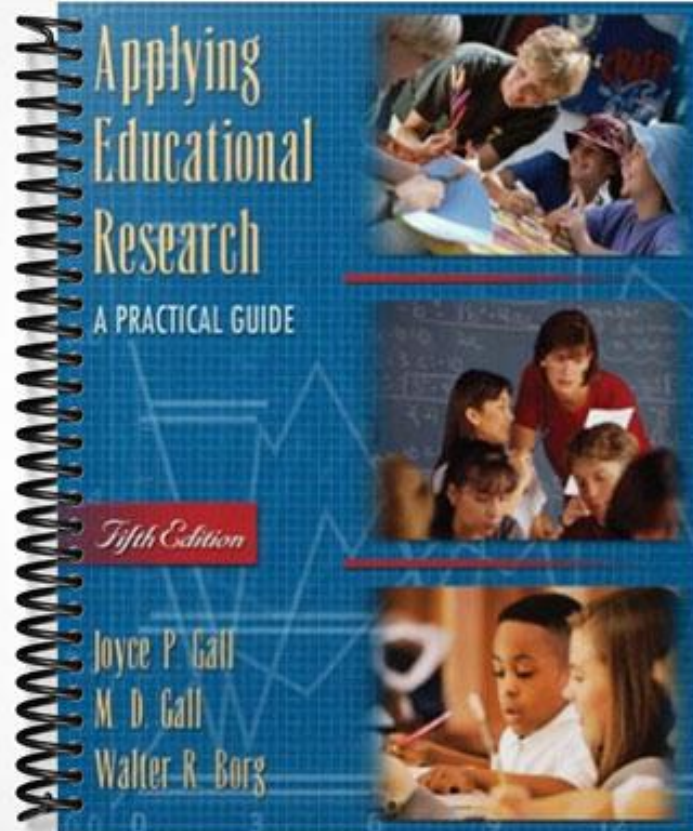


SOLUTIONS MANUAL



Instructor's Manual

for

Gall, Gall, and Borg

Applying Educational Research A Practical Guide

Fifth Edition

prepared by

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University of Oregon



Boston New York San Francisco
Mexico City Montreal Toronto London Madrid Munich Paris
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I SUGGESTIONS FOR DESIGN OF A COURSE USING *APPLYING EDUCATIONAL RESEARCH: AN INTRODUCTION AS THE PRIMARY COURSE TEXTBOOK*

A. OVERVIEW OF THE INSTRUCTOR'S MANUAL

This manual provides suggestions for designing a course based on the use of *Applying Educational Research: A Practical Guide* (5th edition) as the primary course textbook. Our suggestions are based on our own teaching experiences and those of many other instructors. They will help you design a course on applying educational research or conducting educational research for either undergraduate or graduate students, and that reflects your specific needs and teaching situation. Any subsequent reference to **the textbook** in this manual means *Applying Educational Research: A Practical Guide* (5th edition).

Your First Step: Preview the Textbook. If you are not already familiar with the contents and organization of the textbook, we suggest that you review it now. The discussion that follows assumes familiarity with it. For a quick overview, we suggest that you read:

1. The preface and the table of contents, so that you can see how the textbook is organized.
2. The introductions to each of the five parts of the textbook, so that you understand the purpose of each part and the chapters in it.
3. The vignettes and chapter objectives at the beginning of each chapter, which preview the content and intended student learning outcomes for the chapter. All the test items in Section II of this manual are keyed to those objectives.

B. DEVELOPING YOUR COURSE SYLLABUS

Providing students a detailed syllabus helps minimize missed assignments and time-consuming student requests for clarification. Below we provide a comprehensive list of syllabus elements and suggest the type of information that you might include for each element. Feel free to modify it and add other elements to design an appropriate syllabus for your situation.

Background Information. It is helpful to provide students the following information in writing:

1. Course prefix and title.
2. Course identifier. Your registrar's office or other administrative unit might have a unique identifier for your course.
3. Term and year that the course is being offered.
4. Date of syllabus. This information helps students determine how recently the syllabus was updated.
5. Meeting times of the course and of discussion sections, if any.
6. Instructor's name.
7. Instructor's office address.
8. Instructor's office hours.
9. Instructor's phone number.
10. Instructor's e-mail address.

Course Description. Provide a brief description of the course, including its overall goal, the major topics and their significance, what kinds of students it is intended for, and how the course relates to other courses in a program of study. Below is a possible statement of the course goal:

The goal of this course is to help masters students in education (a) learn how to use the methods and findings of educational research to address their practical needs and problems; and (b) complete a master's research project or thesis. These goals will be accomplished by (a) helping students develop skills to identify, interpret, evaluate, and apply the findings of individual research studies and research reviews, and (c) providing a foundation in the design and conduct of a literature review and research project related to one's specific interests.

Course Prerequisites. List any prerequisites that students must satisfy in order to enroll in the course.

These might include:

- a bachelor's degree.
- being enrolled in a particular program of studies.
- experience working in the field of education or a related field.
- having completed certain courses (for example, an introductory course on statistics).

Because quantitative methods of research involve interpretation of statistical results, you might require knowledge of statistics as a prerequisite or as a desirable condition of enrollment.

Course Objectives. The following is a possible approach to stating the objectives for your course.

By taking this course, students will develop:

1. an understanding of the nature of educational research and how it relates to educational practice.
2. an understanding of the different purposes and assumptions of quantitative and qualitative paradigms of educational research.
3. skill in conducting a review of the literature on a specific educational topic.
4. an understanding of the basic procedures involved in research sampling, measurement, and design.
5. skill in comprehending, interpreting, evaluating, and applying the findings of published research articles and other research reports.
6. the inclination to draw upon research findings when making educational decisions.
7. skill in using action research and evaluation research to investigate local educational problems.

