



# PART ONE

## An Introduction to Educational Research

Consider research your personal journey. It will be challenging but also exciting. Pack along for your journey a toolkit. In chapter 1 you will be introduced to the basic supplies. In your pack, place a solid understanding of “research.” Also include a map—the six steps in the process of conducting research. Realize that on this journey you need to respect people and the places you visit. Enjoy the process using your natural skills such as the ability to solve puzzles, use library resources, and write. After learning the process of research, decide on which of two major paths—quantitative or qualitative research—you will follow. Each is viable, and, in the end, you may choose to incorporate both, but as you begin a study consider one of the paths for your research journey.

Let us begin.



# CHAPTER 1

## The Process of Conducting Research Using Quantitative and Qualitative Approaches

*What is research? Research is a process in which you engage in a small set of logical steps. In this chapter, we define research, discuss why it is important, advance six steps for conducting research, and identify how you can conduct research ethically by employing skills that you already have. You can approach research in two ways—through a quantitative study or a qualitative study—depending on the type of problem you need to research. Your choice of one of these approaches will shape the procedures you use in each of the six steps of research. In this chapter, we explore the many ways these two approaches are similar and different.*

By the end of this chapter, you should be able to:

- ◆ Define and describe the importance of educational research.
- ◆ Describe the six steps in the process of research.
- ◆ Identify the characteristics of quantitative and qualitative research in the six steps.
- ◆ Identify the type of research designs associated with quantitative and qualitative research.
- ◆ Discuss important ethical issues in conducting research.
- ◆ Recognize skills needed to design and conduct research.

To begin, consider Maria, a teacher with 10 years of experience, who teaches English at a midsized metropolitan high school. Lately, a number of incidents in the school district have involved students possessing weapons:

- ◆ A teacher found a 10th grader hiding a knife in his locker.
- ◆ A 12th-grade student threatened another student, telling him “he wouldn’t see the light of day” unless he stopped harassing her.
- ◆ At a nearby high school, a student pointed a handgun at another student outside the school.



These incidents alarm district officials, school administrators, and teachers. The principal forms a committee made up of administrators and teachers to develop guidelines about how the school should respond to these situations. In response to a call for teachers to serve on this committee, Maria volunteers immediately.

Maria sees the school committee assignment and her graduate program's research study requirement as mutual opportunities to research school violence and weapon possession and to have a positive impact on her school. Where does she begin?

Maria's situation of balancing the dual roles of professional and graduate student may be familiar to you. Let's assess her present research situation:

- ◆ Maria recognizes the need to closely examine an important issue—school violence and weapons at school—although she is new to research. However, she is not a stranger to looking up topics in libraries or to searching the Internet when she has a question about something. She has occasionally looked at a few research journals, such as the *High School Journal*, the *Journal of Educational Research*, and *Theory into Practice*, in her school library, and she has overheard other teachers talking about research studies on the subject of school violence. Although she has no research background, she expects that research will yield important findings for her school committee and also help her fulfill the requirement to conduct a small-scale research study for her graduate degree.
- ◆ To complete the required research for her graduate program, Maria must overcome her fears about planning and conducting a study. To do this, she needs to think about research not as a large, formidable task, but as a series of small, manageable steps. Knowing these smaller steps is key to the success of planning and completing her research.

Your situation may be similar to Maria's. At this stage, your concerns may start with the question "What is research?"

## A DEFINITION OF RESEARCH AND ITS IMPORTANCE

**Research** is a process of steps used to collect and analyze information to increase our understanding of a topic or issue. At a general level, research consists of three steps:

1. Pose a question.
2. Collect data to answer the question.
3. Present an answer to the question.

This should be a familiar process. You engage in solving problems every day and you start with a question, collect some information, and then form an answer. Although there are a few more steps in research than these three, this is the overall framework for research. When you examine a published study, or conduct your own study, you will find these three parts as the core elements.

Not all educators have an understanding and appreciation of research. For some, research may seem like something that is important only for faculty members in colleges and universities. Although it is true that college and university faculty members value and conduct research, personnel in other educational settings also read and use research, such as school psychologists, principals, school board members, adult educators, college administrators, and graduate students. Research is important for three reasons.

## Research Adds to Our Knowledge

Educators strive for continual improvement. This requires addressing problems or issues and searching for potential solutions. **Adding to knowledge** means that educators undertake research to contribute to existing information about issues. We are all aware of pressing educational issues being debated today, such as the integration of AIDS education into the school curriculum.

Research plays a vital role in addressing these issues. Through research we develop results that help to answer questions, and as we accumulate these results, we gain a deeper understanding of the problems. In this way, researchers are much like bricklayers who build a wall brick by brick, continually adding to the wall and, in the process, creating a stronger structure.

How can research specifically add to the knowledge base and existing literature? A research report might provide a study that has not been conducted and thereby fill a void in existing knowledge. It can also provide additional results to confirm or disconfirm results of prior studies. It can help add to the literature about practices that work or advance better practices that educators might try in their educational setting. It can provide information about people and places that have not been previously studied.

Suppose that you decide to research how elementary schoolchildren learn social skills. If you study how children develop social skills, and past research has not examined this topic, your research study addresses a gap in knowledge. If your study explores how African American children use social skills on their way home from school, your study might replicate past studies but would test results with new participants at a different research site. If your study examines how children use social skills when at play, not on the school grounds, but on the way home from school, the study would contribute to knowledge by expanding our understanding of the topic. If your study examines female children on the way home from school, your study would add female voices seldom heard in the research. If your study has implications for how to teach social skills to students, it has practical value.

## Research Improves Practice

Research is also important because it *suggests improvements* for practice. Armed with research results, teachers and other educators become more effective professionals. This effectiveness translates into better learning for kids. For instance, through research, personnel involved in teacher education programs in schools of education know much more about training teachers today than they did 20 years ago. Zeichner (1999) summarized the impact of research on teacher training during this period (see Table 1.1). Teacher trainers today know about the academic capabilities of students, the characteristics of good teacher training programs, the recurring practices in teacher training programs, the need to challenge student beliefs and worldviews, and the tensions teacher educators face within their institutions. But before these research results can impact teacher training or any other aspect of education, individuals in educational settings need to be aware of results from investigations, to know how to read research studies, to locate useful conclusions from them, and to apply the findings to their own unique situations. Educators using research may be teachers in preschool through Grade 12, superintendents in school district offices, school psychologists working with children with behavioral problems, or adult educators who teach English as a second language. Research may help these individuals improve their practices on the job.

Research offers practicing educators *new ideas* to consider as they go about their jobs. From reading research studies, educators can learn about new practices that have been

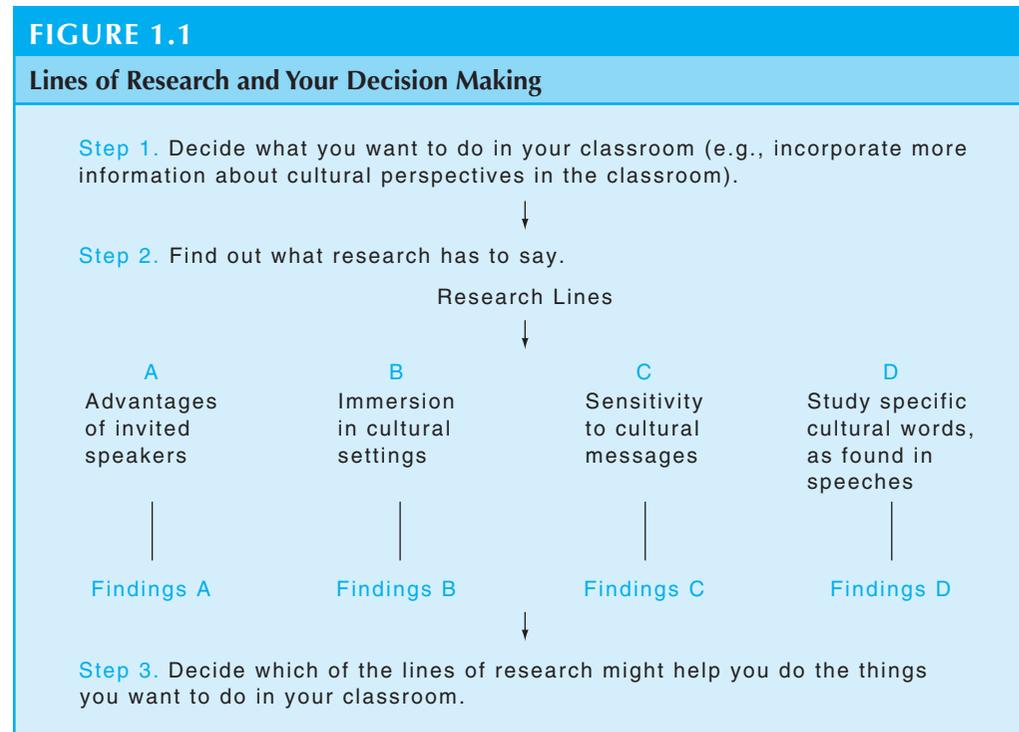
**TABLE 1.1****Zeichner's (1999) Summary of Major Research Results in Teacher Education**

