Websites, and copy potentially helpful passages into a word-processing file. Attach to each passage the title of the material you have copied, along with its web address, which you will need for your report's bibliography, in the event that you use the material in your project.

4

Research Methods—Qualitative

The expression research methods, as used throughout this book, refers to general approaches to gathering and presenting information. Research methods are typically identified by such terms as historical, biographical, experience-narrative, ethnographic, activity-analysis, survey, correlational, and experimental. Within each method, particular devices are used for collecting information, including such devices as content analyses, observations, questionnaires, interviews, and tests.

People who speak about research methods often distinguish between qualitative and quantitative approaches. As those terms are generally used, quantitative research involves amounts, which are usually cast in the form of statistics—frequencies, percentages, percentiles, arithmetic means, standard deviations, correlation coefficients, and the like. In contrast, qualitative research typically involves descriptions of people, places, and events without much concern for amounts, so that statistical comparisons are not involved. Here are titles of studies that might be classified under each type.

Qualitative:

A History of Ability Grouping in Elementary Schools
Lottie Mortensen, School Mistress
An Approach to Teaching Acrylic Portraiture
Life in a Teen Cheerleaders Team

Quantitative:

Teachers' Opinions of Statewide Achievement Tests
Girls' and Boys' Success in High School Science
Comparing Three Ways to Teach Music Sight-Reading in Choral Classes

In recent years a good deal of debate at professional conferences and in academic journals has involved conflicting opinions about whether qualitative methods are superior to quantitative, or vice versa.
I find such controversies quite unproductive, because the proper issue is not whether one of these types is generally superior to the other. Instead, the issue is whether a given method will yield convincing answers to the research questions being asked. Such a quantitative approach as that of conducting an experiment is hardly suitable for answering the question: "What factors in Lettie Mortensen's life contributed to her success as a school mistress?" Nor is a historical approach appropriate for answering the question: "What opinions do teachers in Arapahoe County Public Schools express about statewide achievement testing?" Hence, neither approach—qualitative or quantitative—is generally superior to the other. Both are valuable, with each best suited to answering particular research questions.

In the following pages, the descriptions of qualitative and quantitative methods and of data-gathering techniques are divided among three chapters. Chapter 4 analyzes five qualitative approaches (historical, biographical, experience-narrative, ethnographic, activity-analysis), Chapter 5 concerns three quantitative methods (survey, correlational, experimental), and Chapter 6 describes data-collection techniques—observations, interviews, questionnaires, content analyses, and tests.

The present chapter is divided into six parts. The first part suggests a way to select a research method. The remaining five parts describe the five qualitative methods.

The Process of Selecting a Method

The task of efficiently choosing a method begins with the questions that the research is supposed to answer. For example, here are guide questions for six hypothetical projects.

- In his role as a social-science teacher and as the Brookside Public Schools' first black principal, what were David Johnson's contributions to the schools and the community at large? What personality characteristics enabled him to make those contributions? What philosophical principles guided his efforts?
- What opinions about proper and improper classroom discipline techniques are expressed (a) by parents of students in a high school located in a socioeconomically depressed inner-city neighborhood and (b) by parents of students in an affluent suburban high school? In what ways are the opinions of the two groups of parents similar and different? If there are differences between the two groups, what are the likely reasons for those differences?
- What influences in Marta Garcia's life contributed to her becoming a high school biology teacher and earning the statewide Teacher of the Year Award?

- In a middle-school's social-studies classes, three instructional methods used are those of (a) teacher lectures, (b) student small-group study sessions (four or five students per group), and (c) videotapes of social and historical events. What are the advantages and disadvantages of each method?
- What are the thoughts and feelings of elementary-school pupils after an enraged knife-wielding man attacked a second-grade teacher and a custodian in their school? What steps can be taken to reduce the fear and distress that the pupils exhibit? How well do different steps succeed?
- What have been the reactions of seven Chicago teenagers to social discrimination that they believe they have suffered in their classrooms?

With the guide questions for a project in hand, the teacher's next task can be that of adopting criteria for judging which method, or combination of methods, will be most desirable. Three such criteria described in Chapter 2 were labeled persuasive outcome, cost/benefit ratio, and feasibility (pages 12-16).

Each criterion can be cast as a question.

- **Persuasive outcome**: Which method will likely furnish the most convincing answer to the research question?
- **Cost/benefit ratio**: Which method—or which variation of a general method type—will yield the best answer to the research question, with the least expenditure of time, funds, bother, the researcher's energy, and opposition from reluctant participants and potential critics?
- **Feasibility**: Which method—or which variation of a method type—can be most readily implemented?

A third step in selecting a research method involves generating an array of methods and their variations that could be adopted for answering the research question. As noted earlier, eight general types of methodology described in Chapters 4 and 5 are historical, biographical, experience-narrative, ethnographic, activity-analysis, survey, correlational, and experimental. Sometimes a suitable method will consist of a combination of two or more of these approaches. For instance, a biography focusing on the life of a highly esteemed kindergarten teacher may include a historical review of her family heritage as well as a survey of the opinions of her former pupils. Likewise, a classroom experiment comparing the effectiveness of two ways of teaching high school geology may be combined with a survey of the professional literature on teaching geology.

The final step in the selection process involves applying each potential method in order judge which approach to adopt. Each step involves a somewhat imprecise kind of reckoning—a type of
A Way to Analyze Methods

In the following survey of qualitative approaches, each type is described in a pattern intended to facilitate readers’ scanning the methods and comparing their characteristics. That is, each description addresses the same five topics—the method’s definition, purpose, procedure, illustrative studies, and advantages/disadvantages.

Method definition—a typical label and description of the approach
Purpose—the aim of the method and the kinds of research questions for which it can provide answers
Procedure—a typical sequence of steps for implementing the method
Illustrative studies—the titles and brief descriptions of illustrative research projects that employ the method
Advantages and disadvantages—strengths and weaknesses of the method in terms of (a) how effectively it can furnish convincing answers to the research questions, (b) its cost effectiveness, and (c) how convenient it is to use

The methods summarized in the following pages are described under five major headings—histories, biographies, experience narratives, ethnographies, and activity analyses. Sub-varieties under each type are also included. The types are not mutually exclusive but, instead, they often overlap. It is also the case that a given research project may involve more than one method.

Histories

For convenience of discussion, historical accounts can be divided into two major types—descriptive chronicles and interpretive histories.

Descriptive chronicles

Definition: A descriptive chronicle depicts events over a period of years in the life of a group of people (ethnic, religious, regional, social-class, athletic), an institution (school, church, teen club), a type of event (Christmas, Hanukah, homecoming day, parent-teacher conferencing), a social movement (progressive education, back to basics), a teaching method (phonic approach, sight-vocabulary technique, discovery approach in science classes, assertive-discipline strategy), instructional materials or equipment (blackboard, textbook, photographic slides, computers), type of personnel (school psychologist, teacher’s aide, vocational counselor), and more.

Purpose: The typical two-part goal of a descriptive chronicle is (a) to record a sequence of events so they will not be lost to posterity and (b) to tell readers what actually took place and how conditions may have changed over time. However, there is no attempt to explain why things happened as they did or to evaluate people in terms of their actions being right or wrong, constructive or destructive.

Procedure: One approach to writing a chronicle consists of the author:
1. Identifying the entity that will be the subject of the chronicle, such as an organization, a type of event, a teaching method, instructional materials, a type of personnel, or the like.
2. Delimiting the time frame to be covered by the chronicle, such as the 20th century, the post-World-War-II period, or 1973-2003.
3. Stating the questions to be answered by the information that will be collected.
4. Identifying the sources of information (people to be interviewed, newspaper archives to search, documents to be analyzed, libraries to visit, books to borrow).
5. Gathering information from those sources as directed by the guide questions, and verifying the accuracy of the information (seeking multiple accounts of each significant event, estimating the motives of the authors of those accounts, resolving discrepancies among accounts).
6. Organizing the collected information by (a) selecting which events will be described and (b) arranging the events in chronological sequence.
7. Writing a final narrative that answers the research questions in an easily understood manner.