Course Readings. Thirteen articles, each a published report of original research or a review of research, are reprinted in their entirety in the textbook. Each article is accompanied by original comments prepared for this textbook by the researchers, and footnotes written by the authors of the textbook to explain technical terms. These articles are representative of recent educational research and were selected with the goal of giving your students ample practice in reading and interpreting the research literature.

If you have published a report of your own research or a research review, we recommend that you include it as a reading assignment. You can help students understand the human side of the research enterprise by sharing your experience in doing your research project in class. Similarly, if you plan to include presentations by guest speakers (see section C below), we suggest that you have students read a paper by each speaker that gives a tangible example of his or her experience in conducting or reviewing educational research.

In many courses based on this textbook, students are required to write a major paper that is the main basis of their course grade. If this is your plan, we recommend that you give students specific examples of well-written papers that satisfy the course requirements.

In each course we teach that requires such a paper, we note those student papers that were particularly interesting and well designed. We then ask permission from the authors to make copies available to students in future courses, as good examples of papers that they can read before preparing their own paper. So far, all the students from whom we have requested permission have agreed to allow us to copy their papers. We suggest that you delete the author's name and any other personal identifying information from a paper before making it available to other students. Research plays an increasing part in our daily lives, as evidenced by the frequent accounts of research findings in newspapers and magazines. You might come across an account that pertains to educational research--for example, a national summary of students' test scores on a standardized measure of reading achievement, or a public survey of perceived problems in education. Also, you might find articles about research in other fields--for example, an experiment comparing a traditional medical treatment with a new treatment for a common disease, or results of a national poll of voters' preferences for candidates in an upcoming election. If you consider such reports relevant to what you want your students to learn, by all means include them as readings, and design appropriate class activities or assignments related to them.

Course Activities. Describe the major activities that will occur during class time (e.g., lectures, presentations by experts, discussion), during discussion groups (e.g., discuss course readings, practice skills), and during out-of-class study (e.g., reading, field observations, studying for quizzes, writing papers).

Grading Policy. Explain your basis for awarding letter grades or pass/no pass. Example: "Students who earn between 370 and 400 points in the course will receive an A."

Dual Course Number. Some universities allow undergraduate and graduate students to take the same course, usually under different course prefix numbers. If this option is available for your course, you might be required to include a statement of how the course requirements differ for students who will take it at the undergraduate level and students who will take it at the graduate level.

Attendance Policy. The following is a sample statement of an attendance policy:

- Attendance at class and discussion groups is required.
- To ensure a positive learning environment for all students in the class, it is inappropriate to:
 - a. arrive late to class.
 - b. talk privately with other students while the class is in session.
 - c. leave the class before the session is ended.
- You are expected to participate in all class activities and discussions, and to come to class thoroughly prepared, meaning that you:
 - a. have all materials needed for the class, discussion group, or test before entering the classroom.
 - b. have read the reading assignments sufficiently to discuss ideas in them, relate current information to previous content covered in the course, and apply the information to problem situations.
 - c. are able to formulate questions to ask guest presenters and to pose for the discussion groups.

Absence Policy. The following is a sample statement of an absence policy:

Students must contact the instructor in case of illness or emergencies that preclude attending class sessions or taking quizzes as scheduled. Messages can be left on the instructor's voice mail or e-mail at any time of the day or night prior to class. If no prior arrangements have been made prior to class time, the absence will be unexcused.

If you are unable to take a quiz or exam due to a personal and/or family emergency, you should contact your discussion leader as soon as possible. On a case-by-case basis, the instructor will determine whether the emergency qualifies as an excused absence.

Quizzes and Exams. Describe the scoring system, types of items that will be used, and dates on which each quiz or exam will occur.

Papers and Other Homework Assignments. Describe each paper's requirements, scoring criteria, and due date.

Documented Disability. Some colleges and universities require that course syllabi include a disability statement. The following is an example of such a statement:

If you have a documented disability and anticipate needing accommodations in this course, please make an appointment with the instructor during the first week of the term. Please request that the Office for Students with Disabilities send a letter verifying your disability. The current counselor is _____ at _____. Disabilities may include (but are not limited to) neurological impairment, orthopedic impairment, traumatic brain injury, visual impairment, chronic medical conditions, emotional/psychological disabilities, hearing impairment, and learning disabilities.

Course Incompletes. Describe the consequences for students if they fail to complete the course by the end of the term that it is offered.

Academic Misconduct Policy. Some colleges and universities require that course syllabi include their academic misconduct policy to ensure that students are aware of the consequences of such infractions as cheating and plagiarism.

Schedule of Topics and Assignments. It is helpful to include a detailed statement about each class session so that students know what the session is about and what they need to do beforehand. The following are a few illustrative statements:

Class 4 (Thursday, January 14): Using preliminary sources in a literature review.
Guest presenter: Tina Ortiz, librarian.
Read beforehand: Chapter 3 of textbook.
Quiz 1: Covers chapters 1 and 2 of textbook.

Class 9 (Monday, February 1): Experimental research.
Read beforehand: Chapter 9 of textbook.
First paper (a literature review) is due.

C. SUGGESTIONS FOR CLASS ACTIVITIES

Course Introduction. We suggest that you briefly tell students in the first session about your background, your experience in the field of educational research, and your current work.

We recommend that you have students introduce themselves briefly in similar fashion. If the class is large, you can ask students to form pairs, speak for a few minutes with their partner, and then introduce their partner. You also can have students form small groups of 4-6 and have one person in each group introduce the other group members.