Research Conducted	What Researchers Have Learned
Surveys about students in teacher education programs	<ul style="list-style-type: none"> <li>• From academic, social class, racial, ethnic, and gender characteristics of both teacher educators and their students, the research has challenged the misconception that students who go into teaching are academically inferior to those who go into other fields.</li> <li>• Despite changing U.S. demographics, teacher education programs admit mostly students who are white, monolingual English speakers.</li> </ul>
Specific case studies of individual teacher education programs	<ul style="list-style-type: none"> <li>• Successful teacher education programs have a coherent vision of good teaching and close links to local schools.</li> <li>• Researchers need to spend time living in teacher education programs to understand them.</li> </ul>
Conceptual and historical research on teacher education programs	<ul style="list-style-type: none"> <li>• Teacher education programs differ in their approaches, such as the importance of disciplinary knowledge versus students learning versus critiquing societal inequalities in schooling practices.</li> <li>• Programs throughout the 20th century have emphasized recurring practices such as performance-based teacher education.</li> </ul>
Studies of learning to teach in different settings	<ul style="list-style-type: none"> <li>• It is difficult to change the tacit beliefs, understandings, and worldviews that students bring to teacher education programs.</li> <li>• The impact of a program on students can be increased through cohort groups, portfolio development, case studies, and narratives in which they examine their beliefs.</li> </ul>
Nature and impact of teacher education activities and self-studies	<ul style="list-style-type: none"> <li>• Despite the sometimes unfavorable structural conditions of teacher educators' work, their voices are being heard.</li> <li>• Teachers, in these self-studies, describe the tensions and contradictions involved in being a teacher educator.</li> </ul>

tried in other settings or situations. For example, the adult educator working with immigrants may find that small-group interaction that focuses on using cultural objects from the various homelands may increase the rate at which immigrants learn the English language.

Research also helps practitioners *evaluate approaches* that they hope will work with individuals in educational settings. This process involves sifting through research to determine which results will be most useful. This process is demonstrated in Figure 1.1, which focuses on three steps that a classroom teacher might use (Connelly, Dukacz, & Quinlan, 1980). As shown in Figure 1.1, a teacher first decides what needs to be implemented in the classroom, then examines alternative lines of research, and finally decides which line of research might help accomplish what needs to be done.

For example, a reading teacher decides to incorporate more information about cultural perspectives into the classroom. Research suggests that this may be done with classroom interactions by inviting speakers to the room (line A) or by having the children consider and think (cognitively) about different cultural perspectives by talking with individuals at a local cultural center (line B). It may also be accomplished by having the children inquire into cultural messages embedded within advertisements (line C) or identify the cultural subject matter of speeches of famous Americans (line D). A line of research is then chosen that helps the teacher to accomplish classroom goals. This teacher might be Maria, our teacher conducting research on weapon possession in schools and its potential for violence. Maria hopes to present options for dealing with this issue to her committee and needs to identify useful research lines and consider approaches taken by other schools.



Source: Adapted from Connelly, Dukacz, & Quinian, 1980.

At a broader level, research helps the practicing educator *build connections* with other educators who are trying out similar ideas in different locations. Special education teachers, for example, may establish connections at research conferences where individuals report on topics of mutual interest, such as using small-group strategies for discipline management in classrooms.

### Research Informs Policy Debates

In addition to helping educators become better practitioners, research also provides information to policy makers when they research and debate educational topics. Policy makers may range from federal government employees and state workers to local school board members and administrators, and they discuss and take positions on educational issues important to constituencies. For these individuals, research offers results that can help them weigh various perspectives. When policy makers read research on issues, they are informed about current debates and stances taken by other public officials. To be useful, research needs to have clear results, be summarized in a concise fashion, and include data-based evidence. For example, research useful to policy makers might summarize the alternatives on:

- ◆ Welfare and its effect on children's schooling among lower income families
- ◆ School choice and the arguments proposed by opponents and proponents

### Several Problems with Research Today

Despite the importance of research, we need to realistically evaluate its contributions. Sometimes the results show contradictory or vague findings. An education aide to the

Education and Labor Committee of the U.S. House of Representatives for 27 years expressed this confusion: “I read through every single evaluation . . . looking for a hard sentence—a declarative sentence—something that I could put into the legislation, and there were very few” (Viadero, 1999, p. 36). Not only are policy makers looking for a clear “declarative sentence,” many readers of educational research search for some evidence that makes a direct statement about an educational issue. On balance, however, research accumulates slowly, and what may seem contradictory comes together to make sense in time. Based on the information known, for example, it took more than 4 years to identify the most rudimentary factors about how chairpersons help faculty become better researchers (Creswell, Wheeler, Seagren, Egly, & Beyer, 1990).

Another problem with research is the issue of questionable data. The author of a particular research report may not have gathered information from people who are able to understand and address the problem. The number of participants may also be dismally low, which can cause problems in drawing appropriate statistical conclusions. The survey used in a study may contain questions that are ambiguous and vague. At a technical level, the researcher may have chosen an inappropriate statistic for analyzing the data. Just because research is published in a well-known journal does not automatically make it “good” research.

To these issues we could add unclear statements about the intent of the study, the lack of full disclosure of data collection procedures, or inarticulate statements of the research problem that drives the inquiry. Research has limits, and you need to know how to decipher research studies because researchers may not write them as clearly and accurately as you would like. We cannot erase all “poor” research reported in the educational field. We can, however, as responsible inquirers, seek to reconcile different findings and employ sound procedures to collect and analyze data and to provide clear direction for our own research.

## THE SIX STEPS IN THE PROCESS OF RESEARCH

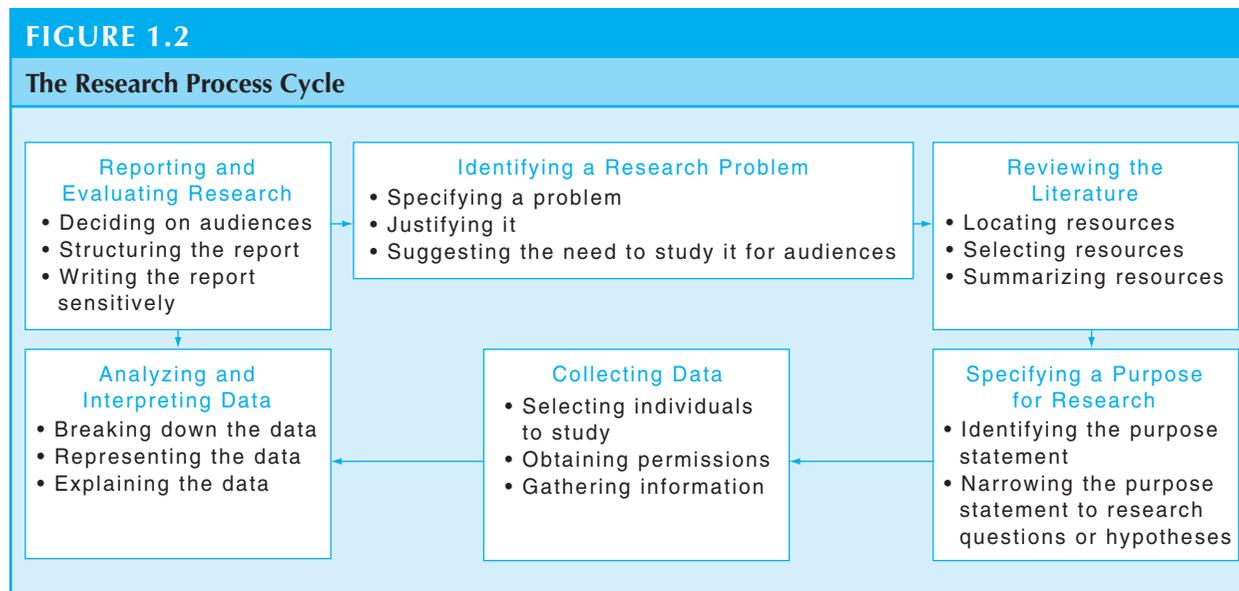
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When researchers conduct a study, they proceed through a distinct set of steps. Years ago these steps were identified as the “scientific method” of inquiry (Kerlinger, 1972; Leedy & Ormrod, 2001). Using a “scientific method,” researchers:

- ◆ Identify a problem that defines the goal of research
- ◆ Make a prediction that, if confirmed, resolves the problem
- ◆ Gather data relevant to this prediction
- ◆ Analyze and interpret the data to see if it supports the prediction and resolves the question that initiated the research

Applied today, these steps provide the foundation for educational research. Although not all studies include predictions, you engage in these steps whenever you undertake a research study. As shown in Figure 1.2, the **process of research** consists of six steps:

1. Identifying a research problem
2. Reviewing the literature
3. Specifying a purpose for research
4. Collecting data
5. Analyzing and interpreting the data
6. Reporting and evaluating research



## Identifying a Research Problem

You begin a research study by identifying a topic to study—typically an issue or problem in education that needs to be resolved. **Identifying a research problem** consists of specifying an issue to study, developing a justification for studying it, and suggesting the importance of the study for select audiences that will read the report. By specifying a “problem,” you limit the subject matter and focus attention on a specific aspect of study. Consider the following “problems,” each of which merits research:

- ◆ Teens are not learning how to connect to others in their communities
- ◆ Teenage smoking will lead to many premature deaths

These needs, issues, or controversies arise out of an educational need expressed by teachers, schools, policy makers, or researchers, and we refer to them as *research problems*. You will state them in introductory sections of a research report and provide a rationale for their importance. In a formal sense, these problems are part of a larger written section called the “statement of the problem,” and this section includes the topic, the problem, a justification for the problem, and the importance of studying it for specific audiences such as teachers, administrators, or researchers.

Let’s examine Maria’s research to see how she will specify her study’s research problem.

Maria plans to study school violence and weapon possession in schools. She starts with a problem: escalating weapon possession among students in high schools. She needs to justify the problem by providing evidence about the importance of this problem and documenting how her study will provide new insight into the problem.

In her research, Marie will need to identify and justify the research problem that she is studying.

## Reviewing the Literature

It is important to know who has studied the research problem you plan to examine. You may fear that you will initiate and conduct a study that merely replicates prior research.

However, faculty and advisors often fear that you will plan a study that does not build on existing knowledge and does not add to the accumulation of findings on a topic. Because of these concerns, reviewing the literature is an important step in the research process. **Reviewing the literature** means locating summaries, books, journals, and indexed publications on a topic; selectively choosing which literature to include in your review; and then summarizing the literature in a written report.

The skills required for reviewing the literature develop over time and with practice. You can learn how to locate journal articles and books in an academic library, access computerized databases, choose and evaluate the quality of research on your topic, and summarize it in a review. Library resources can be overwhelming, so having a strategy for searching the literature and writing the review is important. Let's examine Maria's approach to reviewing the literature.

To inform her committee about the latest literature on school violence and to plan her own research, Maria needs to conduct a literature review. This process will involve becoming familiar with the university library holdings, spending time reviewing resources and making decisions about what literature to use, and writing a formal summary of the literature on school violence. She consults the library catalog at her university and plans to search the computerized databases.

In order to review the literature, Maria will need to become familiar with the literature and visit her university library.

## Specifying a Purpose for Research

If your research problem covers a broad topic of concern, you need to focus it so that you can study it. A focused restatement of the problem is the *purpose statement*. This statement conveys the overall objective or intent of your research. As such, it is the most important statement in your research study. It introduces the entire study, signals the procedures you will use to collect data, and indicates the types of results you hope to find.

The **purpose for research** consists of identifying the major intent or objective for a study and narrowing it into specific research questions or hypotheses. The purpose statement contains the major focus of the study, the participants in the study, and the location or site of the inquiry. This purpose statement is then narrowed to research questions or predictions that you plan to answer in your research study. Let's check again with Maria to see how she will write a purpose statement and research questions.

Maria now needs to write down the purpose of her study and formulate the questions she will ask of the individuals selected for her study. In draft after draft, she sketches this purpose statement, recognizing that it will provide major direction for her study and help keep her focused on the primary aim of her study. From this broad purpose, Maria now needs to narrow her study to specific questions or statements that she would like her participants to answer.

Maria will need to write a good purpose statement and the research questions for her study.

## Collecting Data

Evidence helps provide answers to your research questions and hypotheses. To get these answers, you engage in the step of collecting or gathering data. **Collecting data** means identifying and selecting individuals for a study, obtaining their permission to study them, and gathering information by asking people questions or observing their behaviors. Of paramount concern in this process is the need to obtain accurate data from individuals

and places. This step will produce a collection of numbers (test scores, frequency of behaviors) or words (responses, opinions, quotes). Once you identify these individuals and places, you write *method* or *procedure sections* into your research studies. These sections offer detailed, technical discussions about the mechanics and administration of data collection. Many decisions, however, go into creating a good data collection procedure. Let's see how Maria will address data collection.

At this point in the research process, Maria needs to think about where she will conduct her study of school violence and weapon possession, who will participate in the study, how she will obtain permission to study them, what data she will collect, and how she will gather the data. She needs to decide whether she will have students fill out forms or talk to them directly to gather data to answer her research questions. Whichever course she chooses, she will need permission from the high school students and, because the students are minors, from their parents.

Maria will engage in the steps of data collection to gather the data she needs to address her research questions.

### Analyzing and Interpreting the Data

During or immediately after data collection, you need to make sense of the information supplied by individuals in the study. Analysis consists of “taking the data apart” to determine individual responses and then “putting it together” to summarize it. **Analyzing and interpreting the data** involves drawing conclusions about it; representing it in tables, figures, and pictures to summarize it; and explaining the conclusions in words to provide answers to your research questions. You report analysis and interpretation in sections of a research report usually titled *Results*, *Findings*, or *Discussions*. How will Maria analyze and interpret the data in her research?

If Maria collects information on a written questionnaire from students across the school district, she will need to enter the questionnaire responses into a computer program, choose a statistical procedure, conduct the analyses, report the results in tables, and draw conclusions about (or interpret) whether the data confirm or disconfirm her expected trends or predictions. If she conducts face-to-face interviews, she will collect audiotapes of students talking about weapon possession at school and transcribe these tapes to obtain a written record. With her transcriptions, she will engage in making sense of student comments by selecting specific sentences and paragraphs and by identifying themes of information. From these themes, she will interpret the meaning of student comments in light of her own personal stance and the suggestions found in past studies.

For help in the data analysis and interpretation phase of her study, Maria will need to analyze her data and make an interpretation to answer her research questions.

### Reporting and Evaluating Research

After conducting your research, you will develop a written report and distribute it to select audiences (such as fellow teachers, administrators, parents, students) that can use your information. **Reporting research** involves deciding on audiences, structuring the report in a format acceptable to these audiences, and then writing the report in a manner that is sensitive to all readers. The audiences for research will vary from academic researchers who contribute and read journal articles, to faculty advisors and committees that review master's theses and dissertations, to personnel in educational agencies and

school districts who look for reports of research on timely topics. Your structure for the research report will vary for each audience, from a formal format for theses and dissertations to a more informal document for in-house school reports. In all types of reports, however, researchers need to be respectful and to avoid language that discriminates on the basis of gender, sexual orientation, race, or ethnic group.

The audience for your report will have its own standards for judging the quality and utility of the research. **Evaluating research** involves assessing the quality of a study using standards advanced by individuals in education. Unfortunately, there are no iron-clad standards for evaluating educational research in the academic research community; in school districts; or in local, state, or federal agencies. Still, we need some means of determining the quality of studies, especially published research or reports presented to practitioner audiences. Let's look at how Maria thinks about organizing her research report.

Maria thinks about how she will organize her final report to her school committee and to her university graduate committee. Her graduate committee likely has a structure in mind for her graduate research study, and she needs to consult her faculty advisor about the format that students typically use. She should have a general idea about what the major sections of the study will be, but the contents of the specific paragraphs and ideas will take shape as her data analysis and interpretation progress.

