ESSENTIALS OF
EDUCATIONAL PSYCHOLOGY

BIG IDEAS TO GUIDE EFFECTIVE TEACHING

FIFTH EDITION

Pearson

JEANNE ELLIS ORMROD

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Pearson

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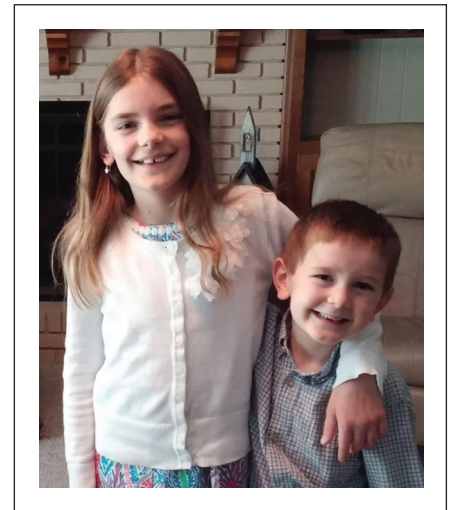Virginia Tech

FIFTH EDITION

To Olivia, Miles, and Jack Fox (from Jeanne)

and

To Mia and Jack Jones (from Brett)

About the Authors

JEANNE ELLIS ORMROD received her A.B. in psychology from Brown University and her M.S. and Ph.D. in educational psychology from The Pennsylvania State University. She earned licensure in school psychology through postdoctoral work at Temple University and the University of Colorado at Boulder and has worked as a middle school geography teacher and school psychologist. She was Professor of Educational Psychology at the University of Northern Colorado (UNC) until 1998 and is currently Professor Emerita in UNC's School of Psychological Sciences. She has published and presented extensively on cognition and memory, cognitive development, instruction, and related topics but is probably best known for this book and four others: *Human Learning* (currently in its 7th edition); *Educational Psychology: Developing Learners* (9th edition coauthored with Eric Anderman and Lynley Anderman); *Child Development and Education* (coauthored with Teresa McDevitt, currently in its 6th edition); and *Practical Research* (coauthored with Paul Leedy, currently in its 11th edition). After raising three children (two of whom have become teachers themselves), she now lives in New Hampshire with her husband, Richard. Within the past few years, she has had the good fortune to visit schools in diverse cultural settings, including Rwanda, Tanzania, Thailand, Malaysia, and Peru's Amazon region.

BRETT D. JONES is Professor of Educational Psychology in the School of Education at Virginia Tech (Virginia Polytechnic Institute and State University). He received his B.A.E. in architectural engineering from The Pennsylvania State University and his M.A. and Ph.D. in educational psychology from the University of North Carolina at Chapel Hill. He has held faculty positions as an educational psychologist at Duke University, the University of South Florida St. Petersburg, and Virginia Tech. He has taught over 20 different types of university courses related to motivation, cognition, and teaching strategies. Dr. Jones has also conducted workshops and invited presentations at several universities and has presented more than 100 research papers at conferences. His research, which includes examining instructional methods that support students' motivation and learning, has led to more than 70 articles, several book chapters, and two other books besides this book (*Motivating Students by Design: Practical Strategies for Professors* and *The Unintended Consequences of High-Stakes Testing*, the latter of which was coauthored with M. Gail Jones and Tracy Hargrove). He and his wife stay busy with their two children, who enjoy school, athletics, and cheering for the Hokies, Nittany Lions, and Tar Heels.

Preface

New to the Fifth Edition

Our knowledge about how children and adolescents learn and develop—and also about how best to *help* them learn and develop—grows by leaps and bounds every year. Throughout this fifth edition, we've made many changes to reflect new research findings and evidence-based classroom strategies. General changes include the following:

- **Reorganization of chapter sequence:** We have switched the order of "Complex Cognitive Processes" (now Chapter 3) and "Learning in Context" (now Chapter 4) to allow a smoother and more logical transition from "Learning, Cognition, and Memory" (Chapter 2). We have also switched the order of "Motivation and Affect" (now Chapter 5) and "Cognitive Development" (now Chapter 6) so that the latter chapter immediately precedes "Personal, Social, and Moral Development" (Chapter 7), and thus the two chapters about child and adolescent development are together in the book.

- **Explicit organization of chapter content to align with the book's Big Ideas:** As was true in the fourth edition, each chapter begins with three to six Big Ideas that summarize the chapter's content. In this edition, each major section of a chapter is explicitly tied to a Big Idea, with a Self-Check quiz and one or more relevant Application Exercises appearing at the end of the section.

- **New graphics to enhance readers' comprehension:** We have added new graphics in several chapters to visually summarize some of the concepts discussed in the text.