We suggest that you hand out the syllabus and say a few words about the purpose of the course, major topics to be covered, dates of quizzes or exams, due dates for written assignments, and the schedule for guest presenters.

We find it helpful to have complete information about students, both to tailor the course to their needs and as an aid for getting hold of them outside of class. We suggest putting on the board or an overhead projector the following items (modified as desired) and giving students a blank 3 X 5 card on which to write the information requested:

1. Your full name and nickname.
2. Address (e-mail and postal).
3. Phone number(s)—home, work, and cell.
4. Best times to be called.
5. Degree program you are in.
6. Advisor/committee chairman.
7. Current/most recent position in education.
8. Number of courses relating to research you've taken.
9. Number of courses relating to statistics you've taken.
10. Self-rating of your background in research on a 5-point scale (1 = minimal, 5 = extensive).
11. Any special concerns/things you want the instructor to know.

To aid students in working together during the course and in future networking, we have found it useful to prepare a class list with students' e-mail or postal address, phone number, major, and other pertinent information and distribute it as a handout. Before doing so, you should ask if anyone objects to being on the list, and honor the preferences of any students who do not wish to be included.

During the first class, students have many procedural questions. First deal with questions that apply to the class in general. Then you can have other students read the syllabus or get in small discussion groups to continue introductions while you handle needs of individual students.

Class Presentations. We recommend that you use some class time to discuss important concepts and principles presented in the textbook. You can give a brief **preview**, if desired, before students have been assigned to read a particular chapter. We have found it is even more helpful to **review** material in class after students have read the relevant chapter(s). As the course progresses, you can help students by providing **summaries** of the content that you have covered thus far and of what lies ahead.

If you have conducted educational research, you might wish to make a presentation on a specific aspect of it, for example, a recent research investigation in which you participated. Or you might describe the review of research literature that you carried out for your master's thesis or your doctoral dissertation, and the main insights you gained. Another possibility is to invite researchers to come in to talk about particular studies that they have conducted or are in the process of conducting.

Students tend to have many questions about research in general, and about the particular sources that you will be expecting them to read. We suggest that you periodically ask if there are any questions about the topic being addressed, and conduct brief question-and-answer sessions. If your class includes students with special expertise in research or the topic being considered (for example, whole language instruction, teacher morale, special-needs students), you might ask them to share their views.

Small-Group Work. Many students like to participate in small-group activities if they are sufficiently focused, clear, and engaging. We have found it helpful to form permanent small groups early in the course so that students can quickly get into their groups when asked to do so. If the small groups are permanent, the students in each group achieve a comfort level with each other that enables them to get quickly to work when assigned a task. A group size of four to six students generally works well.

Small groups are particularly useful for reviewing the ten original empirical research articles (that is, primary sources) that are reprinted in Chapters 7 through 15 of the textbook. Prior to the class session when students will be expected to have read a particular article, you might announce that all of them are to read it, but that in class the members of each small group will focus on a particular aspect of the article. During the next session, give the small groups time to share and synthesize what they learned. Then ask a reporter from each small group to summarize the group's ideas.

If the article involves quantitative research, you might ask each small group to consider a particular question or set of questions included in Appendix 4 of the textbook (Questions for Evaluating Quantitative Research Reports). Similarly, if the article involves qualitative research, you can ask the small groups to respond to the questions included in Appendix 5 of the textbook (Questions for Evaluating Qualitative Research Reports). This type of activity helps students consider the study's strengths and weaknesses and its contribution to the knowledge base underlying educational practice. It also gives you an opportunity to check students' comprehension of the article.

Small groups can also be used for other purposes. For example, you can have students share their ideas for final paper projects and give feedback to each other. Also, you can ask groups to discuss questions and issues that arise during the course, for example: "What is the relative value of quantitative and qualitative research?" "What role should evaluation research play in education?" "Why does research appear to play a larger role in professions such as medicine and engineering than in education?"

Other Class Activities. Above we suggested activities for the first class session and activities that can be used throughout the course. In addition, Section II of this manual contains chapter-specific teaching activities that you can use in teaching your course.

A general class activity we have found effective is to pose a brief question or task to which students can respond in a few minutes on a 3 x 5 index card. (We ask students to purchase a sufficient supply of such cards so that they have one for each class session.) We give students extra-credit points for their written responses. Also, we read selected responses, with anonymity, during the next class session. Students generally enjoy hearing what their classmates have to say. Examples of questions and tasks are: "What did you hear today that struck you as particularly interesting?" "What is your opinion about the research methods that we covered today?" "Describe one way that you could apply the research findings that we discussed today to your educational practice."

Visit to a Research Center. We recommend the following activity to enhance students' understanding of the research process and its applications. Educational research is conducted in many locations on a regular basis. Therefore, we suggest that you identify a research facility in your area and arrange for students to visit it. In Eugene, for example, research and assessment related to students with disabilities is carried out at the University of Oregon by researchers and information specialists in the Behavioral Research and Teaching center. There also are many independent research laboratories, such as the Oregon Institute for Research.

You might wish to schedule the visit right before or after a class presentation by a researcher from the research center to be visited. Arrange to observe an interesting activity but one that will not be disrupted by the presence of your students as observers. For example, your class might be able to observe a session in which individuals are being trained to carry out observations or interviews of students. An appropriate written assignment following the visit would be a brief report on what they learned from their visit about the topic or problem with which the center deals, and what they discovered about the research process.

We suggest also that early in the term you give your students a list of the research centers in your area, so that as part of their information search for their final project paper they can contact experts at centers relevant to their topic.