Illustrative studies: Two examples of chronicles stimulated by classroom concerns are:

Title: Spreading the News at Hanford Prep
Research questions: How did the journalism classes at Hanford Preparatory School change from the time of the first two-page bimonthly school newspaper of 1924 to the time of the eight-page biweekly newspaper and five-minute daily in-school television news broadcasts of 2002? Which people contributed significantly to those changes?

Title: From Horse Shoeing to Computer Repair—A History of Vocational Education in Bannock Center Schools
Research questions: What vocational-education classes have been taught in the Bannock Center Public Schools since the first secondary school opened...
in 1879? When did each type of class begin, how long did that type last, and what were the approximate enrollments in each type at different times over the past century?

Advantages: By compiling events of the past and arranging them in sequence, chronicles preserve information in an organized form. As solely descriptive historical accounts, chronicles are easier to produce and less vulnerable to criticism than are interpretive histories, because chronicles do not require theoretical analyses, estimates of cause, or the evaluation of people and events.

Disadvantages: Historians are at the mercy of record-keepers from the past, because the writer of history obviously must depend on whatever records happen to be available. The danger the historian faces is that those records may be incomplete or distorted. Manuscripts, letters, books, and newspapers can be lost through the carelessness, neglect, or ignorance of people who fail to recognize the potential future importance of such materials. In addition, some significant past events were never cast in written form. Furthermore, the memories of elderly people who participated in past events, and who now serve as a researcher's informants, may be faulty, so that what the informants recall cannot be trusted. Because of these threats to accuracy, a challenge historians face is that of verifying information by (a) seeking multiple accounts of the same event in order to judge the extent of agreement among different sources, (b) estimating the motives and competence of informants, and (c) estimating how the context in which a record was produced likely influenced the form and content of that record. In the past, words may have carried different meanings than they do today. Or influential social conditions that were considered "normal" or "simply understood" and thus required no explanation at the time may be different today—such conditions as ethnic discrimination, differences in styles of life across social classes, differences in men's and women's roles, laws governing people's rights, and the like. Because such factors affect the accuracy of historical sources, researchers are obligated to verify events and their contexts in order to inform readers of the degree of faith to place in the account of events.

In addition to the possibility that a chronicle may distort history, a further potential disadvantage is that readers are often dissatisfied with a mere recounting of events. They prefer, in addition to a descriptive chronology, an author's speculation about what the sequence of events means, that is, why things happened as they did, who was affected by the events, and how event trends may affect the future.

Interpretive histories

Definition: An interpretive history not only traces episodes over a series of years, but it also includes the author's estimate of what the succession of happenings means. The meanings authors assign to their descriptions can be of various sorts. One popular kind is explanatory, a proposal about what factors caused events to happen as they did. Another kind is evaluative, a judgment about who profited from events and who suffered losses. A third kind assumes the form of inferred lessons—generalizations or principles derived from a historical account that can serve as guides to future behavior.

Purpose: As noted above, interpretive histories go beyond a chronicle's compilation and ordering of past events by including a substantial measure of the researcher's beliefs about what the events signify. Researchers vary markedly in the amount and kind of interpretation they offer. Some histories are long on description and short on interpretation. Others are quite the reverse.

Procedure: In deciding what to write about, some authors bring a particular theoretical viewpoint to the history they are compiling. For example, one researcher may select events and interpret them from the viewpoint of conflict theory in an attempt to show how the confrontation among different factions determined the kinds of events that occurred. Another researcher may adopt a great-man or great-woman perspective in an effort to demonstrate how a particular person (state governor, school superintendent, educational philosopher) served as a dominant force in determining how things turned out.

Other authors bring no explicit theoretical vantage point to their work. Instead, they forge their interpretations in an eclectic fashion, offering explanations and evaluations that they intuitively feel make sense of the particular sequence of happenings they have in hand at the time.

The following way to prepare an interpretive history involves a teacher adopting a theory as a guide to deciding which events to select, the manner in which the events are organized, and the meaning assigned to the results. The author:

1. Specifies an area of emphasis for the history as determined by the general research question that the study is supposed to answer—such an area as ability grouping, tracking systems, achievement testing, intelligence testing, corporal punishment, religious education, the evolution of a particular school, or the like.

2. Inspects history books and academic journals in the field of historiography to discover theories on which historians have based their work,
then adopts or creates a theoretical perspective from which to select and organize events related to the chosen area of emphasis.

3. Defines the location (school district, school, classroom) and time period on which the study will focus.

4. States the specific questions to be answered by the historical account, including whatever explanation (estimates of cause of events), evaluation (judgments about the desirability of event outcomes), or inferred lessons that the history will include.

5. Identifies sources of the information needed for answering the specific questions (books and periodicals to inspect, people to interview, documents to analyze).

6. Collects information from the sources and verifies the accuracy of the information (seeks multiple accounts of each significant event, estimates the motives behind different sources of information, and attempts to rationalize discrepancies among accounts).

7. Organizes the obtained information by (a) selecting which events will be included in the history, (b) arranging the events in a sequence that makes sense from the standpoint of the theory, and (c) interpreting the events by proposing what the events mean in terms of the theory.

8. Assesses the usefulness of the theory as a perspective from which to interpret the events, and perhaps suggests ways that the theory could be revised so as to account more adequately for the events. (Collecting data often causes researchers to alter their original theoretical scheme for estimating the causes of events or for evaluating the outcome of events.)

9. Writes the final version of the history.

**Illustrative studies:** Two interpretative-history projects related to classroom concerns are:

**Title:** Staying in Style: A History of Gym Clothes at Baxter High
**Research questions:** Since the founding of Baxter High School in 1903, what styles of athletic clothes have students worn for physical-education classes and for interscholastic sports during successive eras? What have been the causes of the periodic style changes? What changes might be expected in the future, and why?

**Title:** School Books and Politics
**Research questions:** In the Clayton County School District at different times over the past half century, what criteria, principles, or rules have been used for deciding which books should not be permitted in school and classroom libraries? Which community groups or individuals have influenced the choice and application of the criteria? What were those groups' and individuals' stated reasons and likely motives? Which groups or individuals opposed such book-banning, and what were their expressed reasons and likely motives?

**Advantages:** Not only do interpretive histories help preserve the past, but they also afford the researcher the opportunity to speculate about why things happened as they did, to place credit and blame for events, and to propose how past trends suggest what to expect in the future. That opportunity includes the chance to apply the author's particular notion of proper historiography, to illustrate the application of a theory, or to correct earlier historical accounts that the researcher believes were flawed.

**Disadvantages:** Like chronicles, interpretive histories are vulnerable to inaccuracies resulting from the questionable authenticity of records from the past. Unlike chronicles, interpretative histories are also open to criticism for the subjective explanations and evaluations that an author proposes. The faults that critics find with historical accounts often concern the meanings and significance authors assign to events rather than the descriptions of the events themselves.

**Biographies and Autobiographies**

The following discussion concerns two types of biography (descriptive and interpretive) and two types of autobiography (self-written and collaborative).

**Biographies—descriptive and interpretive**

**Definition:** A biography is an account of someone else's life rather than one's own. Like chronicles, biographies can be descriptions of incidents in an individual's life without any interpretation of what those incidents mean. Or, like interpretive histories, biographies can include authors' proposals about likely causes of events and about the merit of people's actions. Most biographies involve at least some degree of interpretation.