Her school report will likely be different from her research report. The school report will be informative and concise, will offer recommendations, and will include minimal discussions about methods and procedures. Whatever the audience and structure for her report, it must be respectful of the audience and be devoid of discriminatory language.

Maria will need to organize and report her research in ways suitable for different audiences.

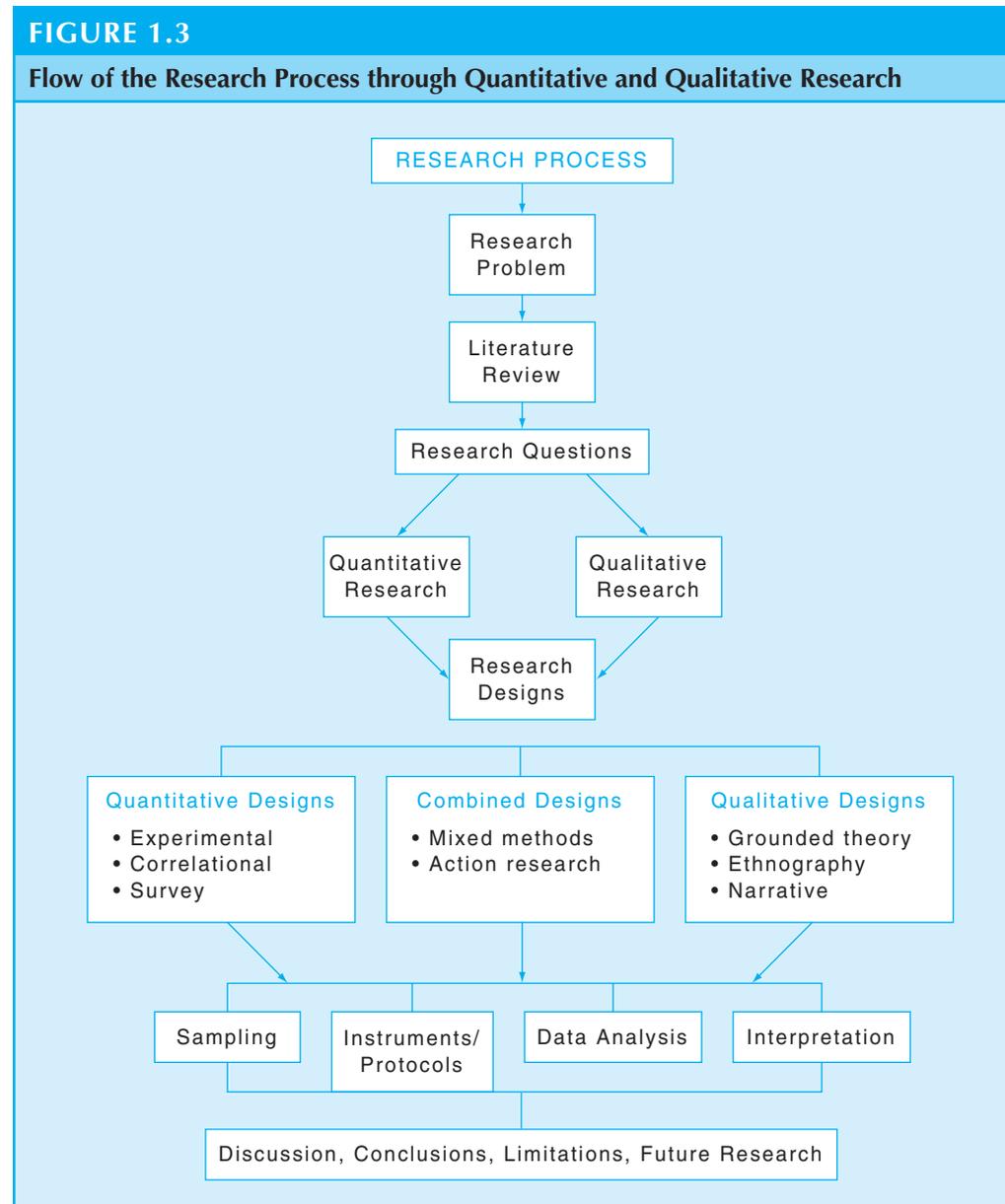
## THE CHARACTERISTICS OF QUANTITATIVE AND QUALITATIVE RESEARCH IN EACH OF THE SIX STEPS

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Conducting educational research is more than engaging in the major steps in the process of research. It also includes designing and writing the research in one of the two major tracks: quantitative research or qualitative research. The way that this unfolds is illustrated in the flow of the research process as shown in Figure 1.3.

Based on the nature of the research problem and the questions that will be asked to address the problem (and accompanying review of the literature that establishes the importance of the problem), the researcher chooses either the quantitative or qualitative research track. The problem, the questions, and the literature reviews help to steer the researcher toward either the quantitative or qualitative track. These, in turn, inform the specific research design to be used and the procedures involved in them, such as sampling, data collection instruments or protocols, the procedures, the data analysis, and the final interpretation of results.

What are the characteristics of quantitative and qualitative research tracks at each step in this research process? As each characteristic is discussed, it is helpful to first examine two sample journal articles at the end of this chapter because these articles will be cited with illustrations for each characteristic. Marginal notes have been inserted into the articles to identify the specific passage containing the quantitative and qualitative



characteristics. The first article is quantitative research while the second is qualitative research. These two articles were chosen because they are good representatives of both tracks of research and they illustrate within them good procedures of research. They will become a frame of reference for each step in the process of research for the quantitative and qualitative tracks. The two articles are:

- ◆ *Quantitative:* Deslandes, R., & Bertrand, R. (2005). Motivation of parent involvement in secondary-level schooling. *Journal of Educational Research*, 98(3), 164–175.
- ◆ *Qualitative:* Shelden, D. L., Angell, M. E., Stoner, J. B., & Roseland, B. D. (2010). School principals' influence on trust: Perspectives of mothers of children with disabilities. *Journal of Educational Research*, 103, 159–170.

## Quantitative Research Characteristics

In quantitative research the major characteristics are:

- ◆ Describing a research problem through a description of trends or a need for an explanation of the relationship among variables
- ◆ Providing a major role for the literature through suggesting the research questions to be asked and justifying the research problem and creating a need for the direction (purpose statement and research questions or hypotheses) of the study
- ◆ Creating purpose statements, research questions, and hypotheses that are specific, narrow, measurable, and observable
- ◆ Collecting numeric data from a large number of people using instruments with preset questions and responses
- ◆ Analyzing trends, comparing groups, or relating variables using statistical analysis, and interpreting results by comparing them with prior predictions and past research
- ◆ Writing the research report using standard, fixed structures and evaluation criteria, and taking an objective, unbiased approach

In *quantitative research*, the investigator *identifies a research problem* based on trends in the field or on the need to explain why something occurs. Describing a trend means that the research problem can be answered best by a study in which the researcher seeks to establish the overall tendency of responses from individuals and to note how this tendency varies among people. For example, you might seek to learn how voters describe their attitudes toward a bond issue. Results from this study can inform how a large population views an issue and the diversity of these views.

However, some quantitative research problems require that you explain how one variable affects another. *Variables* are an attribute (e.g., attitude toward the school bond issue) or characteristic of individuals (e.g., gender) that researchers study. By explaining a relation among variables, you are interested in determining whether one or more variables might influence another variable. For example, quantitative researchers may seek to know why certain voters voted against the school bond issue. The variables, gender and attitude toward the quality of the schools, may influence individuals' vote on the bond issue.

For example, examine the sample quantitative article—the parent involvement study—at the end of this chapter. The authors in the parent involvement study (Deslandes & Bertrand, 2005) are less interested in describing the level of parent involvement in secondary-level schooling and more interested in examining the relationship between four factors—parents' role construction, self-efficacy, perceptions of teacher invitations, and perceptions of adolescent invitations—as predictors of parent involvement at home and at school. To examine this relation, they collect survey data from 770 parents of children in Grades 7, 8, and 9 (American system equivalents to Canadian schools). Thus, the problem being addressed is that we know little about what factors relate to parental involvement in secondary-level schooling. Assessing whether certain factors predict an outcome is best suited to quantitative research.