Course Evaluation. To help us plan future offerings of a course, we find it helpful to get written, anonymous feedback from students at the end of the course. Below is a list of questions we have used for this purpose. Some institutions provide numerical rating forms, but generally we find open-ended questions like the following more useful.

Your instructor would appreciate your frank and honest response to the following questions:

1. Identify what you consider the most positive aspect(s) of the course.
2. Identify what you consider the aspect(s) of the course that you found least satisfying.
3. In future offerings of the course, what do you suggest be done differently with respect to course readings, use of class time, assignments, tests, or other aspects?
4. Any other comments?

D. SUGGESTIONS FOR HOMEWORK ASSIGNMENTS

Application Problems. Section II of this manual includes application problems specific to each chapter that require students to apply what they learned. You can review these problems and decide whether you wish to include them on tests or assign them as graded homework assignments. Although the application problems typically do not have a single correct answer, a sample answer is provided in order to provide a model of what constitutes a sufficient level of detail and adequacy in addressing the problem.

Critiques of Primary Sources. A major goal of the textbook is to help students learn how to interpret and critique primary sources related to their interests and the problems they encounter in their work settings. If this is a goal of your course, you can create homework assignments in which students write a critique of a primary source. If the primary source to be critiqued involves quantitative research, you can remind students to check the questions in Appendix 4 of the textbook (Questions for Evaluating Quantitative Research Reports) as a guide. Similarly, if the primary source to be critiqued involves qualitative research, you can remind students to check the questions in Appendix 5 of the textbook (Questions for Evaluating Qualitative Research Reports). Below we suggest three options for selecting one or more articles for students to critique.

Option 1. Critique of one of the articles reprinted in the textbook. This option is probably the most convenient, because the reprinted articles are readily accessible. They also include researchers' comments and footnotes written by the textbook authors, which should be helpful to students in grasping and critiquing an article. You can give students a choice of critiquing any article from a chapter that has been covered during the course.

Option 2. Critique of one primary source other than those reprinted in the textbook. You might wish to reserve the articles in the textbook for group activities conducted in class. If so, you can assign another primary source for all students to critique independently. Be sure to select an article that reports original, empirical research. See Section III of the Instructor's Manual for examples of articles available in the Content Select database. You can select one of these articles, or another article of your choice that is available online, so that students can access it easily. Otherwise you will need to photocopy the assigned article and provide a copy for each student to read.

Option 3. Critique of a primary source of the student's choice. This option may be the least feasible, because you will need to read the report selected by each student in order to evaluate the student's critique of it. However, it has the advantage of giving students responsibility for selecting a specific report of personal interest. If you choose this option you should first give students an overview of the Content Select database. Review in class how to select articles from the database relevant to each research method, how to determine if an article is a primary source, and how to obtain the full text of an article. We suggest that you also give students the option to examine specific scholarly research journals relevant to education. In this case, we recommend that you show them how to determine whether the journal's reports are available online through your institution's library, and explain where the hard-copy volumes of journals and the recent editions of journals that have not yet been bound are stored in the library. You might wish to recommend particular journals that contain many reports of original research, such as the *American Educational Research Journal*, *Journal of Educational Research*, *Journal of Experimental Education*, *Educational and Psychological Measurement*, and *Journal of Educational Psychology*.

Final Paper Project. You can consider asking students to synthesize what they have learned in your course by conducting a major project and writing a report about it. Below we present three suggested options for this assignment. They correspond to three research-based approaches to making professional decisions that educators can use to supplement expert opinion and personal experience, namely: (1) reviews of the research literature, (2) evaluation research, and (3) action research.

We suggest that you give students a list of guidelines for preparing their papers. The following guidelines for preparing a paper have proven very helpful in obtaining more manageable, readable papers from our students.

Paper Preparation Guidelines

1. Type double space or 1-1/2 space, with at least a one-inch margin on the right and left sides and at the top and bottom of the page.
2. **Put the page number on every page** (including appendices or attachments, if any), **at the right side, at least 3/4 inch from the top of the page.**
3. Use a typeface big enough to read easily (12 point is standard).
4. Type your name and the date, course title, and a brief, descriptive title of your paper on a cover page, or at the top of the first page.
5. Include a reference list giving sources for assertions, quotes, data, or materials you use that originated elsewhere. Use a consistent format, either the APA reference style that is described in the *Publication Manual* of the American Psychological Association or the format used in one of the articles reprinted in the textbook.
6. Use a staple or clamp on the upper left corner to hold the paper together. Do not use clear plastic folders with plastic strip spines.
7. If you want your project paper returned in a confidential manner, submit it in an envelope.
8. If you want your paper mailed to you, submit it in a stamped, self-addressed envelope.

Option 1. Literature review. The purpose of the paper is to use the findings of educational research to answer a question or solve a problem concerning a topic of personal interest and concern. You will review primary and secondary sources to find out what is known about the question or problem. You will draw conclusions, that is, give your best answer/solution based on your review and experience. Writing the paper will give you practice in reviewing the research literature. Your paper should be approximately 10-15 pages, double-spaced with one-inch margins.

The description in Chapter 2 of the textbook (Conducting a Review of the Research Literature) provides useful information for writing your paper. However, the following guidelines for writing a project paper should be your main guide, because they address both the literature search **process** you used and the **outcome** of your search. The model papers on reserve from last term's class illustrate the use of these guidelines.

