Jack R. Fraenkel is currently Professor of Interdisciplinary Studies in Education, and previously Director of the Research and Development Center, College of Education, San Francisco State University. He received his Ph.D. from Stanford University and has taught courses in research methodology for more than 30 years. In 1997, he received the James A. Michener prize in writing for his writings about the social studies and the social sciences. His current work centers on advising and assisting faculty and students in generating and developing research endeavors.

Norman E. Wallen is Professor Emeritus of Interdisciplinary Studies in Education at San Francisco State University, where he taught from 1966 to 1992. An experienced researcher, he received his Ph.D. from Syracuse University and taught courses in statistics and research design to master’s and doctoral students for many years. He is a former member of the City Council of Flagstaff, Arizona, and the Executive Committee, Grand Canyon Chapter of the Sierra Club.

Helen H. Hyun is currently Assistant Professor of Interdisciplinary Studies in Education at San Francisco State University. She received her Ed.D. from Harvard University and has taught courses in research design and methodology to master’s and doctoral students at both San Francisco State and the University of California at Berkeley. Her teaching and research interests include higher education policy, mixed methods research, and equity issues in education.

To Marge, Lina, and Jeff for all their support
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How to Design and Evaluate Research in Education is directed to students taking their first course in educational research. Because this field continues to grow so rapidly with regard to both the knowledge it contains and the methodologies it employs, the authors of any introductory text are forced to carefully define their goals as a first step in deciding what to include in their book. In our case, we continually kept three main goals in mind. We wanted to produce a text that:

1. Provide students with the basic information needed to understand the research process, from idea formulation through data analysis and interpretation.
2. Enable students to use this knowledge to design their own research investigation on a topic of personal interest.
3. Permit students to read and understand the literature of educational research.

The first two goals are intended to satisfy the needs of those students who must plan and carry out a research project as part of their course requirements. The third goal is aimed at students whose course requirements include learning how to read and understand the research of others. Many instructors, ourselves included, build all three goals into their courses, since it is hard to read and fully comprehend the research of others if you have not yourself gone through the process of designing and evaluating a research project. Similarly, the more you read and evaluate the research of others, the better equipped you will be to design your own meaningful and creative research. In order to achieve the above goals, we have developed a book with the following characteristics.

CONTENT COVERAGE

Goal one, to provide students with the basic information needed to understand the research process, has resulted in a nine-part book plan. Part 1 (Chapter 1) introduces students to the nature of educational research, briefly overviews each of the seven methodologies discussed later in the text, and presents an overview of the research process as well as criticisms of it.

Part 2 (Chapters 2 through 9) discusses the basic concepts and procedures that must be understood before one can engage in research intelligently or critique it meaningfully. These chapters explain variables, definitions, ethics, sampling, instrumentation, validity, reliability, and internal validity. These and other concepts are covered thoroughly, clearly, and relatively simply. Our emphasis throughout is to show students, by means of clear and appropriate examples, how to set up a research study in an educational setting on a question of interest and importance.

Part 3 (Chapters 10 through 12) describes in some detail the processes involved in collecting and analyzing data.

Part 4 (Chapters 13 through 17) describes and illustrates the methodologies most commonly used in quantitative educational research. Many key concepts presented in Part 2 are considered again in these chapters in order to illustrate their application to each methodology. Finally, each methodology chapter concludes with a carefully chosen study from the published research literature. Each study is analyzed by the authors with regard to both its strengths and weaknesses. Students are shown how to read and critically analyze a study they might find in the literature.

Parts 5 (Chapters 18 through 20) and 6 (Chapters 21 through 22) discuss qualitative research. Part 5 begins the coverage by describing qualitative research, its
philosophy, and essential features. It has been expanded to include various types of qualitative research. This is followed by an expanded treatment of both data collection and analysis methods. Part 6 presents the qualitative methodologies of ethnography and historical research. As with the quantitative methodology chapters, all but one of these is followed by a carefully chosen research report from the published research literature, along with our analysis and critique.

Part 7 (Chapter 23) discusses Mixed-Methods Studies, which combine quantitative and qualitative methods. Again, as in other chapters, the discussion is followed by our analysis and critique of a research report we have chosen from the published research literature.

Part 8 (Chapter 24) describes the assumptions, characteristics, and steps of action research. Classroom examples of action research questions bring the subject to life, as does the addition of a critique of a published study.

Part 9 (Chapter 25) shows how to prepare a research proposal or report (involving a methodology of choice) that builds on the concepts and examples developed and illustrated in previous chapters.

