety of fields, the pool will represent these diverse fields. If there are certain types of articles that you particularly want included in the sample pool, or that you anticipate will be missing from the pool, you may want to provide these.

Place students into groups of about five. Make these groups diverse by field to the extent possible. Without providing any opening discussion about the nature of research, ask students to look through their group's collection of articles and determine how they are similar to each other and how they differ. After groups have explored the articles and attempted to classify them on various criteria, conduct a discussion of the content of Chapter 1. Returning to the pool of sample articles, assist students in identifying what types of articles are in the sample pool and which of the articles true research are as described in Chapter 1.

I suggest collecting the articles from class members at the end of the activity to keep on hand for use throughout the course. I make additional suggestions for their use in conjunction with subsequent chapters.

Chapter 1

The Nature and Tools of Research

Multiple-Choice Questions

- *1. To be considered true research, a project must:
- gather together a body of existing information and communicate it in a clear and concise way.
 - uncover obscure or esoteric information and bring it to the consideration of the broader research community.
 - gather and interpret information in a systematic fashion so as to increase understanding of some phenomenon.
 - produce definitive conclusions regarding the subject of study.
- **2. Which of the following examples illustrates research as it is described in your textbook?
- Sally is writing a paper about the effects of the Harry Potter books on the reading habits of fourth graders in the United States and United Kingdom. She goes to a research library to find information to include in her paper.
 - Ian wants to know why the population of songbirds has declined in recent years in the Sutton Wilderness Area. He carefully collects soil and water samples, systematically surveys the entire area for predators, and then sits down to make sense of his findings.
 - Leonard is starting a woodworking business and is not sure how to calculate the cost of his labor so he can be both profitable and fair to the customers. He asks several established business owners how they calculate labor charges.
 - Bill is doing a report on the sonnets of Shakespeare. He carefully reads a number of sonnets and then carefully reads scholarly reviews of those same sonnets written by various Shakespeare scholars. He synthesizes all of this information in his report.
- *3. Which of the following is defined as an organized body of concepts and principles intended to explain a particular phenomenon?
- Theory
 - Inference
 - Hypothesis
 - Interpretation
- *4. The purpose of formal research is to:
- prove or disprove the study hypotheses.
 - support or fail to support the study hypotheses.
 - identify alternative hypotheses.
 - move beyond the need for hypotheses.

- *5. Assumptions come into play:
 - a. for nearly every research study.
 - b. in qualitative research but not in quantitative research.
 - c. when research is not well thought out.
 - d. rarely, if ever.
- *6. Well-designed research manages to minimize or avoid:
 - a. assumptions.
 - b. predictions.
 - c. theory.
 - d. bias.
- *7. Researchers _____ their phenomenon of interest on the basis of data analysis.
 - a. make inferences about
 - b. know facts about
 - c. define
 - d. identify
- *8. A primary function of the methodology is to:
 - a. guide and control the acquisition of data.
 - b. extract meaning from the data that have been gathered.
 - c. both a and b
 - d. neither a nor b
- *9. A well-designed and well-conducted study:
 - a. answers questions of importance in the field.
 - b. raises questions of importance to the field.
 - c. answers some questions and raises other questions.
- *10. Reading the professional literature in the field of interest:
 - a. will enhance an individual's ability to design and conduct high-quality research.
 - b. will stifle creativity and constrain the individual to the status quo.
 - c. will make little difference to the quality and impact of the individual's work.
 - d. is necessary only for the leaders in the field.
- *11. One indication that a piece of information is of high quality is that the information:
 - a. is found on the Internet.
 - b. is found in a juried (or refereed) research report.
 - c. resulted from a project that received corporate funding.
 - d. is the firsthand account of a personal experience.

- *12. A _____ is a specific mechanism or strategy the researcher uses to collect, manipulate, or interpret data.
- research tool
 - research methodology
 - statistical test
 - theory
- *13. Research methodology refers to:
- the general approach the researcher takes to conducting a research project.
 - a specific device the researcher uses to collect data.
 - the specific theoretical basis of the research project.
 - the statistical tests to be employed in a research project.
- **14. Sam wants to find high-quality research reports related to attribution theory that have been published in professional journals. Sam's best approach would be to:
- consult the library catalog.
 - consult an online or electronic database.
 - search the World Wide Web.
 - browse the shelves in the library.
- **15. Sonya is a college freshman who has just been assigned her first research paper, and she doesn't know how to get started finding information. Sonya should:
- search the World Wide Web.
 - consult an online or electronic database.
 - consult a reference librarian.
 - browse the shelves in the library.
- *16. _____ allows a researcher to receive news in an area of special interest and discuss that news with others.
- A search engine
 - E-mail
 - A list server
 - A Web browser
- *17. _____ allows researchers to personally correspond practically instantly with other users around the world.
- A search engine
 - E-mail
 - A list server
 - A Web browser