1. Paper topic: Define a **question or problem** in education that interests you, and that you are willing to investigate by reading related research. We recommend that you focus the topic of your question or problem, to increase your chances of finding relevant research literature. Indicate what personal experience led you to define your question or problem as you did. Indicate how, and why, you redefined your question or problem, if at all, during the course of writing your paper.
2. Develop a **search strategy** for identifying relevant research literature. Summarize your strategy in the paper. For example: Did you speak to any **experts** about the question or problem, and if so, how did that affect your search? What **research reviews** or **secondary sources** (e.g., a theme issue of a journal, meta-analysis, encyclopedia article) did you read in order to get an overall understanding of your problem or question? What **preliminary sources** (e.g., ERIC, *PsycINFO*) did you use to identify relevant primary sources? What **descriptors** did you use, and what **years** did your search cover? What **criteria** did you use to select the particular references you cited in your paper?
3. Write an analysis and critique of one **primary source** that you found especially useful in answering the question or solving the problem that you formulated. **Include a photocopy of that article as an appendix to your paper**, so that we can see firsthand how you reviewed and applied the research. In the body of your paper, cite at least **ten references** that represent primary sources reporting either qualitative or quantitative research. Explain the research method and findings of each of these references in sufficient detail to demonstrate that you actually read and interpreted each primary source. In other words, review and apply at least ten primary sources in your paper, but include a photocopy of only one in your paper appendix.
4. Include a detailed statement of your **conclusions**, that is, how you would answer the question, or what you would recommend to solve the problem that you formulated, based on the research you cited. Avoid relying on what experts or researchers said; we're interested in **your** views and the basis for them. Explain how the research you read affected your perceptions of the question or problem that you investigated.
5. Indicate how you might **apply** your conclusions or recommendations, (e.g., sharing them with colleagues, continuing to investigate the problem or question by taking courses and further reading, writing a grant proposal, modifying your classroom procedures).
6. Include a brief statement of your **insights** regarding the literature review process, including how it might have helped you make educational decisions about topics of personal concern and about its limitations for this purpose. If appropriate, describe any **insights or shifts** in your thinking about educational research that occurred in the process of writing the paper.
7. To prepare a copy of your paper for submission, use the paper preparation guidelines provided by your instructor.

Our directions for this assignment also include the following criteria for grading it:

1. The question/problem is clear, specific, worthy of study.
2. The approach to identifying relevant literature is comprehensive and clear.
3. The literature is reviewed clearly and in detail.
4. The ideas are well organized and presented.
5. The paper states a conclusion and indicates how the student will apply what was learned.
6. The analysis of primary sources shows an understanding of relevant research concepts and procedures.
7. The student included meaningful personal insights about using educational research to make professional decisions.

Option 2. Evaluation research project. One way to help students develop an understanding of educational research is to have them collect and analyze their own evaluative data. If you take this approach, you need to make sure that your students have access to situations in which they can collect data. If your students are currently employed as educators, they are likely to have this type of access. It is also likely that they can identify some aspect of their work environment to evaluate.

If you wish to have your students conduct evaluation research as a course project, assign Chapter 14 of the textbook to be read early in the term. This chapter presents the most commonly used quantitative and qualitative approaches to evaluation research. Students also should read Chapter 5 and Chapter 10 of the textbook to learn the main features of quantitative and qualitative research, respectively.

You might consider having your students complete several preliminary assignments to check that they are on the right track before proceeding to collect data, analyze the data, and write their project paper. For example, you might ask them to write a brief paper (one page should be sufficient) in which they identify the aspect of their work situation that they wish to evaluate. One section of Chapter 14 of the textbook, Aspects of Educational Practice Investigated by Evaluators, is particularly helpful for this assignment. Another preliminary assignment might be a brief paper in which students describe the quantitative or qualitative methodology and evaluation model that they plan to use in their evaluation study. The section of Chapter 14 of the textbook on Common Forms of Evaluation Research in Education summarizes many commonly used evaluation models.

If students work from a prescribed outline, it is likely to be easier for students to write their project paper and for you to grade it. You can generate such an outline by referring to the section, Organization of a Quantitative Research Report, in Chapter 5 of the textbook. This report organization should be suitable irrespective of whether the student uses quantitative or qualitative methods of data collection and analysis.

Students generally find it helpful to know in advance the criteria by which their project will be evaluated. Most of the criteria stated above for evaluating a literature review project are also applicable to an evaluation research project. In addition, you can draw on the section, Criteria for Judging an Educational Evaluation Research Study, in Chapter 14 of the textbook.

Option 3. Action research project. Action research is increasingly being used in the professional development of educators and to make research personally meaningful to education practitioners. For these reasons, an action research project is an excellent option for a final project paper for the course. Because action research is designed to improve practitioners' performance, it is important that students choosing this option have a suitable workplace in which they can reflect on their professional practice and on ways to improve it. It is also critical that they be able to collect personally meaningful data in this workplace.

If you wish to have your students conduct action research as a way to synthesize and apply what they have learned in your course, assign Chapter 15 of the textbook for students to read early in the term. They also should read Chapter 5 and Chapter 10 of the textbook to learn the main features of quantitative and qualitative research, respectively.

As we explained above with respect to the evaluation research project, you should consider having your students complete several preliminary assignments before proceeding with data collection. For example, they might write a brief paper in which they identify a problem that they wish to solve or a practice that they wish to try. As they learn about methods of research by reading other chapters in the textbook, they might write another brief paper in which they describe their planned approach to the design of their action research and to the collection and analysis of data.

Chapter 15 of the textbook lays out a seven-step process of action research and gives numerous examples of action research projects. You can allow students to select their own steps, or you might prescribe a set of steps to follow. They can organize their final project paper based on the steps of action research they followed.

Action research is often done collaboratively. Therefore, you might wish to allow your students to develop collaborative action research projects in which they jointly develop a problem to investigate and cooperate in collecting data. In this arrangement, it is still possible, and recommended, for each student to write an individual paper as the culminating assignment for the course.