**Purpose:** Obviously, a biography is not a catalogue of all episodes in a subject's life. Rather, the account consists of selected events that illustrate one or more themes that the author traces over time. Such themes are usually reflected in the research questions that guide the biographer's work. Here are three examples. The first case features the biographee's educational contributions, events that influenced her contributions, and the subsequent influence of her work. The theme in the second case is the contrast between the two cultures.
which a Native American boy was raised. The third case focuses on three themes—the therapeutic techniques that a school psychologist developed over her career, the factors that caused her to adopt such techniques, and the outcomes of her efforts.

**Title: The Creator of the McKenzie Quick-Sketch Method**

Research questions: How and why did Doris McKenzie develop the approach to teaching free-hand drawing that has become known as the Quick-Sketch Method? What experiences in Ms. McKenzie's life contributed to her creating the method? Through what stages did her teaching procedure evolve? What difficulties did she experience in getting her approach accepted by other art teachers? What have her students accomplished?

**Title: The Schooling of Leaping Deer**

Research questions: What were the experiences of a Cheyenne Indian boy, Ralph Ralston (Leaping Deer), when he attended a U.S. Government school on an Indian reservation? What was he taught and how was he treated in the classroom? How did his school experiences differ from those in his traditional tribal culture? How did such a mixed cultural background influence his way of life and his feelings of accomplishment when he reached middle age?

**Title: The Perfect School Psychologist**

Research questions: Over her 30 years as a school psychologist, what techniques did Minda Martinelli develop for helping children and youths succeed in and outside the classroom? How did her early years compare with her later years in terms of her philosophy and methods of working with the young? What were the most important influences on her evolution as a successful psychologist? How were her efforts rewarded over the years?

**Procedure:** The stages in writing a biography can be much the same as those followed in producing an interpretive history.

**Advantages:** Biographies are valuable for revealing the unique character of an individual's life—a life which, in its details and pattern of development, is unlike anyone else's. Readers may also derive lessons about life that are inferred from events in a biographical account.

**Disadvantages:** Like histories, biographies depend for their accuracy on the particular information available to the author. Hence, the view of the biographee's life can be distorted when crucial data are missing or misrepresented. And because interpretive biography involves researchers drawing inferences about the intentions, goals, beliefs, values, and feelings of the people they write about, there is the danger that those inferences may be faulty. When biographers fail to find all of the evidence needed to support their interpretations, they may be censured for being too subjective, for basing their conclusions on incomplete sources, or—out of an ulterior motive—for adopting a biased perspective that results in an account that is unduly favorable to the biographee (too "soft") or unreasonably critical (too "harsh").

There is also the danger of authors over-generalizing their results—using the conclusions they draw from a single life as the basis for generalizing about other people's lives, thereby implying that their biographee's characteristics are typical of an entire group, when, in fact, the person who was studied was unique.

**Autobiography—self-written and collaborative**

**Definition:** An autobiography is a person's account of her or his own life. Two kinds of autobiography are the self-written and the collaborative. A self-written autobiography is entirely the work of the person whose life is portrayed. A collaborative study is a cooperative effort between the person whose life is being depicted and a writer responsible for casting the work in a suitable form. Sometimes the collaborator— who serves as the mediator between the autobiographer and the reading audience—is identified in the final publication and sometimes not. Thus, a collaborator may play the role of silent partner or ghost writer. In most cases, the collaborator has been asked to participate in the venture because the person whose life is being portrayed lacks the time, patience, or expertise to produce a well-written tale.

**Purpose:** A typical aim of an autobiography is to offer readers an insider's view of a life by describing how events are interpreted by the person who lived those events and who is the product of their influence. Therefore, autobiography is intentionally subjective, designed to expose the motives, plans, ambitions, values, joys, fears, disappointments, and sorrows that help explain the author's behavior and fate. Some autobiographies are motivated by individuals seeking to defend themselves against what they regard as unfair or mean-spirited attacks; they hope to "correct the record" or "right the wrongs" they feel they have suffered at the hands of critics.

**Procedure:** One apparently common approach to self-written biography consists of an author searching through his or her memory and memorabilia to find influential people and key events (critical incidents) that affected the author's life. The writing task involves linking together those incidents to form a chronological chain of causes and effects that account for the autobiographer's life course.

There are several ways that collaborative autobiographies may be created. As one alternative, the collaborator brings to the task a conceptual structure, which consists of a series of questions that define the matters
to be presented in the finished product. The autobiographee’s role becomes that of providing answers to the questions in the form of mental recollections and letters, diaries, newspaper clippings, and photographs from which the writer can draw information.

Another approach involves the writer intentionally avoiding a preconceived structure that determines what information will be asked of the person whose life is being depicted. Instead, the writer invites the autobiographee to talk or write at great length about her or his life history, describing the incidents and people that come to mind as significant influences. The collaborator then searches through this wealth of raw material for themes, decisions points, and strands of cause-and-effect that characterize such a life. In short, the writer “follows the data” in an attempt to fashion a narrative that traces significant themes and influences in the autobiographee’s past.

Illustrative studies: The first of these examples concerns the recollections of a retired teacher. The second reflects the views of a former high-school athlete.

Title: Teacher of the Year

Research question: What influences in Marta García’s life contributed to her becoming a high school biology teacher and winning the statewide Teacher of the Year Award? Why did she choose teaching as a career? In what ways did her family and her teachers in elementary and secondary school affect her choice and the qualities she brought to her own teaching? What philosophical principles and ideals have guided her teaching career?

Title: Glory Days—Memories of a High-School Football Star

Research questions: Upon reaching age 40, what memories does Abdul McFee have of his high-school years when he was selected for three years as a running back on the state-wide all-star football team? What does he regard as the most important things he learned in the classroom and on the football field during those years? What problems did he face as a football star in high school and in later years? How did he cope with those problems? What advice does he have for youths now in high school?

Advantages: The value of an autobiography lies in its depicting an individual’s life from the author’s own perspective. If the author is candid and insightful, readers are able to learn the individual’s motives, goals, beliefs, values, emotional reactions, and interpretations of events that might not be discovered by a biographer.

Disadvantages: The validity of autobiographies is endangered by the fact that they are likely to be unduly self-serving. Authors may take this opportunity to concoct a partially fictional account that portrays them as more influential, wise, adventurous, creative, or self-sacrificing than is deserved. As a result, the vision that the narrative conveys may, either intentionally or unwittingly, be rather at odds with reality.

Experience Narratives

Definition: An experience narrative is a relatively brief story or description of one or more influential events in a person’s life.

In recent decades, individuals’ descriptions and interpretations of their experiences have been increasingly accepted as suitable versions of research, particularly by academicians of a postmodern persuasion. In other words, depictions of personal experiences are seen as contributions to the world’s body of knowledge. It is obvious that biographies and autobiographies, like experience narratives, include a large measure of personal views of life. However, in the following discussion, an experience narrative focuses on a particular time and on more restricted subject matter than those found in biographies and autobiographies.

Purpose: The aim of experience narratives (or personal stories) is to reveal individualistic perceptions of selected life events. The emphasis is on differences among people in their responses to the episodes of their lives.

Procedure: Some experience narratives are self-composed. Others are collaborative efforts in which a compiler helps by (a) eliciting information from the person whose experience is the focus of the study and (b) organizing the information in a readily understood form. The following procedure is one in which a compiler participates. The series of steps demonstrates one way the collaboration may develop. The individual whose experiences are the focus of the study is referred to as the informant. The researcher who is compiling the informant’s narrative is identified as the collaborator.