- **18.** John wants to begin using e-mail. Which of the following steps is NOT necessary for John to get started as an email user?
- Request an e-mail account
 - Obtain necessary software from the e-mail provider and load it onto a computer
 - Learn to use a Web browser to explore the Internet
 - Learn how to access and use the e-mail provider's services
- *19.** Three of the following statements about measurement in the research setting are accurate. Which one is NOT accurate?
- The purpose of measurement is to systematically limit the data in a way that makes it quantifiable.
 - Measurement is applied by researchers only to insubstantial phenomena.
 - Measurement is a tool that aids researchers in interpreting their observations.
 - Systematic measurement assists researchers in obtaining objectivity in their researcher.
- **20.** Kade has spent the past month carefully observing a group of third graders on the playground during recess, taking note of how the students interact with one another. On the basis of these observations, Kade is drawing conclusions about the interaction styles of boys and girls. This is an example of:
- hypothetical logic.
 - deductive logic.
 - inductive logic.
 - propositional logic.
- **21.** Kimberly knows that teenagers often do not make good decisions in areas where they have little knowledge. She also knows that most teens have little knowledge about human sexuality. Therefore, Kimberly believes that teens are likely to make poor decisions about sexual activity. This is an example of:
- inductive logic.
 - propositional logic.
 - transductive logic.
 - deductive logic.

Essay Questions

22. Your chapter states: "Research is, by its nature, cyclical or, more exactly, helical." Explain why "cyclical" is an appropriate description of the research process. Then explain why "helical" is a better description.
23. Describe an example of the word *research* being used inappropriately. Be clear about how your example deviates from the definition of research offered in the chapter.

24. Graduate professors like to insist that the completion of thesis or dissertation research is not merely an “academic exercise” or final hurdle to obtaining the desired degree. Explain at least one personal benefit that the individual derives from completing a high-quality thesis or dissertation. Then explain at least one societal benefit that follows from the individual’s completion of a high-quality thesis or dissertation.
25. Near the end of Chapter 1 the authors of your textbook include a relatively lengthy section on writing the research report. Why is it important that research results are carefully written up and made available to the scientific community?
26. Do recent technological advances (e.g., the World Wide Web, electronic databases) assure that future research will be of higher quality, or of greater utility, than past research? Support your answer.

ANSWER KEY

Multiple-Choice Questions

- | | | |
|------|-------|-------|
| 1. c | 9. c | 17. b |
| 2. b | 10. a | 18. c |
| 3. a | 11. b | 19. b |
| 4. d | 12. a | 20. c |
| 5. a | 13. a | 21. d |
| 6. d | 14. a | |
| 7. a | 15. c | |
| 8. c | 16. c | |

Essay Questions

22. Research is cyclical in that it starts with a question and, ultimately, closes the circle by interpreting the study findings in such a way that they shed light on that question. However, as the study answers one question it is likely to raise others, creating the beginning of the next cycle of question posing and data gathering. Moreover, at the end of a study you know more than you did when you started, so you do not return to the same state (as in closing a circle), but in fact you have a greater (if only slightly greater) understanding of your subject.

23. Student examples will likely include uses such as these:
- “*Research* paper,” referring to a paper based on information found in a library
 - “Do *research* on product X,” which might include reading *Consumer Reports* or consulting relevant professionals or salespeople
 - “*Research* the family history,” which involves the collection of information related to family history

In none of these cases has the “researcher” produced new information through the collection, analysis, and interpretation of data.