As with the other final paper project options, you should consider developing and sharing criteria by which the students' papers on action research will be judged. Some of the above-stated criteria for evaluating a literature review project paper are also applicable to an action research project. Criteria specific to action research can be generated from the sections, Facilitating Conditions for Action Research, and Increasing the Validity of Action Research, in Chapter 15 of the textbook.

E. SUGGESTIONS FOR TESTS

Scheduling Tests. We find that a final exam, in addition to a final project paper, is often overly demanding for the types of students who are enrolled in courses based on the textbook. Therefore, we recommend instead either a single midterm exam, or the administration of periodic quizzes. You might consider giving students permission to bring one page of notes into the quizzes or midterm exam with them. This option often generates a great deal of note taking and study group activity to prepare for the tests.

Using the Test Item File. The test items in Section II of this manual include both closed-form (multiple-choice, matching, and true/false) and open-form (short-answer) items keyed to the objectives for each chapter of the textbook. For closed-form items, the answer is given below each item. For open-form (short-answer) items, a suggested answer is given below each item, but other answers might be acceptable in some cases. The test items serve at least two purposes. First, you can give your students selected items, either orally in class or as written handouts, to help them practice the concepts and procedures being covered in the course and to self-test themselves as the course progresses. Second, you can use the test items, along with others that you write, to design quizzes and exams for assessing student mastery and evaluating individual performance. You may also wish to include some of the self-check test items (at the end of each chapter of the textbook) in your quizzes and exams.

In the test item file the items for each chapter begin on a separate page and are organized by the objective to which they relate. When you turn to the Test Items for Chapter 1, for example, you will first see Objective 1, written just as it appears in the textbook, followed by test items related to Objective 1. For each chapter objective, the closed-form items are presented first, followed by the open-form items. After the test items for the last chapter objective you will find the application problems and the teaching activities for that chapter.

F. SUGGESTIONS FOR USING THE SAMPLE ARTICLES FROM CONTENT SELECT DATABASE RELEVANT TO EACH RESEARCH METHOD

New to this edition of the Instructor's Manual is Section III, which lists three sample articles from the Content Select database relevant to each research method covered in the textbook. This database is part of the Research Navigator website and can be accessed by instructors and students who use the textbook as part of a college or university course. Instructors can assign some of these sample articles to students to read as additional examples of research studies available online, or they can use them as a starting point for doing their own search of Content Select for articles of interest.

G. CONCLUSION

Authors' Commitment. We are committed to a successful teaching-learning experience for every instructor and every student who comes into contact with our textbook, *Applying Educational Research: An Introduction* or with this Instructor's Manual. Please let us know if we can provide any additional help as you read and apply these materials. We welcome your questions or comments at any time, including any suggestions for revision of, or additions to, the textbook or Instructor's Manual.

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1. II TEST ITEMS, APPLICATION PROBLEMS, AND TEACHING ACTIVITIES FOR EACH CHAPTER

**CHAPTER 1
USING RESEARCH TO IMPROVE EDUCATIONAL PRACTICE**

TEST ITEMS FOR CHAPTER 1

Chapter 1, Objective 1. Define research and explain its role in professional work.

1. A researcher hypothesizes that students identified as having good writing skills will receive higher scores on a measure of verbal aptitude than students identified as having poor writing skills. This is an example of using research to _____ behavior.
 - a. describe
 - b. predict
 - c. control
 - d. manipulate

Answer: b

2. Evaluating a new approach to teaching reading by trying it out in one's own classroom and collecting data on its effectiveness is an example of using research to generate
 - a. descriptions.
 - b. predictions.
 - c. interventions.
 - d. explanations.

Answer: c

3. Define and explain the purpose of educational research.

Answer:

The systematic collection and analysis of information, for the purpose of developing valid, generalizable descriptions, predictions, interventions, or explanations relevant to various aspects of education.

Chapter 1, Objective 2. Explain how basic, applied, and action research each contribute to practice.

4. Two middle school teachers give their students a vocabulary test before and after trying a new instructional method designed to expand students' working vocabulary, and measure each students' gain from pretest to posttest. Based on the positive pretest-posttest gains, they decide to incorporate the new method in all their classes. This example illustrates the use of _____ in making a practical decision.
 - a. basic research
 - b. applied research
 - c. action research
 - d. personal opinion

Answer: c

5. Compared to basic research, applied research generally
 - a. contributes more directly to the development of theory.
 - b. involves exploration of cause-and-effect relationships.
 - c. is carried out by education practitioners rather than by researchers.
 - d. focuses on direct improvement of practice.

Answer: d

6. Explain the purpose of (a) basic research and (b) applied research, and give an example of how each might contribute to educational practice.

Answer:

- a. Basic research is designed to increase understanding of the basic processes and structures that underlie observed behavior. For example, researchers have sought to examine the biological and psychological bases of attention deficit hyperactivity disorder (ADHD) among students.
- b. Applied research is designed to develop and test predictions and interventions that can be used directly to improve practice. For example, educational researchers have developed aptitude tests that predict academic success in graduate-level educational programs to prepare students for careers in professions such as medicine and law.

Chapter 1, Objective 3. Explain how an awareness of research findings and methods can benefit education practitioners.

7. The most likely way in which research can benefit educational practice is by
 - a. producing findings that are value-free.
 - b. broadening practitioners' thinking about possible solutions to problems.
 - c. identifying desirable changes to practice that can be made quickly.
 - d. eliminating intuition as a basis for decision making.