1. The collaborator explains to the informant the aspect of life experiences that is the focus of interest. If the informant is an elementary-school pupil, the focus might be the individual’s life from the vantage point of (a) the new kid in the class, (b) a talented violinist, (c) a girl on a boys’ baseball team, (d) a child whose early years were spent in France, or (e) a blind pupil. If the informant is a classroom teacher, the narrative might reveal what it’s like to teach (a) in a poverty-ridden inner-city high school, (b) students from Latin American immigrant families, (c) beginning reading to children who suffer hearing loss, or (d) high school students of exceptional aptitude in the field of science.

2. The collaborator describes (a) the informant’s expected role and why the informant’s narrated experiences are valued, and (b) the collaborator’s own role (that of recording and organizing the informant’s story).
3. The informant speaks freely about the topic as the collaborator records the narration verbatim, preferably through the use of an audio or video recorder so that the account will be accurate. When such equipment is unavailable or when the informant objects to its use, the collaborator must depend on notes written at the time of the conversation or as soon as possible afterwards.

4. Throughout the session, the collaborator may offer prompts that keep the informant on the topic and encourage the informant to elaborate on aspects that have been unclear or inadequately developed. For example, when eliciting a respondent's impressions of being the new kid in class, the collaborator might ask, "What did the other kids say to you?" or "How did the teacher introduce you to the class, and how did you feel about that?"

5. When casting the narrative in final written form, the compiler prefaxes the account with a description of:
   5.1 The research topic, that is, the aspect of life featured in the narrative.
   5.2 Who the informant was and why such an informant was a source of interest.
   5.3 The division of labor between the informant and the collaborator in the conduct of the study.
   5.4 The context in which the session took place.
   5.5 Conditions that may have influenced the outcome of the session.

An experience-narrative project can assume a comparative form if more than one person's account is included in the study, thus permitting the likenesses and differences between individuals' experiences to be compared. Under those circumstances, the author may present the informants' stories without adding any analysis, so that the narratives stand on their own and the task of drawing comparisons is left to the reader. Or the author may identify themes that the narratives follow and point out similarities and contrasts among the several accounts.

Illustrative studies: In the first of the following examples, a highschool English teacher recorded a published author's description of how the author approached the writing of a novel. The resulting narrative was then used as discussion material for students in the teacher's creative-writing class. In the second example, similarities and differences among middle-school students in their experiences of social discrimination are revealed in the stories told by seven teenagers.

Title: Thinking About Writing a Novel

Research questions: How does the author start in planning to write a novel?
What does she think about? How does she choose the setting and characters? How does she create a plot? How long does it take to write a novel? What problems does she face, and how does she solve them? How does she find a publisher?

Title: Feelings of Discrimination—Seven Teenagers' Stories

General research question: What are the reactions to social discrimination displayed by seven Chicago teenagers who represent different ethnic, social-class, and religious backgrounds?

Specific questions—What does each of the youths think the term discrimination has meant in his or her life? What episodes in each one's life are examples of discrimination? Why did each believe that he or she was being discriminated against? How did the youth feel about those episodes? What did the youth do about the episodes? Did the youth's reactions to the episodes change over time? If so, how and why?

Advantages: As a research method, the experience-narrative approach has been lauded for its ability to discover and "celebrate" the uniqueness of individuals' lives and of reactions to events as described in those individuals' own words.

Disadvantages: An error sometimes committed by either a researcher or readers of narratives is that of accepting a particular person's experiences as typical of some group of people—typical of other redheads, of other immigrant children, of other short boys, or of other pregnant teenagers. This is the error of improperly generalizing beyond the available data. Thus, the experience-narrative approach is not appropriate for providing information about how characteristics of people (honesty, intelligence, beauty, diligence, humility, generosity, feelings of discrimination, reactions to discrimination, and more) are distributed throughout a population.

Ethnographies

Definition: The word ethnography identifies the branch of anthropology dedicated to the scientific description of different cultures. Among the host of ways culture has been defined by academicians, the one proposed by White (1994, p. 874) will adequately serve our present purpose.

Culture may be defined as behavior peculiar to Homo sapiens, together with material objects used as an integral part of this behavior; specifically, culture consists of language, ideas, beliefs, customs, codes, institutions, tools, techniques, works of art, rituals, ceremonies, and so on.

Because one group of people can differ from another in the components of culture that White identifies, one group's culture will differ from another's. The typical way of identifying which group's culture we have in mind is to attach an adjective to the word culture, thereby enabling us to distinguish among French culture, Apache culture, Islamic culture, teenage American culture, the legal-profession culture, radical-feminist culture, nursery-school culture, and far more.
**Purpose:** The aim of ethnographic studies is to portray a group's way of life and, as far as possible, to reveal how members of the group perceive themselves and the world they know.

**Procedure:** When ethnography is adopted as a method for investigating classroom issues, it can take the form of projects focusing on the way of life shared either (a) by everyone who inhabits one or more classrooms (students, teachers, aides, counselors) or (b) by some subgroup of classroom participants (a school’s social-studies teachers, a classroom’s clique of upper-socioeconomic-level students, or the group of high-school students who work as teachers’ aides in the primary grades).

In conducting an ethnographic study, the researcher’s relationship to the cultural group can vary from distant to intimate. As an example of a distant relationship, a college student may interview members of a high-school orchestra to discover the musicians’ roles and status within their group and also to learn the ambitions, interests, values, joys, and sorrows the members hold in common. Along the distant/intimate scale, a somewhat more intimate relationship involves a researcher joining the cultural group’s daily activities as a participant, but still being recognized as an outsider by the group members. Such was the case of a middle-aged journalist, Elinor Burkett, who spent hundreds of hours in a Minnesota high school collecting material for a book titled Another Planet—A Year in the Life of a Suburban High School (2001). During the year, she attended

as many classes, sports practices, play and music rehearsals, faculty meetings, teacher discussions, student bull sessions, and informal gatherings and parties as she could. She became a confidante of students, teachers, and administrators alike, and was permitted to sit in on parent-teacher conferences. She became so well integrated into the scene that at the end of the year the seniors asked her to speak at their graduation and invited her to attend future reunions as an honorary member of their class. (Stossel, 2001)

Still more intimate was the position of James Allen, a university doctoral candidate, who was permitted to enroll part-time in a California high school in order to view classroom-control issues from a high-school student’s perspective (Allen, 1982).

The closest first-hand participant-observer relationship occurs when a regular member of the cultural group serves as the researcher. In a study of classroom issues, that member can be the teacher, the teacher’s aide, or one of the students.

H. G. Wolcott, as an anthropologist hoping to produce “a generalized description of the life-way of a socially interacting group,” has identified the advantages and limitations of being a participant-observer at different points along the distant/close scale.

Ordinarily an outsider to the group being studied, the ethnographer tries hard to know more about the cultural system he or she is studying than any individual who is a natural participant in it, at once advantaged by the outsider’s broad and analytical perspective but, by reason of that same detachment, unlikely ever totally to comprehend the insider’s point of view. The ethnographer walks a fine line. With too much distance and perspective, one is labeled aloof, remote, insensitive, superficial; with too much familiarity, empathy, and identification, one is suspected of having “gone native.” (Wolcott, 1988, pp. 188-189)

How a researcher collects ethnographic data can range between (a) being guided by a precise set of questions or theory and (b) holding no expectations at all about what to observe or how to interpret the observations. Which aim the researcher brings to the task determines to a great extent the data-collection steps to be taken.

At the precise question or theory end of the scale, viewing a classroom through the lens of a preconceived structure defines exactly what to look for and what to ignore. Such would be the case if we were to study a kindergarten in order to answer the question: Who are the leaders and who are the followers among the kindergarten children, and what characteristics of children and their environment distinguish leaders from followers? Guided by this question, we first define what we mean by lead and follow, then observe the children’s activities throughout the school day to record under what conditions certain children lead while others follow. Or we might start with a social-hierarchy theory that views groups in terms of dominance and submission, thereby focusing our attention on (a) which children are dominant and which are submissive in their interaction, (b) the sorts of situations in which such relationships are most obvious, and (c) the personal characteristics of children that are linked to—and perhaps cause—different kindergartners’ dominant and submissive roles.