24. Personal benefits include the opportunity to
- Gain expertise in a field of interest
 - Gain expertise in technical writing
 - Sharpen critical thinking skills
 - Improve written communication skills
 - Become familiar with others who share your professional interests

Societal benefits include

- Gaining new knowledge or insight into the research problem that was investigated
- An accumulation of knowledge that may promote the welfare and comfort of society
- Citizens who have well-developed critical thinking skills

25. Typically research is not conducted merely to satisfy personal curiosity; it is conducted within a professional field with the goal of improving understanding of that field. If researchers do not communicate their findings to their field, it impedes this progression. Moreover, if researchers do not communicate their findings clearly and carefully, they may inadvertently introduce confusion or even false notions into the field.
26. No. Recent technological advances certainly make information access quicker and easier. They also provide much wider access to information than was formerly possible. However, information acquired using technological advances is not necessarily different, in terms of its quality or utility, from information acquired in more traditional ways. Likewise, research based on information acquired through technological advances will not differ, in quality or utility, from research based on information acquired in more traditional ways. The method of acquisition has little or no bearing on how that information is ultimately understood and put to use.

Yes. The widespread dissemination of information that is now possible will result in greater and more widespread understanding of existing knowledge. Greater understanding of information within individuals will allow researchers to focus their work even more tightly on studies that will truly advance the state of knowledge. More widespread understanding of information within professional communities allows a greater and more diverse number of people to become actively involved in research endeavors.

Chapter 2

THE PROBLEM: THE HEART OF THE RESEARCH PROCESS

Students are likely to benefit from practice at formulating research problems. This group activity will help students move from identifying a topic or question of interest to clearly communicating a research problem that can serve as the foundation of a formal investigation.

Form groups of three to five students who share common research interests. Ask each group to formulate a formal statement of a research problem. In doing so, the students will need to consider the importance and practicality of the general research problem. Then they will need to identify subproblems, pose hypotheses, define terms, and state assumptions related to the research problem. Although students may lack a deep familiarity with a body of professional literature and may thus be somewhat limited in their ability to work through all of these steps, the exercise will impress upon them how complex the task of research problem formulation is when done properly. Ask each group to hand in a detailed document at the end of the activity.

The research problems formulated in this exercise will be a good basis for the group activity recommended for later chapters. Therefore, you may want to make note of group membership from this activity and collect the research problem exercises for later use.

Chapter 2

THE PROBLEM: THE HEART OF THE RESEARCH PROCESS

Multiple-Choice Questions

- *1. Research problems, as defined in your textbook:
 - a. are identified by experts in the field, and not typically knowable by novices.
 - b. clearly and completely specify important questions that are currently unanswered in a particular field of inquiry.
 - c. are broad, general statements about the incomplete state of understanding in a particular field of inquiry.
 - d. can be addressed by compiling and synthesizing existing information in a way that sheds light on the issue of interest.

- *2. *Basic* research is:
 - a. research intended to enhance basic knowledge about the physical, biological, psychological, or social world or to shed light on historical, cultural, or aesthetic phenomena.
 - b. large scale research performed under contract with a governmental agency such as the National Science Foundation (NSF), National Institute of Mental Health (NIMH), etc.
 - c. informal research conducted locally by a small staff with a small budget, the purpose of which is to pave the way for larger research initiatives.
 - d. research intended to address issues that have immediate relevance to current practices, procedures, and policies.

- *3. *Applied* research is:
 - a. research intended to enhance basic knowledge about the physical, biological, psychological, or social world or to shed light on historical, cultural, or aesthetic phenomena.
 - b. large-scale research performed under contract with a governmental agency such as the National Science Foundation (NSF), National Institute of Mental Health (NIMH), etc.
 - c. informal research conducted by a small staff with a small budget, the purpose of which is to shed light on a problem of local interest.
 - d. research intended to address issues that have immediate relevance to current practices, procedures, and policies.

- **4. Which of the following represents a well-written *basic* research problem?
- “Which general education course is more interesting, U.S. History or World Music?”
 - “How do business teams of six or fewer members compare to teams of more than six members in terms of productivity?”
 - “How does the organization of mathematical information in long-term memory differ between 3-year-olds and 13-year-olds?”
 - “What is the ratio of native-born students to international students on the campuses of major U.S. state universities?”
- **5. Which of the following represents a well-written *applied* research problem?
- “How does the organization of mathematical information in long-term memory differ between 3-year-olds and 13-year-olds?”
 - “How do business teams of six or fewer members compare to teams of more than six members in terms of productivity?”
 - “Which general education course is more interesting, U.S. History or World Music?”
 - “What is the ratio of native-born students to international students on the campuses of major U.S. state universities?”
- **6. Three of the following questions lend themselves well to formal research. Which one does NOT?
- “How does the organization of mathematical information in long-term memory differ between 3-year-olds and 13-year-olds?”
 - “How do business teams of six or fewer members compare to teams of more than six members in terms of productivity?”
 - “Does message medium, print versus television, impact the effectiveness of public service health messages?”
 - “Which general education course is more interesting, U.S. History or World Music?”
- *7. Three of the following are characteristics of a well-written research problem. Which one is NOT?
- The problem statement includes jargon associated with the field.
 - The problem statement clearly delimits the object(s) of study.
 - The problem statement identifies the important factors to be investigated in the study.
 - The problem statement explicitly identifies assumptions.
- *8. A common weakness of research problems is that they:
- delimit the object(s) of study.
 - constrain the variables to be investigated.
 - implicitly rest on common assumptions.
 - incorporate a number of subproblems.