RESEARCH EXERCISES

To achieve our second goal of helping students learn to apply their knowledge of basic processes and methodologies, we organized the first 12 chapters in the same order that students normally follow in developing a research proposal or conducting a research project. Then we concluded each of these chapters with a research exercise that includes a fill-in problem sheet. These exercises allow students to apply their understanding of the major concepts of each chapter. When completed, these accumulated problem sheets will have led students through the step-by-step processes involved in designing their own research projects. Although this step-by-step development requires some revision of their work as they learn more about the research process, the gain in understanding that results as they slowly see their proposal develop “before their eyes” justifies the extra time and effort involved.

Problem Sheet templates are located in the Student Mastery Activities book electronically at the Online Learning Center Web site, www.mhhe.com/fraenkel8e.

ACTUAL RESEARCH STUDIES

Our third goal, to enable students to read and understand the literature of educational research, has led us to conclude each of the methodology chapters in Parts 4, 5, 6, 7, and 8, with an annotated study that illustrates a particular research method. At the end of each study we analyze its strengths and weaknesses and offer suggestions as to how it might be improved. Similarly, at the end of our chapter on writing research proposals and reports, we include a student research proposal that we have critiqued with marginal comments. This annotated proposal has proved an effective means of helping students understand both sound and questionable research practices.

STYLE OF PRESENTATION

Because students are typically anxious regarding the content of research courses, we have taken extraordinary care not to overwhelm them with dry, abstract discussions, and we have adopted an informal writing style. More than in any text to date, our presentations are laced with clarifying examples and with summarizing charts, tables, and diagrams. Our experience in teaching research courses for more than 30 years has convinced us that there is no such thing as having “too many” examples in a basic text.

In addition to the many examples and illustrations that are embedded in the text, we have built the following pedagogical features into the book: (1) a graphic organizer for each chapter, (2) chapter objectives, (3) chapter-opening examples, (4) end-of-chapter summaries, (5) key terms with page references, (6) discussion questions, and (7) an extensive end-of-book glossary.

CHANGES IN THE EIGHTH EDITION

A number of key additions, new illustrations, and improved or refined examples, terminology, and definitions have been incorporated in this edition to further meet the goals of the text. The Notes (references) have been updated throughout to include the latest research, and the Research Exercises and Problem Sheets have been revised with more effective questions.

Following is a sampling of chapter-by-chapter changes:

Chapter 1: The Nature of Educational Research
- Moved up discussion of quantitative and qualitative research to the beginning of the “Types of Research” section
- Added a new section on evaluation research
- Added new key terms

Chapter 2: The Research Problem
• Revised the section on research questions, including the distinction between quantitative and qualitative research questions and new examples
• Revised illustrations to include more diversity

Chapter 3: Locating and Reviewing Literature
• Originally was Chapter 5; contents moved up to highlight the importance of finding and analyzing research while introducing the many new ideas presented about literature review
• Updated the technological/digital terminology throughout
• Updated the discussion of search engines and other research tools
• Added new key terms

Chapter 4: Ethics and Research
• Added a new section on academic cheating and plagiarism
• Revised the opening scenario
• Added new information on regulation of research and human subjects, including the NIH and CITI
• Updated the discussion of Institutional Review Boards and HHS regulations, and added an IRB (Human Subjects) protocol template and consent form
• Added new key terms

Chapter 5: Variables and Hypotheses
• Originally was Chapter 3; contents moved back for more logical flow of material
• Revised terminology for clarity
• Added new discussion of mediator variables
• Added new section on hypotheses and qualitative research
• Added new key terms

Chapter 6: Sampling
• Added mention of how to use computer-generated lists
• Added a note on qualitative studies and sample size

Chapter 7: Instrumentation
• Revised opening case illustration
• Added a note on qualitative researchers and objectivity
• Updated the discussion on using the ERIC database and other testing resources
• Updated the screen captures to show recent searches
• Added information on using probes (improvised questions) in interviews
• Added a new example of a qualitative, open-ended interview protocol
• Added new key terms

Chapter 8: Validity and Reliability
• Updated terminology

Chapter 9: Internal Validity
• Revised opening illustration to be more realistic
• Revised terminology to reflect more accepted usage
• Added information on qualitative research and internal validity
• Inserted new table on “Threats to the Internal Validity of a Study”

Chapter 10: Descriptive Statistics
• Revised chapter objectives
• Revised opening case study
• Added and revised Excel boxes throughout, deleting previous SPSS boxes
• Relocated section on “Types of Scores,” originally in Chapter 7
• Added new key terms