In contrast to bringing a theory or precise set of questions to our observations, we could come to the kindergarten to observe everything that happened. We might also lend greater focus to this broad, amorphous intent by trying to view kindergarten life through the eyes of a particular kind of person—a shy girl, a boy who had been much indulged at home before reaching school age, or an ambitious mother anxious to see her child succeed academically. We would then generate our questions of what we see from this viewpoint. Such an open-minded approach collecting evidence has sometimes been referred to as grounded, meaning that the researcher develops a theory out of the observations rather than bringing a preconceived structure to the observation.

**Illustrative studies:** Each of the following studies could be at any grade level and in different subject-matter fields.
Title: Ninth-Graders' Formal and Informal Rituals

Research questions: In a ninth-grade social-studies classroom, what formal rituals (such as taking roll, pledging allegiance to the nation, collecting homework, starting a lesson, taking tests) are part of the classroom culture? What informal rituals (such as students' ways greeting each other, their personal-grooming habits, attention-getting behavior, amusements, reactions to the teacher) are part of the classroom culture? What functions does each ritual appear to serve? What consequences do individuals experience for failing to observe various rituals? Who applies the consequences or sanctions? What functions do the sanctions appear to serve? How are new rituals created, by whom, and why?

Title: Authority and Power in a Girls' Volleyball Team

Research questions: Authority is defined as the officially assigned decision-making influence over other people's behavior. Power is defined as the actual ability to influence other people's behavior. So, on a girls' high-school volleyball team, who has the authority to make what decisions? How is that authority obtained? Can such authority be delegated to someone other than the original holder? If so, what is the purpose of delegating authority and what is the process of delegating it? Do people who have no official authority wield power? If so, under what conditions do they gain power? Under what circumstances do authority and power come into conflict? How is such conflict resolved?

Advantages: As a research method, ethnography can reveal those characteristics of a group that make the group's culture distinctive, thereby helping readers understand how and why one group—such as one seventh-grade class or one soccer team—differs from another. An ethnographic approach also can expose the internal operations of a classroom or of a subgroup within a classroom by identifying the kinds of individuals who make up the group, revealing the relative influence of different members, tracing routes of communication within the group, showing patterns of friendship among members, suggesting how individuals achieve and maintain their status, and revealing the sanctions imposed to ensure that members abide by group rules.

Disadvantages: To caution readers that an ethnography is not a revelation of the "objective truth" about a group, Denzin (1997, p. 3) has asserted that "Ethnography is that form of inquiry and writing that produces descriptions and accounts about the ways of life of the writer and those about which." Therefore, although authors may contend that they have simply recorded "what really happened," their account is inevitably a landscape filtered through their particular mental lens, so that versions of the same event as produced by different investigators can result in somewhat different pictures. This observation about diverse portrayals of the same group or classroom is considered to be a disadvantage of ethnography by readers who hope to learn "the real truth" about a classroom. However, if a number of researchers conduct independent studies of the same classroom, the diverse reports can be considered advantageous by readers who accept Denzin's proposal that different "truths" result from different people's perceptions of a cultural group.

As noted earlier, the accuracy of an ethnographic report can be impeded by the relationship of the ethnographer to the group being studied. Participant-observers can become so intimately immersed in a classroom culture that they diminish the objectivity they sought to bring to their research. But if participant-observers fail to engage themselves intimately in the life of the classroom—and therefore fail to understand the language, ambitions, and values of the students or teacher—they are apt to produce a blemished version of what life means to the people who inhabit the classroom.

Finally, generalizations drawn in one ethnographic study can be validly applied to other studies only at considerable risk because of the unique conditions that may determine the fabric of life in each classroom.

Activity Analyses

Definition: In classroom settings, activity analysis consists of a teacher (a) devising a procedure (usually an instructional procedure) that represents a novel perspective and (b) portraying that procedure in terms of its components. Studies conducted in such a way qualify as research because they involve "systematically gathering and analyzing evidence appropriate for solving a problem or answering a question whose answer has not been available." The evidence may be in the form of information from the professional literature, a teacher's observations of students' behavior, the inadequacies of a current procedure, or colleagues' suggestions.

Purpose: The intent of activity analysis is to portray innovative teaching or counseling procedures in sufficient detail to enable other teachers to apply the activities in their own classrooms.

Procedures and illustrative studies: The novel perspective offered by an activity analysis may be in the form of an innovative theory, when theory is defined as a proposal about (a) the most important components of an activity and (b) how those components interact. The theory may appear as an analogy—likening one thing to another in an unaccustomed fashion, as illustrated in the first of the following examples titled Teaching Patriotism as Religion. Or the innovation may be depicted as a series
of steps in performing an activity, as demonstrated in the second example—Guiding Reluctant Participants.

Teaching Patriotism as Religion. In this case, the activity involves teaching about patriotism or, more precisely, teaching the characteristics of patriotism.

A high-school social-studies teacher believes that students can gain useful insights into the phenomenon of patriotism if they compare patriotism with religion. Thus, he constructs an analytic scheme that identifies key components of religion that he contends are also typically found in the practice of patriotism. Such components include a hierarchy of authority, holy scriptures, experts who interpret the scriptures, idealized heroes, rituals and ceremonies, holy days, revered objects and symbols, rules of behavior, sanctions for disobeying the rules, and rewards for faithful service. The teacher then applies his analysis to his teaching by creating a unit of study in which students are led to compare patriotism to religion, identifying the religion-like components of patriotism and showing how those components interact to produce events in the life of a nation and in the lives of individual citizens.

Guiding Reluctant Participants—A Fear-Reduction Approach. The activity analyzed in this case is a teacher's attempt to increase different students' contributions to classroom discussions and projects.

A middle-school language-arts teacher wished to encourage reluctant students to contribute more often to class discussions. From her observations of reticent students during discussions, she estimated that their unwillingness to participate was due to (a) a lack of knowledge about the subject under discussion, (b) a lack of ability to express themselves clearly, or (c) a fear that they might appear foolish. In her effort to help them cope with the third of these causes (fear of speaking out), she devised the following activity for use at the beginning of a group discussion of a literary work that class members had been reading. The activity is divided into five stages, each supported by a rationale.

Stage 1: Goal clarification. The teacher explains that every member of the group should take part in the discussion so that the group can profit from all individuals' ideas. Rationale: The extent of participation expected from the students should be made clear at the outset.

Stage 2: Leader's admission of fear. The teacher explains that people often hesitate to speak in a group for fear they will appear foolish in the eyes of other group members. She then gives illustrations of situations in which she herself was afraid to speak out. Rationale: By using herself as an example, she hopes to show that it's not only common for people to suffer such fear, but it's all right to admit being afraid.

Stage 3: Others' admission of fear. The teacher asks group members if they have ever hesitated to participate out of fear, and she invites individuals to describe those occasions. Rationale: When many group members describe their own experiences, the universality of such fear becomes apparent. This realization may help different students become more willing to engage in discussions.

Stage 4: Students' proposals. Each student who has reported a fear experience is asked to tell how that fear could have been eliminated or reduced, that is, how conditions might have been different so the student would have felt comfortable contributing to the discussion. Rationale: Students identify causes of their fear and suggest how those causes might be remedied.

Stage 5: Rules of the game. Drawing on the suggestions at Step 4, the teacher proposes a set of rules that the present group can adopt so as to encourage all members to participate willingly. For example, one rule might be that no group member should ridicule ideas contributed by other members, even when they disagree with those ideas. Rationale: The rules of group behavior are not only made clear, but they are drawn on the experiences and suggestions of members of the group and therefore may encourage greater compliance because the rules were not simply imposed by an authority.