In *reviewing the literature* in quantitative research, you will typically see a substantial literature review at the beginning of the study. Thus, the literature plays a major role in two ways: justifying the need for the research problem and suggesting potential purposes and research questions for the study. Justifying the research problem means that you use the literature to document the importance of the issue examined in the study. To accomplish this, you search the literature, locate studies that identify the problem as important to examine, and then cite this literature in the opening sections of a research report.

The literature also creates a need for the study, as expressed specifically in the purpose statement and the research questions or hypotheses. You identify in the literature

key variables, relations, and trends, and use these to provide direction for your research questions and hypotheses. A literature review on college students, for example, may show that we know little about the problem of binge drinking. Existing literature, however, may identify the importance of peer groups and styles of interacting among student peer groups. Thus, important research questions might address how peers and their interaction styles influence binge drinking on college campuses. In this way, the literature in a quantitative study both documents the need to study the problem and provides direction for the research questions.

In the quantitative parent involvement study (Deslandes & Bertrand, 2005), the authors cite extensive literature at the beginning of the article. In these paragraphs, the authors rely on the model of the parent involvement process, and they discuss the literature surrounding each of the four major factors that are expected to influence parental involvement. They begin by reviewing the literature about the demographic or personal factors such as family size and educational level, then they proceed to review the literature about the major factors in the study that they predict will influence parental involvement—parents' role construction, parents' self-efficacy, parents' perceptions of teacher invitations, and parents' perceptions of student invitations. In this way, the introduction establishes the research that has been reported in the literature on each of the four factors in the study and foreshadows the research questions that will be addressed in the study.

In *quantitative research questions*, you ask specific, narrow questions to obtain measurable and observable data on variables. The major statements and questions of direction in a study—the purpose statement, the research questions, and the hypotheses—are specific and narrow because you identify only a few variables to study. From a study of these variables, you obtain measures or assessments on an instrument or record scores on a scale from observations. For example, in a study of adolescent career choices, the variable, the role of the school counselor, narrows the study to a specific variable from among many variables that might be studied (e.g., role of parents, personal investment by student). To examine the impact of the school counselor on adolescent career choices, data must be obtained from the students.

In the quantitative parent involvement study (Deslandes & Bertrand, 2005), the authors narrow and select a few factors that they predict will explain parental involvement. They state their purpose of the study and the major research questions. They say that they will examine four factors that influence parental involvement at home and at school, and then they identify the four factors that they predict will influence this involvement. Thus, their research questions are specific to four factors, and later in the method section, they explain how they will measure these factors.

In *quantitative data collection*, you use an instrument to measure the variables in the study. An *instrument* is a tool for measuring, observing, or documenting quantitative data. It contains specific questions and response possibilities that you establish or develop in advance of the study. Examples of instruments are survey questionnaires, standardized tests, and checklists that you might use to observe a student's or teacher's behaviors. You administer this instrument to participants and collect data in the form of numbers. For instance, you might collect responses based on students checking boxes on a form, or from checklists you complete as you watch a student perform a task in the classroom. The intent of this process is to apply the results (called *generalizing the results*) from a small number of people to a large number. The larger the number of individuals studied, the stronger the case for applying the results to a large number of people. For example, on a survey sent to 500 parents in a school district, the researcher seeks information about parents' attitudes toward the educational needs of pregnant teenagers in the schools. The researcher selects an instrument, "Attitudes toward Education of Pregnant

Teenagers,” found through a search of library resources. The 500 parents who receive this instrument represent a cross section of people from all socioeconomic levels in the school district. After collecting and analyzing this data, the investigator will draw conclusions about all parents in this school district based on the representative sample studied.

Data collection is also an integral part of the quantitative parent involvement study (Deslandes & Bertrand, 2005). The authors study a large number of parents (i.e., 770) of children in Grades 7, 8, and 9. They survey parents using an adaptation of the instrument, “Sharing the Dream! Parent Questionnaire,” as well as items on a questionnaire designed by other researchers to assess parents’ perceptions of student invitations. The survey items are translated into French to fit the Quebec context, and they gather quantifiable data (scores) on the survey. They discuss the scales used to collect the data and how they are scored (i.e., from 1 = *disagree very strongly* to 6 = *agree very strongly*).

In *quantitative data analysis*, you analyze the data using mathematical procedures, called *statistics*. These analyses consist of breaking down the data into parts to answer the research questions. Statistical procedures such as comparing groups or relating scores for individuals provide information to address the research questions or hypotheses. You then interpret the results of this analysis in light of initial predictions or prior studies. This interpretation is an explanation as to why the results turned out the way they did, and often you will explain how the results either support or refute the expected predictions in the study.

For example, in the parent involvement study (Deslandes & Bertrand, 2005), the authors collect responses from the parents of secondary-level students who provide scores on the survey instrument. The survey has questions relating to each of the eight factors (or constructs) and the outcome measures as shown in Table 2. To examine the relation of factors to parental involvement, the researchers do not use all of the items on the survey because some were not good measures of the factors. They use a statistical program (i.e., factor analysis) to help them identify the most important questions for each of the four scales composed of items (or factors) in the study. With this reduced set of questions for each of the four factors in the study, they then conduct descriptive analysis (i.e., means and standard deviations as shown in Table 3), and use the statistical program of regression statistical analysis to predict whether the control or personal items or four predictors best explain the variation in scores for parent involvement. From Tables 4 and 5, we see what variables best explain the variation for each grade level (7, 8, 9) and for the two outcome measures of parent involvement at home and parent involvement at school. In short, the authors use statistical analysis consisting of three phases: factor analysis, descriptive analysis, and regression analysis. The ultimate goal was to relate variables to see what predictors (demographics or the four factors) best explain parental involvement. Then, in the implication section of the article, the authors discuss the main results of the study and compare their results with those found in other studies in the literature.

In *reporting and evaluating* quantitative research, the overall format for a study follows a predictable pattern: introduction, review of the literature, methods, results, and discussion. This form creates a standardized structure for quantitative studies. In addition, it also leads to specific criteria that you might use to judge the quality of a quantitative research report. For example, you examine a quantitative study to see if it has an extensive literature review; tests good research questions and hypotheses; uses rigorous, impartial data collection procedures; applies appropriate statistical procedures; and forms interpretations that naturally follow from the data.

In quantitative research, you also use procedures to ensure that your own personal biases and values do not influence the results. You use instruments that have proven value and that have reliable and valid scores from past uses. You design studies to control

for all variables that might introduce bias into a study. Finally, you report research without referring to yourself or your personal reaction.

In the quantitative parent involvement study (Deslandes & Bertrand, 2005), the authors subdivide the research into standard sections typically found in quantitative studies. The study begins with an introduction that includes the literature review, purpose statement, and research questions; the methods; the results; the discussion; and, finally, the implications and limitations. The entire study conveys an impersonal, objective tone, and they do not bring either their biases or their personal opinions into the study. They use proven instruments to measure variables, and they employ multiple statistical procedures to build objectivity into the study.

## Qualitative Research Characteristics

In qualitative research, we see different major characteristics at each stage of the research process:

- ◆ Exploring a problem and developing a detailed understanding of a central phenomenon
- ◆ Having the literature review play a minor role but justify the problem
- ◆ Stating the purpose and research questions in a general and broad way so as to the participants' experiences
- ◆ Collecting data based on words from a small number of individuals so that the participants' views are obtained
- ◆ Analyzing the data for description and themes using text analysis and interpreting the larger meaning of the findings
- ◆ Writing the report using flexible, emerging structures and evaluative criteria, and including the researchers' subjective reflexivity and bias

Qualitative research is best suited to address a *research problem* in which you do not know the variables and need to explore. The literature might yield little information about the phenomenon of study, and you need to learn more from participants through exploration. For example, the literature may not adequately address the use of sign language in distance education courses. A qualitative research study is needed to explore this phenomenon from the perspective of distance education students. Unquestionably, using sign language in such courses is complex and may not have been examined in the prior literature. A *central phenomenon* is the key concept, idea, or process studied in qualitative research. Thus, the research problem of the difficulty in teaching children who are deaf requires both an exploration (because we need to better know how to teach these children) and an understanding (because of its complexity) of the process of teaching and learning.