- **9. “What proportion of workers hired by selected factories in the state of Oklahoma between 1995 and 2000 held four-year college degrees?”
The chief weakness of this research problem is that:
- it lacks clarity or completeness in the problem statement.
 - it implies only description of the data, not interpretation.
 - it does not lead to the creation/discovery of new information.
 - studying the question as stated is not feasible.
- **10. “What do underemployed U.S. workers (i.e., those workers who are employed, but not in positions for which they have specialized training or expertise) identify as the primary reason for their inability to find suitable employment?”
The chief weakness of this research problem is that:
- it lacks clarity or completeness in the problem statement.
 - it does not lead to the creation/discovery of new information.
 - it implies only description of the data, not interpretation.
 - studying the question as stated is not feasible.
- **11. “What is the correlation between an index of civic-mindedness and years of involvement in local organizations and charities among members of city councils of selected midsized cities in the northeastern United States?”
The chief weakness of this research problem is that:
- it implies only description of the data, not interpretation.
 - it does not lead to the creation/discovery of new information.
 - it lacks clarity or completeness in the problem statement.
 - studying the question as stated is not feasible.
- **12. “Among social workers in selected U.S. urban areas, are the personality characteristics of Need for Structure or In-Group Preference related to prejudicial social judgments about African Americans, Latino Americans, or Asian Americans?”
Which of the following is a well-stated subproblem that follows from this research problem?
- Which group is more discriminated against by the public at large in each of the selected areas: African Americans, Latino Americans, or Asian Americans?
 - What is the most valid existing measure of In-Group Preference?
 - What is the relationship between an index of Need for Structure and an index of prejudice targeting attitudes about Asian Americans among the selected social workers?
 - Which analytic technique is best suited to addressing the research problem, multiple regression or path analysis?

- *13. In regard to research questions and hypotheses, a high-quality research study will:
- articulate only research questions, not hypotheses, so as not to constrain the possible findings.
 - articulate only hypotheses, not research questions, in order to preserve the scientific rigor of the investigation.
 - focus only on those questions that can support the correctness of current hypotheses or theoretical positions.
 - articulate either research questions or hypotheses depending on the nature of the study.
- **14. Which of the following represents a null hypothesis?
- Class A high school basketball teams who employ a sports psychologist will have a higher proportion of wins over the course of the season than comparable teams who do not employ a sports psychologist.
 - There will be no difference in rate of skill improvement between college gymnasts who practice meditation and those who do not.
 - Does incorporating relaxation exercises into the daily practice routine of college vocal majors enhance their performance confidence?
 - None of the above
- **15. Which of the following represents a research hypothesis?
- Class A high school basketball teams who employ a sports psychologist will have a higher proportion of wins over the course of the season than comparable teams who do not employ a sports psychologist.
 - There will be no difference in rate of skill improvement between college gymnasts who practice meditation and those who do not.
 - Does incorporating relaxation exercises into the daily practice routine of college vocal majors enhance their performance confidence?
 - None of the above
- *16. The recommended order of tasks in preparing a research proposal is:
- state the problem and subproblems, note the assumptions, note the delimitations, define the terms, note the research questions/hypotheses.
 - state the problem and subproblems, note the delimitations, note the research questions/hypotheses, note the assumptions, define the terms.
 - state the problem and subproblems, note the research questions/hypotheses, note the assumptions, define the terms, note the delimitations.
 - state the problem and subproblems, note the research questions/hypotheses, note the delimitations, define the terms, note the assumptions.