Advantages: It should be apparent that when a teacher offers a detailed analysis of an activity, the activity can be more easily and more accurately adopted in other classrooms than if it were sketched in only general terms.

Disadvantages: Some teachers who create and successfully use novel instructional methods are not adept at analyzing and describing the components of the activity. In other words, they perform more by intuition than by systematic logic, so they are unable to provide a detailed, comprehensive description of the activity's components. As a result, it is difficult for other teachers to adopt that activity to their own repertoire of teaching methods.

Planning Guide

To discover a question—or series of questions—that you might like to answer by conducting a research project using a qualitative research method, carry out the following series of steps:

1. State your question or questions.

2. State the criteria you will apply in deciding which of several methods might be the most appropriate in view of the time, expertise, and funds you are willing to dedicate to the project.
3. Describe in some detail the method—or combination of methods—you possibly could use to answer your research question. For instance, imagine that you want to answer the two-part question “What techniques have been used to accommodate for the individual differences in reading ability among first graders, and what have been the strengths and limitations of each technique?” A historical approach could consist of surveying books and articles in the professional literature over past years. Another approach would involve collecting experience narratives from first-grade teachers. A third would require forming a team of graduate students, each of whom would conduct an ethnographic study of a first-grade classroom to discover the teacher’s ways of handling the reading-skill differences among children. A fourth approach could be a combination of the historical survey and teachers’ experience narratives.

4. Apply your criteria to your potential methods and decide which method will likely be most suitable. Explain the line of reasoning you followed to arrive at your final choice. For example, which of your criteria weighed most heavily in the selection process? And why did you give high priority to that criterion?

5

Research Methods—Quantitative

As noted in Chapter 4, approaches to research referred to as quantitative involve techniques that yield results in the form of numbers. In effect, the qualities that are the focus of research are not only described—as in historical and ethnographic studies—but are cast in amounts, such as frequencies, percentages, averages, and the like. An important advantage of quantitative methods is that they provide a more precise picture of the magnitude of a quality than do verbal descriptions. For example, saying that a classroom of fifth-graders learned how to add fractions is not as clear a description as saying that 83 percent of the class accurately solved at least 15 out of 20 problems on an adding-fractions test. Or noting that eighth-grade boys’ height influenced their feelings of self-confidence is less precise than reporting a correlation of .79 between boys’ heights and their scores on a paper-pencil personality test titled Inventory of Self Regard.

The present chapter concerns three quantitative approaches—surveys, correlational studies, and experiments. The description of each includes its definition, purpose, illustrative studies, procedure, advantages, and disadvantages.

Surveys

Survey methods involve gathering information about a topic from various sources, then summarizing and interpreting the findings. One way to classify surveys is to locate them under two broad categories—direct-data types and literature-review types.
Direct-data surveys

Definition: A direct-data survey involves collecting information directly from individuals, groups, or institutions by means of questionnaires, interviews, or observations.

Purposes and illustrative studies: There are various ways to distinguish direct-data surveys. For studying classroom issues, a useful way divides direct-data surveys into five types—demographic, equipment, performance, practice, and opinion.

A demographic survey assigns people to subgroups based on such identifying characteristics as ethnic background, religious affiliation, socioeconomic status, gender, age, education, nationality, or regional origins. Examples of demographic surveys are projects bearing such titles as:

- Trends in the Ethnic Mix in County Elementary Schools
- Effects of Religious Affiliation on Moral-Education Programs
- Social Class and School Dropouts—A Statewide Survey

Equipment and supply surveys involve collecting data about the amount and quality of educational settings and instructional materials, as reflected in research entitled:

- Computer Availability and Frequency of Classroom Use in Monroe School District
- The Size and Growth Rate of Morristown’s Classroom Libraries
- The Quality of Lighting in Rural Classrooms

Performance surveys report how well individuals, groups, or institutions carry out their assignments.

- Achievement-Test Results by School, Grade, and Classroom
- Teachers’ Classroom-Efficiency Ratings and Merit Pay
- Ranking the County’s High-School Swimming Classes

Surveys frequently focus on kinds of practices by describing and comparing ways instructional functions are carried out.

- The Popularity of Phonics Instruction in First-Grade Classrooms
- Types of Laboratory Experiences in Physics Classes—A Regional Survey
- Teachers’ Instructional Uses of the World Wide Web

Opinion surveys involve gathering people’s expressed attitudes about classroom activities.

- Teachers’ Appraisals of the City Schools’ Sex-Education Curriculum
- Students’ Opinions of Their Literature Textbooks
- Parents’ Attitudes about Homework

Procedure: Direct-data surveys can be conducted in many ways. Here is one example of steps that the survey process can involve.

The survey’s focus is defined by the question—or questions—that the research is expected to answer, such as “What do the city’s public school teachers believe are desirable and undesirable features of the newly devised drug-education curriculum?” or “How many kindergarten and first-grade classrooms include sight-vocabulary exercises in their reading instruction?”

1. Potential subjects (individuals, groups, or institutions) to be surveyed are identified.
2. Criteria are devised to guide the choice of which subjects from among the potential ones at step 1 will actually be used. The following are examples of such criteria:
   - Availability: Which subjects are most readily available?
   - Representativeness: Which subjects best represent the range of people that the survey is designed to learn about?
   - Willingness: Which subjects are likely most willing to participate in the survey?
3. The criteria are applied to the options in order to arrive at the actual subjects who will be studied.
4. Potential instruments and techniques for collecting survey data (as will be described in Chapter 6) are identified.
5. Criteria for selecting the most appropriate instruments and techniques are established, such as:
   - Accuracy: Which techniques will likely yield the most valid answers to the research questions?
   - Availability: Which instruments or techniques are most readily obtained or created?
   - Ease of Use: Which techniques are the simplest to use?
   - Cost: Which techniques require the least expenditure of funds?
6. The criteria are applied to the options from step 4 to select the most suitable data-collection techniques, and the chosen instruments and procedures for data collection are created or adopted.
7. A small sample of the chosen type of subjects (individuals, groups, institutions) that will not be used in the final survey is selected for testing the instruments and techniques in a pilot study in order to discover possible weaknesses in the data-collection procedures.
8. The instruments and techniques are tried out on that small sample.
9. The results of the pilot study are analyzed; and the instruments and procedures are revised to correct weaknesses found during the pilot study. If many shortcomings were identified, or if the researcher doubts that the corrections have been sufficient, a second cycle of steps 7-9 may be conducted with a different sample of subjects (who will not participate in the final survey).
10. In most surveys, the entire population of individuals that is being studied does not take part, because studying all of them would be too burdensome. Therefore, only a representative segment (a sample) of that population will be used in the final survey. As step 10, a system for drawing the sample is adopted (as described below), and a decision is reached about exactly which subjects will be asked to participate.
11. The survey procedures are administered to the subjects.
12. The subjects' responses are tabulated and classified.
13. The classified results are interpreted in terms of the researcher's original guide question.
14. A description of the project is written and distributed.

The question of sampling: When researchers draw conclusions from the results of a survey, they either can limit those conclusions to the people or objects they directly studied or can extend the conclusions to a broader population of people or objects that were not studied. For instance, the teacher of a high-school health-education class administers an Eating Habits Questionnaire to the 33 students enrolled in her class, then reports the results as representing the self-reported dietary practices of only the members of that class. Her study's results can be labeled descriptive conclusions, because she has simply described her students' responses. However, let's imagine that she feels that the pattern of answers she obtained from her 33 students is likely an accurate reflection of answers she would receive if all 2,700 of the high school's students completed the questionnaire. Or, perhaps she thinks that her class's pattern of responses would also result if all of the 13,000 students in the city's five high schools took part in the survey. This application of a study's outcomes to people who did not directly participate is usually referred to as an inferential conclusion, because the researcher is inferring that the results from a limited number of participants (the sample) are valid indicators of what a broader collection of people (the population) would answer. In effect, the population is the large group about which the researcher wishes to draw generalizations, and the sample is the segment of that large group which is directly studied.