Chapter 11: Inferential Statistics
• Added new Excel box

Chapter 12: Statistics in Perspective
• Added Delta to discussion of effect size

Chapter 13: Experimental Research
• Updated examples of experimental studies conducted by educational researchers
• Updated digital terms
• Revised discussion of gender and groups
• Replaced research report and analysis with a new study on students at risk

Chapter 14: Single-Subject Research
• Replaced opening illustration with case example
• Added examples of single-subject studies

Chapter 15: Correlational Research
• Updated examples of correlational studies

Chapter 16: Causal-Comparative Research
• Replaced research report and analysis with a new study on Internet use and abuse by students

Chapter 17: Survey Research
• Added examples of surveys
• Added a new section on Web-based surveys

Chapter 18: The Nature of Qualitative Research
• Added new examples of qualitative studies
• Included mention of “theoretical approach”
• Revised section on generation of hypotheses
• Added discussion of qualitative data analysis
• Added new key terms
Chapter 19: Observation and Interviewing
• Updated discussion of using technology with current terminology
• Added note about attentive listening during interviewing
• Expanded discussion of focus groups and the role of the moderator
Chapter 20: Content Analysis
• Added examples of content analysis studies
Chapter 21: Ethnographic Research
• Revised opening case study
• Revised examples of studies by ethnographers
• Added note regarding theoretical generalizability of a study
• Replaced research report and analysis with a new study on teaching ESL students
Chapter 22: Historical Research
• Revised examples of historical studies
Chapter 23: Mixed-Methods Research
• Revised examples of mixed-methods studies
• Added discussion of multiple samples
Chapter 24: Action Research
• Added examples of action research
• Replaced research report and analysis with a new study on integrating student choice and arts activities
Chapter 25: Preparing Research Proposals and Reports
• Added discussion of qualitative research proposals offering several propositions
• Updated terminology used with organization of a research report
Appendix D: Using Excel
• Revised this appendix to include information on using Excel for various statistical calculations, rather than SPSS, as it is more commonly used today.

New Annotated and Analyzed Research Reports: Four new Research Reports have been added to the text, introducing more research involving diverse populations as well as helping the student apply the text’s concepts and also practice evaluating published studies.

• Cognitive Effects of Chess Instruction on Students at Risk for Academic Failure
• Internet Use, Abuse, and Dependence Among Students at a Southeastern Regional University
• Lessons on Effective Teaching from Middle School ESL Students
• An Action Research Exploration Integrating Student Choice and Arts Activities in a Sixth-Grade Social Studies Classroom

SPECIAL FEATURES

Support for Student Learning

How to Design and Evaluate Research in Education helps students become critical consumers of research and prepares them to conduct and report their own research.

Chapter-opening Features: Each chapter begins with an illustration that visually introduces a topic or issues related to the chapter. This is followed by an outline of chapter content, chapter learning objectives, the Interactive and Applied Learning feature that lists related supplementary material, and a related vignette.

More About Research, Research Tips, and Controversies in Research: These informative sections help students to think critically about research while illustrating important techniques in educational research.

End-of-Chapter Learning Supports: The chapters conclude with a reminder of the supplementary resources available, a detailed Main Points section, a listing of Key Terms, and Questions for Discussion.

Chapters 1–12 include a Research Exercise and a Problem Sheet to aid students in the construction of a research project.

Chapters 13–17 and 19–24 include an actual Research Report that has been annotated to highlight concepts discussed in the chapter.

Practical Resources and Examples for Doing and Reading Research

How to Design and Evaluate Research in Education provides a comprehensive introduction to research that is brought to life through practical resources and examples for doing and reading research.

• Research Tips boxes provide practical suggestions for doing research.
• The Annotated Research Reports at the conclusion of Chapters 13–17 and 19–24 present students with research reports and author commentary on how the study authors have approached and supported their research.
• Research Exercises and Problems Sheets at the conclusion of Chapters 1–13 are tools for students to use when creating their own research projects.
• Using Excel boxes show how these software programs can be used to calculate various statistics.
• Chapter 24: Action Research details how classroom teachers can and should do research to improve their teaching.
• Chapter 25: Preparing Research Proposals and Reports walks the reader through proposal and report preparation.
• Resources on the Online Learning Center Web site (see listing below) provide students with a place to start when gathering research tools.

