

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

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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 clear description of all measurement tools to be used in the research project
 - A clear statement of what the researcher will and will not do in the course of the study
 - A clear statement of the assumptions on which the research problem rests
 - 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
- An independent variable
 - A dependent variable
 - A mediating variable
 - 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
- An independent variable
 - A dependent variable
 - A mediating variable
 - 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
- An independent variable
 - A dependent variable
 - A mediating variable
 - 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
- An independent variable
 - A dependent variable
 - A mediating variable
 - 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 preschool, 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

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