The authors in the sample article on mothers' trust in school principals (Shelden et al., 2010) build a case for the importance of trust in the opening passages of the article. They suggest that it is an important issue, and that it has a positive effect on student outcomes. They then narrow the discussion to trust of school leaders and then to parents of children with disabilities, and then finally to the relationships between home and school partnerships for students with disabilities. They point out the problem of possible discrepant viewpoints between parents and schools—a potential problem that needs to be addressed. They then discuss the need for exploring further the critical role of principals in establishing trust in the relationships between families of children with disabilities and education professionals. In sum, they open the article by discussing the important central phenomenon of trust and exploring the potential discrepant viewpoints between

mothers of individuals with disabilities and principals. They say that they view trust as the “central phenomenon requiring exploration and understanding” (p. 161).

In qualitative research, the *literature review* plays a less substantial role at the beginning of the study than in quantitative research. In qualitative research, although you may review the literature to justify the need to study the research problem, the literature does not provide major direction for the research questions. The reason for this is that qualitative research relies more on the views of participants in the study and less on the direction identified in the literature by the researcher. Thus, to use the literature to foreshadow or specify the direction for the study is inconsistent with the qualitative approach of learning from participants. For example, one qualitative researcher who studied bullying in the schools cited several studies at the beginning of the research to provide evidence for the problem but did not use the literature to specify the research questions. Instead, this researcher attempted to answer in the research the most general, open question possible, “What is bullying?” and to learn how students constructed their view of this experience.

In the illustrative sample qualitative study by Shelden et al. (2010), the authors begin the article by citing numerous studies from the literature. This literature review is not to identify specific questions that need to be answered; instead, the literature review establishes the meaning and importance of the central phenomenon of trust—why it is important and the relationships needed in schools that involve parents and educational teams, including principals. In this article, there is no separate literature review section, and the literature is used to justify the importance of studying the potential problem of the relationships between parents (i.e., mothers) and the schools (i.e., principals).

In qualitative research, the *purpose statement* and the *research questions* are stated so that you can best learn from participants. You research a single phenomenon of interest and state this phenomenon in a purpose statement. A qualitative study that examines the “professionalism” of teachers, for example, asks high school teachers, “What does it mean to be a professional?” This question focuses on understanding a single idea—being a professional—and the responses to it will yield qualitative data such as quotations.

In the qualitative study of mothers’ trust in school principals (Shelden et al., 2010), the authors say that the study emerged from a broader study of the perspectives of mothers of children with disabilities on trust in education personnel. The authors raise this question, “What are the perspectives of mothers of children with disabilities on trust in school principals?” (p. 161). This is a general and broad question that seeks to understand (or “gain insight into,” p. 161) the perspectives of the mothers.

In qualitative research, you *collect data* to learn from the participants in the study and develop forms, called *protocols*, for recording data as the study proceeds. These forms pose general questions so that the participants can provide answers to the questions. Often questions on these forms will change and emerge during data collection. Examples of these forms include an *interview protocol*, which consists of four or five questions, or an *observational protocol*, in which the researcher records notes about the behavior of participants. Moreover, you gather text (word) or image (picture) data. Transcribed audio recordings form a database composed of words. Observing participants in their work or family setting, you take notes that will become a qualitative database. When researchers ask young children to write their thoughts in a diary, these diary entries, too, become a text database. With each form of data, you will gather as much information as possible to collect detailed accounts for a final research report.

In our sample qualitative study by Shelden et al. (2010), the authors recruited a sample of mothers of school-age children with disabilities, and conducted interviews with 16 of these parents. In the journal article, the authors provide the eight open-ended

questions that they asked. These interviews enabled them to probe for further information, elaboration, and clarification of responses, while maintaining a “feeling of openness” to the participants’ responses.

In qualitative research typically you gather a text database, so the *data analysis* of text consists of dividing it into groups of sentences, called *text segments*, and determining the meaning of each group of sentences. Rather than using statistics, you analyze words or pictures to describe the central phenomenon under study. The result may be a description of individual people or places. In some qualitative studies, the entire report is mostly a long description of several individuals. The result may also include themes or broad categories that represent your findings. In qualitative studies in which you both describe individuals and identify themes, a rich, complex picture emerges. From this complex picture, you make an interpretation of the meaning of the data by reflecting on how the findings relate to existing research; by stating a personal reflection about the significance of the lessons learned during the study; or by drawing out larger, more abstract meanings.

In the study of mothers’ perspectives of trust in school principals (Shelden et al., 2010), we can see these data analysis steps. The authors analyzed text data based on audiotaped and transcribed verbatim passages as mentioned in the section on interviews. In their section on data analysis, they talk about the “line-by-line coding” of their data in which they used the words of the participants to form categories. They provide in Table 1 a detailed descriptive portrait of participants in their study, noting the ethnicity, type of disability, grade level, and other personal information. In the results section we find the various themes that they identified, such as principal attributes and principal actions. In the conclusion section, they review all of these findings, thereby creating a complex picture of the relationship between mothers and school leaders. Although their personal reflections are minimal in this study, the authors discuss their challenges in recruiting participants to the study and how they sought to protect the identity of the participants.

In *reporting* qualitative research you employ a wide range of formats to report your studies. Although the overall general form follows the standard steps in the process of research, the sequence of these “parts” of research tends to vary from one qualitative report to another. A study may begin with a long, personal narrative told in story form or with a more objective, scientific report that resembles quantitative research. With such variability, it is not surprising that the standards for evaluating qualitative research also are flexible. Good qualitative reports, however, need to be realistic and persuasive to convince the reader that the study is an accurate and credible account. Qualitative reports typically contain extensive data collection to convey the complexity of the phenomenon or process. The data analysis reflects description and themes as well as the interrelation of themes. In addition, you discuss your role or position in a research study, called *being reflexive*. This means that you reflect on your own biases, values, and assumptions and actively write them into the research. This may also involve discussing personal experiences and identifying how you collaborated with participants during phases of the project. You may also discuss how your experiences and cultural backgrounds (e.g., Asian American perspectives) affect the interpretations and conclusions drawn in the study.

In the sample study of mothers’ trust in school principals (Shelden et al., 2010), the authors used more of a scientific structure than a literary structure for writing their article. This may have been done because of the requirements of the journal to address certain aspects (e.g., methods, results, discussion). However, the article did depart from the traditional structure by not having a separate literature review section; instead, the literature review was incorporated into the introduction to establish the importance of the central phenomenon—trust—and to develop a need for the study. The authors did employ the

personal pronoun “we” in referring to themselves in the study, a subjective orientation typically associated with qualitative, literary writing. As mentioned earlier, references to themselves, and especially how their backgrounds shaped their interpretation, were absent.

## Similarities and Differences between Quantitative and Qualitative Research

At this point you may be asking how quantitative research and qualitative research are similar and different. In terms of similarity, both forms of research follow the six steps in the process of research. There are minor differences, as well, in the introduction to a study—the research problem section—in that both sections need to establish the importance of the problem. In quantitative research the research problem section is used to direct the types of questions or hypotheses asked in the study, whereas in qualitative research the research problem discussion is typically used to establish the importance of the central idea. These differences are apparent in the comparison of the introduction to the quantitative parent involvement study (Deslandes & Bertrand, 2005) and the qualitative mothers’ trust in school principals study (Shelden et al., 2010).

Another similarity exists in the data collection procedures. Both quantitative and qualitative data collection may employ similar approaches, such as interviews or observations. However, quantitative approaches use more closed-ended approaches in which the researcher identifies set response categories (e.g., strongly agree, strongly disagree, and so forth), whereas qualitative approaches use more open-ended approaches in which the inquirer asks general questions of participants, and the participants shape the response possibilities (e.g., in an interview with a teacher, a qualitative researcher might ask: What does professional development mean to you?).

There are distinct differences that go beyond the forms of gathering data. In data analysis, the procedures are quite different. In quantitative research, the investigator relies on statistical analysis (mathematical analysis) of the data, which is typically in numeric form. In qualitative research, statistics are not used to analyze the data; instead, the inquirer analyzes words (e.g., transcriptions from interviews) or images (e.g., photographs). Rather than relying on statistical procedures, the qualitative researcher analyzes the words to group them into larger meanings of understanding, such as codes, categories, or themes. The reporting formats are also typically different, with the quantitative structure following the typical introduction, literature review, methods, results, and conclusion sections. In qualitative research, some of these sections may be missing (e.g., the literature review in the Shelden et al., 2010 study), and the format may be more of a literary opening with a personal vignette or passage, an unfolding story, the use of extensive quotes from participants, and personal reflections from the researcher.