SUPPLEMENTS THAT SUPPORT STUDENT LEARNING
Online Learning Center Web Site at www.mhhe.com/fraenkel8e

The Online Learning Center Web site offers tools for study, practice, and application including:

Study Resources
• Multiple quizzes and flashcards for testing content knowledge
• Learn More About audio clips that provide additional explanation or examples of key concepts

Practice Resources
• Student Mastery Activities that provide students extra practice with specific concepts
• Data Analysis Examples and Exercises

Research Resources
• Statistics Program
• Correlation Coefficient Applet
• Chi Square Applet
• Research Wizard, a wizard version of the Problem Sheets
• Forms, including a Research Worksheet, Sample Consent Forms, Research Checklists, electronic versions of the Problem Sheets
• A Listing of Professional Journals
• Bibliography Builder, an electronic reference builder
• The McGraw-Hill Guide to Electronic Research

SUPPLEMENTS THAT SUPPORT INSTRUCTORS
Online Learning Center Web Site at www.mhhe.com/fraenkel8e

The Instructor’s portion of the Online Learning Center offers a number of useful resources for classroom instruction, including an Instructor’s Manual, Test Bank, Computerized Test Bank, chapter-by-chapter PowerPoint presentations, and additional resources.

CPS by eInstruction
Classroom Performance System is a wireless response system that gives you immediate feedback from every student in the class. These CPS questions are specific to How to Design and Evaluate Research in Education, 8/e. Contact your local sales representative for details about this resource.

ACKNOWLEDGMENTS

Directly and indirectly, many people have contributed to the preparation of this text. We will begin by acknowledging the students in our research classes, who, over the years, have taught us much. Also, we wish to thank the reviewers of this edition, whose generous comments have guided the preparation of this edition. They include:

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Jack R. Fraenkel
Norman E. Wallen
Helen H. Hyun
Welcome to How to Design and Evaluate Research in Education.

This comprehensive introduction to research methods was designed to present the basics of educational research in as interesting and understandable a way as possible. To accomplish this, we’ve created the following features for each chapter.

Opening Illustration

Each chapter opens with an illustrative depiction of a key concept that will be covered in the chapter.

Chapter Outline

Next, a chapter outline lists the topics to follow.

Interactive and Applied Learning Tools

This special feature lists the practice activities and resources related to the chapter that are available in the student supplements.

Chapter-Opening Example

The chapter text begins with a practical example—a dialogue between researchers or a peek into a classroom—related to the content to follow.

Objectives

Chapter objectives prepare the student for the chapter ahead.
Chaos Theory

The concept of chaos theory is often attributed to French mathematician Henri Poincaré, who first used the term in the late 19th century. However, it was not until the mid-20th century that the idea gained widespread recognition, with contributions from mathematicians and physicists such as Edward Lorenz, who is often credited with coining the term "chaos theory." The theory focuses on the study of systems that are highly sensitive to initial conditions, meaning that small changes in initial conditions can lead to vastly different outcomes. This sensitivity is often referred to as the "butterfly effect," suggesting that something as small as a butterfly flapping its wings in one part of the world could lead to a tornado in another. Chaos theory and related fields such as fractal geometry have found applications in a wide range of disciplines, from physics and biology to economics and meteorology.

More About Research

These boxes take a closer look at important topics in educational research. See a full listing of these boxes, starting on page xii.

Research Tips

These boxes provide practical pointers for doing research. See a full listing of these boxes on page xii.

CONTROVERSIES IN RESEARCH

These boxes highlight a controversy in research to provide you with a greater understanding of the issue. See a full listing of these boxes on page xiii.
In this article, the authors describe a mixed-methods study designed to explore perceived family support, acculturation, and life satisfaction among 266 Mexican American adolescents. Specifically, the authors conducted a thematic analysis of open-ended responses to a question about life satisfaction to understand participant perceptions of factors that contributed to their overall satisfaction with life. The authors also conducted hierarchical regression analyses to investigate the independent and interactive contributions of perceived family support from family and Mexican and Anglo acculturative orientations on life satisfaction. Convergence of mixed-methods findings demonstrated that perceived family support and Mexican orientation were significant predictors of life satisfaction in these adolescents. Implications, limitations, and directions for further research are discussed.

Psychologists have identified and studied a number of challenges faced by Latino youth (e.g., juvenile delinquency, gang activity, school dropout, alcohol and drug abuse), yet little scholarly time and energy have been spent on exploring how these adolescents successfully navigate their development into adulthood or how they experience well-being and identify and develop client strengths in theory, research, and practice (Copen et al., 2000; Walsh, 2001). This commitment to understanding the whole person, including internal and contextual assets and challenges, has been one hallmark of the field (Super, 1955; Tyler, 1973) and has influenced a variety of research on optimal human functioning (e.g., M. W. Sue & Constantine, 2000). More recent discussions in this area have underscored the importance of identifying and nurturing cultural values and strengths in people of color (e.g., family, religious faith, biculturalism), being cautious to acknowledge that strengths are not universal and may differ according to context or cultural background (Copen et al., 2000; Lopez et al., 2002; D. W. Sue & Constantine, 2003), and may be influenced by certain within-group differences such as acculturation level (Mero & Gamboa, 2003; Zane & Mal, 2003).