There is clearly a widespread desire among researchers to extend their conclusions beyond the subjects they have surveyed. A political pollster who can accurately predict the outcome of a presidential election on the basis of surveying a sample of 5,000 voters is held in far higher esteem than a pollster who makes no attempt to extend his results beyond the 5,000. And being able to offer convincing statements about 13,000 students' reported eating habits is far more impressive than limiting such statements to 33 respondents. However, it's quite obvious that extending the conclusions about a directly studied group to a larger population entails the risk of error, since the sample may not represent the population in a balanced fashion.

Consequently, when conducting surveys about classroom issues, researchers need to decide how broadly they intend to apply their findings. Are they content to limit their conclusions to the people or objects that were actually surveyed, or do they plan to regard those subjects as a sample of a broader population to which the outcomes could also be

If the latter is the case, then how can the researcher support the assumption that the studied sample accurately represents the broader population? There are two popular ways to attack this problem. The first involves formal sampling procedures. The second involves estimating patterns of cause.

Formal sampling procedures: There are numbers of traditional methods of drawing samples, with each method accompanied by strengths and limitations. Four such approaches are random, multistage, systematic, and convenience.

Simple random sampling. The two most basic rules governing random sampling are that (a) each member of the population should have an equal chance of being chosen and (b) selecting one member should not influence which other members will be chosen. One familiar way to draw a random sample is to begin by defining the characteristics of the population to which generalizations from the survey will be applied. For example, the population can be defined as all high school students in a city's public schools. Or, in a study of school buildings' resistance, the population can consist of all public and private school buildings in the state. Or, in research on classroom teachers' opinions of a school board's salary offer, the population can include all full-time public-school teachers in the county.

After the population has been delineated, a decision is reached about the size of the sample that will be drawn. Obviously, the larger the sample in comparison to the size of the population, the greater the likelihood that the sample will represent the population in a balanced manner. For instance, in a high-school population of 13,000, having 650 students (5%) fill out questionnaires will likely furnish results that more accurately represent the population than would a sample of 130 students (1%). Next, the name of each individual in the population is written on a slip of paper (with all slips identical in size and texture). The slips are placed in an open container (hat, fishbowl, cardboard box) and stirred around. Then, one slip at a time is drawn out until the specified sample size has been reached.

Or, instead of putting slips of paper in a container, another way to draw a random sample is to list all 13,000 students' names and to assign an identification number to each name. Then the researcher obtains a set of random numbers from a statistics book or from a computer program that generates random numbers. The first 650 numbers in the random set are matched against the students' identification numbers to determine which students are to become members of the sample.

The advantage of drawing a random sample is that the researcher can now make a statistical estimate of how accurately the sample represents
the population. Various kinds of inferential statistical techniques are described in most statistics textbooks. Those techniques provide an estimate of how closely the results of surveying the sample probably approximate the results that would be obtained if the entire population had been surveyed.

The disadvantage of simple random sampling is that the larger the population, the more trouble it is to carry out the process. For populations that are very large, the task is not merely burdensome but practically impossible. Imagine trying to draw a simple random sample of 1,000 participants from among the mothers of all secondary-school students in Texas in order to survey mothers' opinions about whether schools should provide birth-control information to the state's teenagers. Therefore, with large populations, simple random sampling is not practical.

Multistage random sampling. A popular way to simplify the task of drawing a random sample involves dividing the selection process into stages. The researcher begins by identifying a hierarchy of sampling units of different sizes and types. For instance, imagine that we want to study a sample of approximately 500 Michigan high-school seniors' experience with, and their attitudes toward, the use of classroom computers. On the basis of those results, we wish to extend our conclusions so they apply to all Michigan seniors. Therefore, we start by defining a hierarchy of four stages or levels: (1) counties (rural and urban, because we estimate that experiences and attitudes may differ between rural and urban schools), (2) school districts within counties, (3) high schools within districts, and (4) classrooms of seniors within high schools. First, we randomly pick one primarily-rural and one primarily-urban county. Then, within each of those two counties, we randomly pick one school district. Next, within each of the two school districts, we randomly select two high schools. Finally, within each high school we randomly choose five classrooms of seniors (with each classroom averaging 25 students) to compose our sample of 250 rural and 250 urban participants.

This process meets the basic requirements for random sampling (each senior in the state has had a chance to be chosen, and selecting one student has not affected who else will be chosen), and we have much simplified our task of conducting the survey. Variations of multistage sampling are available to accommodate the conditions of different studies and different kinds of populations (Ross, 1985).

Systematic sampling. Within relatively small populations, systematic sampling closely approximates the results that would be obtained with simple random sampling. Imagine that an elementary school teacher, for her master's degree, wishes to write a thesis about how elementary-school pupils would plan to respond to various types of emergency that might occur in their classroom—such emergencies as fire, earthquake, a child being injured or falling ill, a fight among pupils, or the teacher being called away. The teacher intends to obtain her data by interviewing a sample of third-graders and sixth-graders, then drawing conclusions that apply to all third- and sixth-grade pupils in a school district that contains four elementary schools. Rather than interviewing all 2,423 of the district's third-graders and all 2,172 sixth-graders, she plans to solicit the opinions of only 35 pupils at each grade level. To select the 35 participants, the researcher assigns each child a number ranging from 1 to 2,423 in grade three and 1 to 2,172 in grade six. For her third-grade sample, she writes numbers 1 to 69 on a sheet of paper (because there are about 69 thirty-fives in 2,423) and, with her eyes closed, touches a pencil point to the sheet. The point hits number 11. That number defines the first third-grader to be included in the sample. The next choice will be 69 numbers beyond 11 (pupil 80), the third participant will be 69 numbers beyond 80 (149), and so on until all 35 have been chosen. The same procedure will be used for picking the sixth-graders.

Because only chance errors, rather than other sources of bias, are apt to affect how closely the interview results approximate the pattern of responses of the entire population of the school district's third and sixth graders, the statistical techniques (such as t-test and analysis of variance) found in statistics textbooks can be appropriately used to estimate the accuracy of systematic sampling.

Available sampling. The overwhelming majority of research on classroom issues utilizes what have been called available, convenience, or accidental samples. Most researchers study the people, institutions, and events that are convenient—ones that happen to be at hand. One teacher studies the way her fourth-graders interpret maps. Another conducts a survey of classroom discipline incidents in a school district's junior high schools. A third interviews parents of high-school students to learn what sorts of vocational preparation parents expect the school to offer their offspring. In each of these cases, the researchers—if they have done their work skillfully—can confidently draw conclusions about the groups they have directly studied. But if they hope to generalize their results to include populations that they have not studied (other fourth-graders, other school districts' junior-high discipline problems, parents of other high school students), they are skating on thin ice. Whereas statistical techniques can be helpful for estimating how well a random or systematic sample represents a population, there are no techniques for estimating how likely a convenience sample reflects the characteristics of some larger collectivity.
Estimating patterns of cause: The best that researchers can do to apply the results from their available sample to some broader population is to (a) estimate what pattern of causal factors is probably responsible for the phenomenon that has been studied (children's map interpretations, junior high discipline problems, parents' expectations for their teenagers' vocational preparation) and (b) to speculate that those same results might also be obtained in a nonstudied population that displayed a pattern of causal factors similar to that of the available sample.