Answer: b

8. Why is personal opinion usually not a sufficient basis for an important educational decision?

Answer (any 1 OK):

1. It is based primarily on direct experience that is limited in scope.
2. It is subject to errors of recall or personal biases.

Chapter 1, Objective 4. Describe several ways in which practitioners in education can collaborate with researchers.

9. Filling out a questionnaire concerning one's use of computers in instruction illustrates how an education practitioner can collaborate with researchers by
 - a. being a research participant.
 - b. participating in program evaluation.
 - c. influencing policy agendas.
 - d. conducting action research.

Answer: a

10. How do (a) researchers and (b) practitioners differ with respect to their orientation to the quest for knowledge?

Answer:

- a. Researchers' main interest in knowledge is scientific; when confronted with a problem, they seek to explore and discover the nature of the problem, no matter how long that might take. Researchers thus are oriented to formal basic or applied research.
- b. Practitioners' main interest in knowledge is clinical; when confronted with a problem, they seek information that will allow them to solve it, usually under time pressure. Practitioners thus are oriented to action research, or to nonresearch-based methods of obtaining knowledge to guide their decisions.

11. Describe one way that education practitioners might collaborate with researchers, and a benefit to practitioners in doing so.

Answer (any 1 OK):

1. Serving as research participants: Practitioners might obtain new materials or develop new skills that might be useful in their practice.
2. Conducting a joint research project: Practitioners would develop research skills that they could use in the future to collect information to help improve their practice.
3. Obtaining consultation for an action research project: Practitioners might receive professional-development credit for carrying out action research with guidance from representatives of a research institution.
4. Evaluating a program that is in operation within the practitioners' work site: Practitioners would obtain information that is useful in deciding whether to continue, discontinue, or modify the program.

Chapter 1, Objective 5. Describe the key characteristics of research that differentiate it from other forms of inquiry.

12. Probably the main effect of postmodernism on educational research has been to
- a. demonstrate the value of social science methods of inquiry compared to other methods.
 - b. demonstrate the superiority of other methods of inquiry compared to social science methods.
 - c. greatly increase the level of federal funding available for research using methods of inquiry other than those of social science.
 - d. cause social science researchers to clarify their claims concerning the authority of social science methods of inquiry compared to other methods.

Answer: d

13. Match each of the following examples of a research procedure with the characteristic of research that it illustrates.

- ___ 1. After conducting classroom observations of students' competitive behaviors, the two researchers calculated the percentage of agreement between their behavioral ratings.
- ___ 2. A researcher who read a report of an experiment on the effectiveness of mentoring for new teachers now is conducting the same experiment in a different group of school districts.
- ___ 3. Reviewers of a prospective journal article receive copies of the article from which the names or other identifying information of the article authors have been removed.
- ___ 4. The data obtained in the research study failed to support the hypothesis that female students would have more positive attitudes toward a class designed to decrease math anxiety than male students. The researchers concluded that the hypothesis had been disproved.
 - a. Creation of concepts and procedures that are shared and publicly accessible
 - b. Replicability of findings
 - c. Refutability of knowledge claims
 - d. Control for researcher errors and biases

Answer: 1. d 2. b 3. a 4. c

Chapter 1, Objective 6. Describe how quantitative researchers and qualitative researchers differ in their views about the nature of knowledge, and how that difference affects their approach to data collection and analysis.

14. If a team of qualitative researchers wanted to discover how to improve teachers' questioning strategies, they would most likely

- a. intensely study a few teachers who vary in their questioning strategies.
- b. intensely study a large sample of teachers who vary in their questioning strategies.
- c. record all questions asked by a group of teachers and compute the percentage of lower-cognitive questions.
- d. record all questions asked by a group of teachers and have a panel of experts rate the quality of the questions on a five-point scale.

Answer: a

15. Both quantitative and qualitative researchers

- a. subscribe to the same view about the nature of knowledge.
- b. tend to study samples that represent populations.
- c. collect data to represent the social environment.
- d. analyze social reality into variables.

Answer: c

16. Triangulation of data sources and calculation of inter-observer agreement both have the purpose of

- a. reducing researcher errors and bias.
- b. proving knowledge claims.
- c. enabling comparisons of quantitative and qualitative data.
- d. representing diverse social realities in a research study.

Answer: a

17. Describe two epistemological beliefs that guide quantitative research.

Answer (any 2 OK):

1. Social reality exists as an objective reality, apart from the observer.
2. Social reality is relatively constant across time and settings.
3. Social reality is best studied by defining quantifiable variables that can be studied either in isolation or in combination.
4. By using standardized sampling techniques, researchers can determine precisely the extent to which findings obtained for a sample can be generalized to the population from which the sample was drawn.
5. In order to reduce researcher error and bias, researchers should adopt an objective, detached stance toward the research participants and setting.

(Other answers might be acceptable; see Table 1.1 on p. 15 of the text.)

18. Describe two epistemological beliefs that guide qualitative research.

Answer (any 2 OK):

1. Social reality is constructed by the participants in it.
2. Social reality is continuously constructed in local situations.
3. Social reality is best studied by making holistic observations of the total context within which social action occurs.
4. By investigating other similar cases, researchers can generalize case findings to those cases.
5. In order to reduce researcher error and bias, researchers should become personally involved with research participants and clarify their own perspectives and biases relevant to the research.

(Other answers might be acceptable; see Table 1.1 on p. 15 of the text.)

Chapter 1, Objective 7. Understand the elements that need to be covered in preparing a research proposal.

19. Describing the characteristics of the population or phenomenon that you plan to study should be included in the _____ section of your research proposal.