It should also be mentioned that rather than viewing quantitative and qualitative as two end points in a dichotomy, but rather as different points on a continuum. Studies may contain some elements of the characteristics of quantitative research and some elements of qualitative research. However, studies do *tend* to lean toward one approach or the other, and knowing the characteristics associated with each type of research enables a researcher to assess whether a particular study favors either quantitative or qualitative research.

How do you choose whether to use a quantitative or a qualitative approach? Three factors are important. First, match your approach to your research problem. Remember that the problems best suited for quantitative research are those in which trends or explanations need to be made. For qualitative research, the problems need to be explored to obtain a deep understanding. Second, your approach needs to fit the audience(s) for the research report. Educators write for several audiences, such as policy makers, faculty and

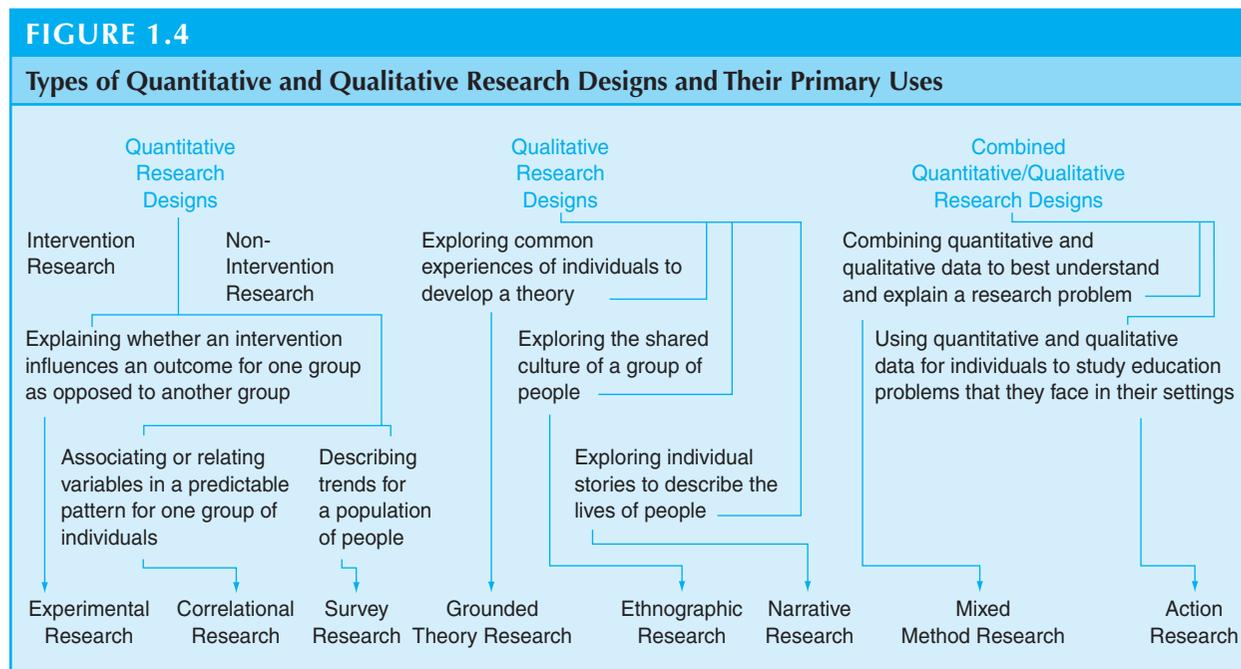
graduate committees, editors and review boards, evaluators of grant proposals, and individuals in schools or educational settings. It is important that the audience(s) be familiar with the approach used in a study. Third, relate your approach to your personal experience and training. A quantitative researcher typically has taken some courses or training in measurement, statistics, and quantitative data collection, such as experiments, correlational designs, or survey techniques. Qualitative researchers need experience in field studies in which they practice gathering information in a setting and learning the skills of observing or interviewing individuals. Coursework or experience in analyzing text data is helpful, as well as in research designs such as grounded theory, ethnography, or narrative research. Some individuals have experience and training in approaches to research that combine both quantitative and qualitative methods, such as mixed methods research or action research.

### Research Designs Associated with Quantitative and Qualitative Research

It is not enough to know the steps in the process of research, and that quantitative and qualitative procedures differ at each step. This text will also go into detailed procedures involved in quantitative, qualitative, and combined research. **Research designs** are the specific procedures involved in the research process: data collection, data analysis, and report writing. Figure 1.4 illustrates how the steps in the research process relate to quantitative and qualitative research and advances eight different research designs, used by educational researchers, discussed in this book.

#### Experimental Designs

Some quantitative researchers seek to test whether an educational practice or idea makes a difference for individuals. Experimental research procedures are ideally suited for



this study. *Experimental designs* (also called intervention studies or group comparison studies) are procedures in quantitative research in which the investigator determines whether an activity or materials make a difference in results for participants. You assess this impact by giving one group one set of activities (called an *intervention*) and withholding the set from another group.

### **Correlational Designs**

In some studies, you may be unable to provide an intervention or to assign individuals to groups. Moreover, you focus more on examining the association or relation of one or more variables than in testing the impact of activities or materials. *Correlational designs* are procedures in quantitative research in which investigators measure the degree of association (or relation) between two or more variables using the statistical procedure of correlational analysis. This degree of association, expressed as a number, indicates whether the two variables are related or whether one can predict another. To accomplish this, you study a single group of individuals rather than two or more groups as in an experiment.

### **Survey Designs**

In another form of quantitative research, you may not want to test an activity or materials or may not be interested in the association among variables. Instead, you seek to describe trends in a large population of individuals. In this case, a survey is a good procedure to use. *Survey designs* are procedures in quantitative research in which you administer a survey or questionnaire to a small group of people (called the *sample*) to identify trends in attitudes, opinions, behaviors, or characteristics of a large group of people (called the *population*).

### **Grounded Theory Designs**

Instead of studying a single group, you might examine a number of individuals who have all experienced an action, interaction, or process. *Grounded theory designs* are systematic, qualitative procedures that researchers use to generate a general explanation (grounded in the views of participants, called a *grounded theory*) that explains a process, action, or interaction among people. The procedures for developing this theory include primarily collecting interview data, developing and relating categories (or themes) of information, and composing a figure or visual model that portrays the general explanation. In this way, the explanation is “grounded” in the data from participants. From this explanation, you construct predictive statements about the experiences of individuals.

### **Ethnographic Designs**

You may be interested in studying one group of individuals, in examining them in the setting where they live and work, and in developing a portrait of how they interact. An ethnographic study is well suited for this purpose. *Ethnographic designs* are qualitative procedures for describing, analyzing, and interpreting a cultural group’s shared patterns of behavior, beliefs, and language that develop over time. In ethnography, the researcher provides a detailed picture of the culture-sharing group, drawing on various sources of information. The ethnographer also describes the group within its setting, explores themes or issues that develop over time as the group interacts, and details a portrait of the group.

### **Narrative Research Designs**

You may not be interested in describing and interpreting group behavior or ideas, or in developing an explanation grounded in the experiences of many individuals. Instead,

you wish to tell the stories of one or two individuals. *Narrative research designs* are qualitative procedures in which researchers describe the lives of individuals, collect and tell stories about these individuals' lives, and write narratives about their experiences. In education, these stories often relate to school classroom experiences or activities in schools.

### **Mixed Methods Designs**

You decide to collect both quantitative data (i.e., quantifiable data) and qualitative data (i.e., text or images). The core argument for a mixed methods design is that the combination of both forms of data provides a better understanding of a research problem than either quantitative or qualitative data by itself. *Mixed methods designs* are procedures for collecting, analyzing, and mixing both quantitative and qualitative data in a single study or in a multiphase series of studies. In this process, you need to decide on the emphasis you will give to each form of data (priority), which form of data you will collect first (concurrent or sequential), how you will “mix” the data (integrating or connecting), and whether you will use theory to guide the study (e.g., advocacy or social science theory).

### **Action Research Designs**

Like mixed methods research, action research designs often utilize both quantitative and qualitative data, but they focus more on procedures useful in addressing practical problems in schools and the classrooms. *Action research designs* are systematic procedures used by teachers (or other individuals in an educational setting) to gather quantitative and qualitative data to address improvements in their educational setting, their teaching, and the learning of their students. In some action research designs, you seek to address and solve local, practical problems, such as a classroom-discipline issue for a teacher. In other studies, your objective might be to empower, transform, and emancipate individuals in educational settings.