Authors respond to the growing need to explore strengths among Latino youth, the importance of investigating these resources and values within a cultural context is needed. Understanding how Latino adolescents experience well-being from their own perspectives and value points is integral, as theories from other cultural worldviews may not be applicable to their lives (Kurzban & Sherman, 2003; Lopez et al., 2002; D. W. Sue & Constantine, 2003). Furthermore, it is necessary to continue to test propositions about the role of certain Latino cultural values, such as the importance of family, in overall well-being. Given that many Latino adolescents today navigate bicultural contexts and adhere to Latino traditions and customs to differing degrees (Romero & Roberts, 2003), it is likely that the role family plays in adolescent well-being is complex and influenced by individual differences such as acculturation. In this study, we sought to explore the relationship between these variables by focusing specifically on perceived family support, life satisfaction, and acculturation among Mexican American youth.

In a study of Mexican American youth, familismo (familism) is the term used to describe the importance of extended family ties in Latino culture as well as the strong identification and attachment of individuals with their families (Yancey, Mazer, Betancourt, Liensy, & Chang, 1982). Familismo is unique to Latino culture and has been noted as an important value for other ethnic groups such as African Americans, Asian Americans, and American Indians (Espino, 1999; Mero & Gamboa, 2003). Nevertheless, it is considered a central aspect of Latino culture, and in some studies, it has been shown to be valued by Latino individuals more than by non-Latino Whites (Caine et al., 1987; Mino, 1993; Mead, 1994). In a study of familismo among Latino adolescents, Vazques Garcia et al. (2000) found that the length of time youth had been in the United States did not affect their adherence to the value of familismo. These results demonstrated that the longer adolescents
Main Points

Bulleted main points highlight the key concepts of the chapter.

HYPOTHESES
No hypotheses are stated. A theoretical hypothesis is clearly implied—i.e., there will be differences between the two groups.

SAMPLE
The two groups are convenience (and possibly voluntary) samples from the two nations. Each is described with respect to location, gender, age, and academic year. They consist only of business students, who may not be representative of all college students. Replication is hindered by the inscrutable nature of “sample.” Sample numbers (41) and (74) are acceptable.

INSTRUMENTATION
The questionnaire consists of yes-no questions (two found on brief scenario) to measure “attitudes” and “plane-goal rating scales to assess attitudes and beliefs about cheating. A total of 20 items, of which 21 are devised in the report. Neither reliability nor validity is mentioned. Because the initial true to compare groups on individual items, no summary scores were used. The authors refer to a clear form of cheating into meaningful results. Though substantively difficult, the procedure followed in the Kinsley study (see page 16) of asking the same question with different wording might have been used, at least, a subsample of students and items. Simultaneously, a comparison of the questionnaire with structure responses to the same content would have provided some evidence of validity.

The question of validity is confirmed by the lack of clear definitions. The items in Table 1 suggest that “instructor cheating” is taken to mean “teaching others cheating,” although the few scenario items define it as cheating. Student cheating. Attitudes and perceptions are combined in Table 2 as “beliefs,” which seem to include both opinions about the extent of cheating and self-reports as to what behaviors are acceptable—e.g., whether cheating is considered instructor responsibility. As such, the items appear to have content validity but not criterion validity, such as detecting required library readings. This does not invalidate the items used unless they are considered to represent all forms of cheating. Finally, the validity of the self-report items cannot be assumed, particularly in cross-cultural studies, where meanings may differ.

Chapter Review

The chapter ends with a listing of the review resources available for students on the Online Learning Center Web site at www.mhhe.com/fraenkel8e.
The research exercise explains how to fill in the Problem Sheet that follows.

### Problem Sheets

Individually, the problem sheets allow students to apply their understanding of the major concepts of each chapter. As a whole, they walk students through each step of the research process.

---

**For Discussion**

End-of-chapter questions are designed for in-class discussion.

**Key Terms**

Key terms are listed with page references.

**Research Exercise 13: Research Methodology**

Using Problem Sheet 13, describe in as much detail as you can the procedures of your study, including analysis of results—that is, what you intend to do, when, where, and how. Lastly, indicate any unresolved problems you see at this point in your planning.

---

**Research Exercises**

The research exercise explains how to fill in the Problem Sheet that follows.