- a. literature review
- b. sampling
- c. variables and measures
- d. data analysis

Answer: b

20. In completing the section of a research proposal that concerns the purpose of the study it is important to describe

- a. how your study builds on previous research.
- b. the type of research design to be used.
- c. procedures to be used to gain the cooperation of research participants.
- d. all of the above.

Answer: a

21. Describe and give one example of something that should be covered under any four of the eight elements that the text authors indicate a research proposal should include.

Answer (any 4 elements, and any one example for each element, OK):

1. Purpose of study: (a) statement of purpose; (b) how the study builds on previous research; (c) how the study will contribute to knowledge about education; (d) research questions or hypotheses.
2. Literature review: (a) list of descriptors; (b) preliminary and secondary sources; (c) basis for selection of sources.
3. Research design: (a) type of research method to be used; (b) internal validity concerns; (c) generalizability concerns.
4. Sampling: (a) characteristics of the population or phenomenon that will be studied; (b) procedures for selecting a sample or cases that represent the population or phenomenon; (c) sample size and subgroups.
5. Variables and measures: (a) a list of the variables to be studied and how they will be measured; (b) how measurement concerns involving validity will be addressed; (c) how measurement concerns involving reliability will be addressed.
6. Data analysis: (a) the descriptive statistical techniques to be used; (b) the inferential statistical techniques to be used; (c) the qualitative analysis techniques to be used.
7. Ethics and human relations: (a) possible threats posed to research participants by the study; (b) strategies to be used to protect research participants from possible threats; (c) procedures for gaining cooperation of research participants.
8. Timeline: (a) the major steps of the study; (b) the date by which each major step will be completed.

APPLICATION PROBLEMS FOR CHAPTER 1

Problem 1. Educational researchers are interested in identifying ways to reduce students' test anxiety. Describe a research question that a quantitative researcher might define and one that a qualitative researcher might define to guide a literature search on this problem.

Sample answer:

Quantitative researcher (**any 1 OK**):

1. Are female math students significantly different from male math students in their level of test anxiety?
2. What is the relative cost-effectiveness of different interventions for reducing test anxiety?
3. Which measure of test anxiety best predicts test anxiety among high school students?

Qualitative researcher (**any 1 OK**):

1. What are the specific aspects of anticipating or taking a test that engender anxiety among students?
2. How do students describe their experience of test anxiety before, during, and after a test?
3. How do students who are high in test anxiety differ from those who are low in test anxiety in terms of their coping strategies?

Problem 2. Describe (a) one potential benefit and (b) one potential drawback that can result from journal reviewers using a "blind" review procedure to review prospective research articles for publication.

Sample answer:

- a. Reviewers' gender and ethnic biases are unlikely to affect their judgments of a journal article's worth if they are unaware of the authors' gender or ethnicity.
- b. An awareness of the article authors' gender and ethnic background could increase the reviewers' understanding of the authors' experience and perspective related to the topic.

TEACHING ACTIVITIES FOR CHAPTER 1

Activity 1. Ask students to identify a problem related to their actual or anticipated educational practice. Have students discuss in small groups whether and how research knowledge could help them with the problem.

Activity 2. Ask each small group to identify a current trend in education and examples of any research of which they are aware that supports or opposes its value. Have each group report to the class what they recall are the methods and findings of the research. On poster paper make a list of the varied characteristics of research that their examples illustrate.

Activity 3. Ask each group to speculate about why scholars agree that knowledge claims can be disconfirmed, but not proven, by research. Discuss one possible advantage and one possible disadvantage of this convention.

Activity 4. Ask your students to generate a list of things that they believe to be true in the field of education. For example, they might say, "Different teaching methods are effective for different types of students." Then ask students to identify how they "know" these things to be true. Generate a discussion about the different ways in which educators develop professional knowledge (e.g., our experience of our own lives, direct observation of others, reading of newspapers, listening to experts), the relative value of each source of knowledge, and the value of research relative to other sources.

Activity 5. Assign all students to read the same article, either one reprinted in the text or one from the Content Select article database available through Research Navigator. In class have different groups report on whether and how that article covers each element of a research proposal that is presented in Table 1.2.

CHAPTER 2
CONDUCTING A REVIEW OF THE RESEARCH LITERATURE

TEST ITEMS FOR CHAPTER 2

Chapter 2, Objective 1. Describe the steps involved in carrying out a literature review, and the purpose of each step.

1. The main problem with not focusing a literature search sufficiently is that most likely you will
 - a. not find many relevant primary sources.
 - b. identify many sources that are not directly relevant.
 - c. not find a sufficient number of secondary sources.
 - d. find it difficult to identify an appropriate preliminary source to search.

Answer: b

2. Classifying the publications identified from a literature search into categories is
 - a. a procedure more often used by qualitative researchers than by quantitative researchers.
 - b. typically done after you have read all relevant publications.
 - c. useful for suggesting strategies for synthesizing your findings.
 - d. most appropriate for the types of publications indexed in *Resources in Education*.

Answer: c

3. Put the following steps involved in conducting a literature review into the order in which they typically are carried out, from 1 to 4.
 - ___ a. Using a preliminary source.
 - ___ b. Preparing a report of the review findings.
 - ___ c. Framing the questions that will guide the literature search.
 - ___ d. Reading relevant primary sources.

Answer: 1. c 2. a 3. d 4. b

Chapter 2, Objective 2. Explain the value of contacting experts before you begin your literature review.

4. The best way to use experts to help you locate information relevant to an educational decision is to
 - a. seek out experts only if you are unable to locate published research bearing on your problem.
 - b. seek out experts early in your search process to get information about your problem.
 - c. ask an expert to critique the research studies that you have identified through your literature search.
 - d. use expert opinion as your primary basis for an educational decision.

Answer: b