Consider, for instance, the fourth-grade teacher's map-analysis project. She may speculate that three causal factors strongly influenced her pupils' understanding of map symbols and relationships: (a) the children's genetic inheritance (inmates intellectual ability and the rate at which that ability matured), (b) the intellectual quality of children's home environments and trips they have taken, and (c) what the children had been taught in school about maps prior to arriving in fourth grade. Therefore, the teacher hypothesizes that children in other fourth grades around the nation or around the world who were like those in her class in terms of her three hypothesized causal variables would probably display the same understanding of maps as that of the children in her own classroom. Hence, when the teacher writes the section of her research report that proposes how her results should be interpreted, she includes (a) her hypothesis about the three causal factors (biological maturation, family environment, school experience), (b) offers evidence and a line of logic to support her hypothesis, and (c) proposes that the outcomes of her study would likely be true for other fourth graders who were similar to her own pupils in terms of the three causal factors. Subsequently, other fourth-grade teachers—whose children appeared to be much like those in the first teacher's class in terms of the three variables—might wish to replicate the research with their own pupils to discover if extending the first teacher's results to other classes seemed warranted.

In like manner, the researchers who carried out the projects on junior-high discipline and on parents' expectations for vocational preparation could also propose factors they believed were strong influences on the outcomes of their projects. And they could suggest that the results of their investigations would likely apply as well to other junior highs and to other parents that displayed a pattern of causal factors similar to the pattern found in the convenience samples.

In summary, applying interpretations drawn from convenience samples can be applied to broader populations only at great risk of error. This risk can be reduced by the researcher proposing a persuasive argument to support the proposition that the main factors causing the results that were found in the available sample also appear in the other groups to which the results might be applied.

Literature-review surveys

Definition: Sometimes the data needed in research on classroom issues are not gathered by directly surveying people or institutions but, instead, are gathered by reviewing the literature that bears on the research question and by summarizing the findings. A literature-review study is therefore an amalgamation of diverse research reports bearing on a particular question.

Purposes and illustrative studies: Literature reviews can have a variety of aims, including those of (a) synthesizing knowledge, (b) revealing diversity, and (c) illustrating applications.

Synthesizing knowledge. Most research by teachers is restricted in scope, with each study focusing on a specific place, group of people, and time period. However, as noted in our discussion of sampling, many consumers of research want to know whether the results or principles derived from a specific study might be equally true in other places, among other people, and at other times. In effect, readers often yearn to know how broadly generalizations from a study can be applied and to learn what conditions influence such applications. Thus, the purpose of a literature-review project can be to satisfy such readers' desire by synthesizing a variety of specific studies that bear on the same general topic.

The most popular method of producing such a synthesis has involved a researcher (a) delineating the educational domain to be studied, with the domain identified by such expressions as classroom discipline, reading readiness, or computer literacy, (b) using the chosen expression to direct a search of the literature, (c) identifying themes and trends that are prominent in the books and articles that are found, and (d) writing a summary of the outcomes. Obviously, the quality of the resulting synthesis depends on both the thoroughness with which the researcher has combed the literature and the researcher's skill at identifying themes common to the reviewed material. However, critics have sometimes found fault with such a method that can depend so heavily on the researcher's intuition and biased perspective. Thus, a form of synthesizing that has become increasingly popular in recent decades is called meta-analysis and is based on the following line of reasoning.

The traditional process of integrating [the conclusions from] a body of research literature is essentially intuitive and the style of reporting narrative. Because the reviewer's methods are often unspecified, it is usually difficult to discern how the original research findings have contributed to the integration. A careful analysis can sometimes reveal that different reviewers use the same research reports in support of contrary conclusions.... The most serious problem for reviewers to cope with is the volume of relevant research literature to be integrated. Most reviewers appear to deal with this
by choosing only a subset of the studies. Some take the studies they know
most intimately. Others take those they value most highly, usually on the
basis of methodological quality. Few, however, give any indication of the
means by which they selected studies for review. (McGaw, 1985, p. 3322)

One method of solving these problems of the typical intuitive synthe-
sizing process involves meta-analysis techniques that can produce a
quantitative integration of diverse empirical research results. Two of the
most popular meta-analytic approaches are those described by Glass,
McGaw, and Smith (1981) and by Hunter, Schmidt, and Jackson (1982).
Three examples of projects for which meta-analysis is appropriate are
ones entitled:

Typical Characteristics of State-Wide Achievement Testing Programs
Common Features of Physical Education Classes in 12 Middle Schools
Similarities Among High Schools’ Teaching Loads

Revealing diversity. Sometimes a literature survey is intended to high-
light differences rather than similarities among classroom practices, as
suggested in studies bearing such titles as:

Ways of Teaching Morality in Elementary Schools
Contrasts in Policies Governing Student Absences
Variations in Systems for Reporting Students’ Progress

Illustrating applications: When a new child-development theory or a
new instructional technique or material has been introduced, practition-
ers often wish to learn the conditions under which the innovation suc-
cedes and the conditions under which it falls short of expectations. To
fulfill this wish, a teacher may survey published studies of the particular
practice in order to show (a) various ways it has been applied, (b) the
kinds of classroom facilities and students involved in those applications,
(c) and the innovation’s strengths and weaknesses in various types of
classrooms.

Why a Self-Discovery Science Approach May or May Not Work with Primary Pupils
Under What Circumstances Is the ‘Natural Phonics’ Program Appropriate?
High School Biology Field Trips—Why and Why Not?

Procedure: The following steps represent one way to conduct a litera-
ture survey with the aid of a computer that provides access to the Inter-
et. The investigator:

1. Identifies the domain to be surveyed by stating the central research ques-
tion and perhaps subquestions.
2. Chooses key words from the research question, along with synonyms and
related terms, to guide the search of the literature.
3. Uses a computer that can access the World Wide Web in order to locate:

3.1 The home page of one or more libraries. From the array of databases
that the library lists, the researcher selects one or more that might report
relevant studies to include in the survey. For example, the fol-
lowing are potentially useful databases in one university’s library
holdings: Magazines & Journal Articles, Newspaper Articles, ERIC (Educa-
tional Resources Information Center), Chicano Data Base, and PsychInfo.
The investigator opens the selected database and enters each key
word in the “search” blank that appears, thereby producing a list of
publications related to the key term.

3.2 One or more search engines, such as Ask Jeeves, Google, or Teoma.
When the search-engine home page appears, the investigator enters
each key word or phrase in the “SEARCH” space in order to generate
the list of websites associated with the word or phrase.

4. Records the results of the search by use of the methods described in
Chapter 3 for compiling material derived from the literature.

Correlation Studies

Definition: Correlation research is conducted to reveal how the con-
dition of one variable—such as pupils’ levels of intelligence—is related
to some other variable—such as pupils’ popularity with classmates. In
other words, are pupils who score higher on intelligence tests more often
chosen as friends than are pupils who score lower?

Or the question of correlation can also be stated another way: What
happens to one variable when another variable changes? For instance,
when high school students are given more frequent history-class home-
work, what happens to their history-test scores?

In this discussion of correlation studies, the term variable refers to
anything that can differ or change in kind or in amount. For example,
the variable gender is typically divided into two kinds—female and male,
or girl and boy. The variable height is typically divided into such
amounts as feet-and-inches or meters-and-centimeters. Many studies
have been conducted to determine the co-relationship between gender
and height in order to answer the question: What happens to height
when gender changes? Or, in more common parlance, are girls taller
than boys, or vice versa? If so, by how much?

Although correlation research most often focuses on two variables,
such investigations can also involve more than two. For instance, we
could study how children’s height relates to gender at different age levels.
The following are a few of the many types of questions that can be an-
swered by the use of correlation analysis.

Are sixth-graders who score high on mathematics tests the most able to
cope in social situations while those who score low are the least able to
cope? How do middle-school girls compare with middle-school boys in
shy-ness skill?