## **IMPORTANT ETHICAL ISSUES IN CONDUCTING RESEARCH**

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Respect for audiences and the use of nondiscriminatory language are ethical issues that Maria must observe. Like Maria, all educational researchers need to be aware of and anticipate ethical issues in their research. Such a need stems from the research horrors of treatment of individuals in Nazi Germany and the inappropriate Tuskegee syphilis studies (Mark & Gamble, 2009). From these and other violations of treatment of participants developed federal guidelines for conducting research as announced in the 1978 National Commission for the Protection of Human Subjects on Biomedical and Behavioral Research and its *Belmont Report* (Department of Health, Education, and Welfare, 1978). The three basic principles of this *Report* involve the beneficence of treatment of participants (maximizing good outcomes and minimizing risk), respect for participants (protecting autonomy and ensuring well-informed, voluntary participation), and justice (a fair distribution of risk and benefits).

### **Institutional Review Boards**

Campus offices developed to monitor adherence to these three principles, and offices of institutional review boards emerged. Federal funds could be withheld from campuses if research conducted on those campuses did not protect the treatment of participants. Accordingly, on campuses that receive federal funds, educational researchers need to

learn about the procedures involved in applying for approval from their institutional review board offices, and follow guidelines in developing applications for approval and in designing consent forms for participants to complete that guarantee their protection.

### Professional Associations

Ethical standards are also available from professional associations. Examples of professional associations that offer helpful guidelines include the American Educational Research Association (AERA; *Ethical Standards of the American Educational Research Association*, Strike et al., 2002), the American Psychological Association (APA; *Ethical Principles of Psychologists and Code of Conduct*, 2003), the American Anthropological Association (AAA; *Code of Ethics*, 1998), and the Joint Committee on Standards for Educational Evaluation (*Program Evaluation Standards*, adopted November 21, 1980; amended through September 20, 1995).

According to these guidelines, individuals who participate in a study have certain rights. Before participating in research, individuals need to know the purpose and aims of the study, how the results will be used, and the likely social consequences the study will have on their lives. They also have the right to refuse to participate in a study and to withdraw at any time. When they participate and provide information, their anonymity is protected and guaranteed by the researcher. Individuals are not to be offered excessive financial inducements to participate in a project. Participants also have the right to gain something from a study. Researchers need to actively look for ways to “give back” (or reciprocate) to participants in a study because the participants have freely provided their time. For example, in one study involving individuals with HIV, the author shared book royalties with the participants in the study. In another study, a researcher volunteered to help supervise lunchroom activities in exchange for information from students in the school.

### Ethical Practices throughout the Research Process

In all steps of the research process, you need to engage in ethical practices. Practicing ethics is a complex matter that involves much more than merely following a set of static guidelines such as those from professional associations or conforming to guidelines from campus institutional review boards. Ethics has become a more pervasive idea stretching from the origins of a research study to its final completion and distribution. Ethics should be a primary consideration rather than an afterthought, and it should be at the forefront of the researcher’s agenda (Hesse-Bieber & Leavy, 2006). Of all of the steps in the research process, it does tend to relate closely to the data collection and reporting and distribution of reports than any of the other phase of research. A few of some of these issues will be mentioned here.

### Some Ethical Issues in Data Collection

It is important to respect the site in which the research takes place. This respect should be shown by gaining permission before entering a site, by disturbing the site as little as possible during a study, and by viewing oneself as a “guest” at the place of study. Lincoln Public Schools (n.d.) in Lincoln, Nebraska, provides illustrative guidelines to follow for conducting research with minimal disruption to a school district. Their guidelines list several reasons why a project may not be approved. Disapproved projects are those that take away considerable amounts of instructional time; require large amounts

of teacher, administrator, or office time (the district may ask to be reimbursed for the costs of compiling information, staff time, or materials); interfere with district data collection or the work of current research projects; are planned for the first or last month of the school year; or are received too late in the year to be adequately reviewed.

Another strategy for respecting the research site with minimal disruption is to gain access through gatekeepers (or officials). Researchers may need to consult with different gatekeepers at multiple levels in an organization. For example, in a study in one high school classroom, the researcher sought permission from several individuals, including the school board responsible for ensuring that the rights of human participants were protected, the research official in the school district, the principal of the school, the teacher in a government class, and the actual students who participated in the study and their parents.

Other ethical issues arise in data collection and are associated with specific types of research designs. You need to not purposefully deprive some participants of helpful treatments, only publish positive results, or fail to disclose the purpose of the study to participants. It is helpful to involve stakeholders in assessing risk to participants, and to not pressure participants into signing consent forms (S. Levy, personal communication, May 3, 2010), to not engage in practices that create power imbalances, and to respect norms of indigeneous cultures (Lincoln, 2009).

### Some Ethical Issues in Data Reporting

You need to show respect to audiences who read and use information from studies. Data should be reported honestly, without changing or altering the findings to satisfy certain predictions or interest groups. It may, however, be appropriate for the primary investigator to provide those at the research site with a preliminary copy of any publications. In addition, studies completed by others should not be plagiarized, and credit should be given for material quoted from other studies. This credit involves citing the authors and the date of the publication, and listing the publication in the reference section of the study. In addition, research should be free of jargon and be understandable to those being studied. As ethical educators, we need to make every effort to communicate the practical significance of our research to the community of researchers and practitioners so inquiry will be encouraged and used. Educational researchers have an ethical mandate to produce research that is of high quality, and to report their results that convey basic assumptions they are making. This also means that research should not sit unpublished and that researchers should openly share their findings (Brown & Hedges, 2009). Results should be published and disseminated, even though they may present findings contrary to accepted standards (S. Levy, personal communication, May 3, 2010).

## SKILLS NEEDED TO DESIGN AND CONDUCT RESEARCH

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As a new researcher, you may wonder whether you have the ability to read, evaluate, and actually conduct research. Knowing the process of research, you may say, does not guarantee an adequate research study. Certainly Maria, who is new to research, has these concerns.

Let me set your mind at ease. You have already learned valuable research skills through your life experiences. These skills include solving puzzles, employing a long attention span, using a library, and, of course, writing out your thoughts.

## Solving Puzzles

Researchers look at problems as puzzles to solve. The steps in the research process are viewed as a series of puzzle pieces that the inquirer assembles. You already have skills in solving puzzles. You fit together the debits and credits to balance your checkbook. As a parent (or prospective parent), you engage in multiple roles during the day that require juggling of different tasks. These are puzzles that we work out by breaking them down into manageable parts (“What will be the demands on my time today?”), setting obtainable objectives (“I will have a busy day at work, so I will focus on my job today”), and possibly writing them down (“I need to make a list of what I must accomplish today”). As you examine research studies or engage in the process of inquiry, assembling these parts of the puzzle—such as first working on a research problem and then specifying a purpose for a study—will require that all of the pieces fit together, as with the many puzzles that we solve in daily living.

## Lengthening Your Attention Span

Although we generally make time to complete the tasks we love, our attention span certainly varies from task to task. The process of research involves six steps that may span a period of 6 months or more. To read through a journal article and identify each of these steps, for example, requires patience as well as knowledge about what to look for. We all bring attention spans of varying lengths to the process of research. But if we consider the tasks we love and the amount of time we devote to them, we can see that we have already developed an attention span long enough to spend considerable time at research.

## Learning to Use Library Resources

The step in the research process that requires you to review the literature means spending time in an academic library. For most of us, going to the library probably began in grade school with trips to the school library. Engaging in research requires spending time with library resources, a process that is facilitated by home computers and Internet connections to library catalogs. But the process of research requires that you use skills in locating studies, summarizing them, and writing a review of the literature. These skills are developed during research, if you do not already have them. They develop from our comfort level with a library and with experiences that began early in our schooling and continue today.

## Writing, Editing, and More Writing

Researchers cannot escape the ever-present aspect of writing as a key facet of research. As writers, we work through numerous drafts, receive reactions from others, and develop new drafts. Research involves writing the study for an audience. Do you enjoy writing and communicating your thoughts? Do you like to write in a journal or a diary? Do you get satisfaction from completing projects? You have probably written several essays in college already or worked on a research report with other students or a faculty member. In short, you have experience in writing. As you know, writing is more than recording ideas on paper or in a computer file. It is also organizing ideas, preparing interview questions, jotting down notes during an observation, and writing for permission to use someone else’s questions or articles. Writing exists in all phases of the creative process of planning and in conducting research.