- *17. Three of the following comprise the setting of the research problem. Which one does NOT?
- a. A clear description of all measurement tools to be used in the research project
 - b. A clear statement of what the researcher will and will not do in the course of the study
 - c. A clear statement of the assumptions on which the research problem rests
 - d. A clear definition of all terms related to the research problem that might be misunderstood by a reader
- **18. Lucy examined relationships between middle-school students' self-esteem and their performance in Mathematics. Her data analysis indicated that students with higher self-esteem perform better than those with lower self-esteem. Her investigation further revealed that students with higher self-esteem are more willing to invest effort in solving Math problems. In this case, the amount of effort is
- a. An independent variable
 - b. A dependent variable
 - c. A mediating variable
 - d. A moderating variable
- **19. Research suggests that children who eat hot breakfast at home perform better at school. Many argue that not only hot breakfast but also parental care of children before they go to school has an impact on children's performance. In this case, parental care is
- a. An independent variable
 - b. A dependent variable
 - c. A mediating variable
 - d. A moderating variable
- **20. Imani analyzed data and found that explicitly teaching reading strategies improves students' performance on standardized tests. In this study, explicit teaching of reading strategies is
- a. An independent variable
 - b. A dependent variable
 - c. A mediating variable
 - d. A moderating variable
- **21. Marcos's study suggested that elementary students who watch TV more than three hours a day are more likely to be overweight than students who watch less TV. In this study, students' weight is
- a. An independent variable
 - b. A dependent variable
 - c. A mediating variable
 - d. A moderating variable

Essay Questions

22. Why is it important that the researcher articulate, as clearly as possible, all assumptions that affect the research problem?
23. Your textbook authors recommend explicitly defining any term that might be misunderstood by someone reading the research proposal. If the research proposal is being written chiefly for use and review by researchers, why is such a step necessary?
24. Daphne has been a member of a research team studying interpersonal aggression among preschoolers for more than a year. In that time, her team has repeatedly employed a consistent set of techniques and procedures to study preschoolers as they interact in a number of settings. The procedures revolve around volunteer mothers bringing their children to the university child development lab for a “play session” that is the basis of the formal observations. Settings they have studied so far include: the university pre-school, affluent local day-care centers, and a pre-kindergarten program being offered in the neighborhood school district. All of these settings were fairly racially homogenous.

Daphne has just learned that a friend of a friend can help her gain research access, in the near future, to preschoolers in an unusually racially diverse though impoverished preschool setting. Daphne decides she has no time to prepare a formal research proposal before embarking on the study. “Besides,” she thinks, “this study should go just like all the others we’ve done.”

Is Daphne leaving herself open to problems in this situation, or is she safe moving ahead with no formal proposal, given how familiar she is with the study techniques and procedures?

ANSWER KEY

Multiple-Choice Questions

1. b
2. a
3. d
4. c
5. b
6. d
7. a
8. c
9. c
10. d
11. a
12. c
13. d
14. b
15. a
16. d
17. a
18. c
19. d
20. a
21. b

Essay Questions

22. There are at least two reasons to articulate assumptions underlying a research problem. First, these assumptions will guide the selection of research questions and/or the formation of hypotheses, as well as the interpretation of the data. Clearly stating the assumptions assists the reader in evaluating the merits of the study and the conclusions drawn from it. Second, to the extent that the researcher is aware of his/her assumptions, these can be incorporated into the study design as needed to promote the validity of the conclusions drawn from the study.
23. Even among those professionals working in a common field, there can be differences in how various terms are used and defined. Those outside of the immediate field, or those new to a field, are even more likely to be unfamiliar with technical language connected to the field, heightening the chances for miscommunication. The situation is exacerbated when terms that have a technical meaning within a field also have a more general meaning known to the larger public. It is very likely that among researchers reviewing your research proposal will be people who vary in their expertise regarding your immediate professional field. To communicate as clearly as possible with all potential readers of the proposal and, later, of the research report, it is important to define any term that might possibly lack a common meaning across the potential audience.
24. Daphne is setting herself up for potential problems by skipping the formal proposal. Without the exercise of writing the proposal, Daphne may not stop and carefully think through all the ways in which this study may not be like previous studies. For instance, Daphne needs to consider whether the mothers of the children in this more impoverished setting will be willing or available to bring their children to the lab sessions. She also needs to consider whether the techniques being used to record peer interactions are adequate, given that this sample is more racially heterogeneous than previous samples. There may be additional or different questions that should be added to the study to capture the richness of the new situation. It may turn out that the present design will translate fairly seamlessly to the new setting. But without the detailed planning that the well-written proposal forces the researcher to undertake, it is entirely possible that Daphne will encounter a dearth of research participants and data that do not capture the richness of the interactions among the participants that do volunteer.

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