- **Many new online resources:** We have added many book-specific online resources, which can now all be accessed with a single click in the e-book. These resources include:

  - Many updated video examples of children and teachers in action

  - Animated Video Explanations that explain and illustrate certain key concepts and principles (users of the fourth edition may recognize these as short clips from that edition's lengthy interactive modules)

  - Interactive Application Exercises, many of which include classroom videos requiring analysis

  - Multiple-choice Self-Check quizzes (one connected to each Big Idea section)

  - Interactive exercises similar to those a preservice teacher might find on a licensure exam

More specific, chapter-by-chapter changes are the following additions and modifications:

- **Chapter 1:** Reorganization of the chapter content to move some ideas to other sections; minor revisions to the Ormrod's Own Psychological Survey; expanded discussion of educational psychology as a discipline; expanded discussion of principles and theories; reorganization of the principles within Big Idea 1.3; expanded discussion of strategies for learning and studying effectively; several new figures and illustrations related to educational psychology, organizations associated with educational psychology, knowledge needed by teachers, and the cyclical process of action research; new Application Exercises related to types of research, action research projects, and study strategies.

- **Chapter 2:** Reorganization to switch the order of Big Ideas 2.1 and 2.2; new title for Big Idea 2.1; new hotlinked Video Explanation that explains the basic structures of the brain; expanded discussion of working memory, with a revised figure consistent with the discussion; new discussion and associated figure to summarize the contents of long-term memory; reorganization of some of the meaningful learning strategies, with a new associated figure; new figure related to declarative and procedural knowledge; reorganization of the strategies provided in the *Encouraging Effective Long-Term Memory Storage Processes* section; new

Application Exercises related to misconceptions about the brain, active knowledge construction, the three-component model of memory, facilitating recall, and applying information processing strategies.

- **Chapter 3:** Reorganization to switch the order of the *Self-Regulation* and *Metacognition* sections and to include both sections in Big Idea 3.1; expanded discussion about the components and cycle of self-regulation, with a new associated figure; new See for Yourself exercise titled "Knowledge About Beliefs"; new examples of specific transfer; expanded discussion of well-defined and ill-defined problems; reorganization of subsections in the *Promoting Self-Regulation Skills and Metacognitive Development* section; new Application Exercises related to studying and remembering, transfer, problem solving and creativity, critical thinking, self-regulation, and instructional strategies associated with creative thinking.

- **Chapter 4:** New Big Idea to accompany the *Social Interaction as Context* section; new figure to show contexts that influence learning; four new art figures related to behavior, reinforcement, and punishment; expanded discussion of negative reinforcement; revision of table distinguishing among reinforcements and punishment; reorganization and revision of the *Technology and Media as Contexts* section; updated figures depicting environmental influences on learners; two new classroom strategies to address stereotypes and prejudice, with a new illustrative artifact; six new hotlinked Video Explanations that explain negative reinforcement, positive reinforcement, punishment, mediated learning experiences, cognitive tools, peer reinforcement, shaping, and intermittent reinforcement.

- **Chapter 5:** New entry titled "Interest theories" in the table related to theoretical perspectives; reorganization of the sections related to intrinsic and extrinsic motivation; change of the key term *personal interest* to *individual interest*; new figure related to self-efficacy; new Application Exercises related to the nature of motivation, psychological needs, cognitive factors influencing motivation, anxiety, and motivational teaching strategies.

- **Chapter 6:** Addition of *development* as a key term, with a new associated figure; new Think About It question related to growth; new figure showing the interplay among genes, the environment, and behavior; revision of the figure depicting neurons; three new figures related to working memory capacity, the development of knowledge, and intelligence; three new hotlinked Video Explanations that explain (a) mediated learning experiences and cognitive tools, (b) the zone of proximal development, and (c) apprenticeships and cognitive apprenticeships; new Application Exercises related to maturation, the zone of proximal development, Piaget's stages of conservation, dispositions and thinking, and scaffolding.

- **Chapter 7:** New discussion of peer relationships as an important factor influencing classroom climate; new discussion of how students' social motives influence the kinds of peer relationships they seek; expanded discussion of moral and prosocial development to reflect advancements in research findings; new section on providing support strategies and services for students who are homeless; new discussion of students who are recent refugees from war-torn countries; distinction between autism spectrum disorders and Asperger's syndrome (in line with some experts' current thinking about this issue); new Application Exercises related to temperament, social skills, and moral reasoning.

- **Chapter 8:** Revision of opening case study to incorporate the use of technology-based instructional strategies; emphasis on the importance of *evidence-based* strategies in this chapter as well as in Chapter 1; expanded discussion of standards that now includes the Next Generation Science Standards and ISTE standards for technological literacy, rebuttals to several common concerns regarding the Common Core, and the importance of enhancing students' literacy skills in *all* content domains; new section regarding the importance of planning lessons that enhance students' engagement; updated and expanded discussion of computer-based instruction (e.g., in intelligent tutoring programs); expanded discussion of students' independent online research to include webquests and teacher monitoring via a remote desktop feature; new section regarding the use of technology-based simulations and games; new section and Classroom Strategies box regarding modifying and/or supplementing instruction for English language learners; expanded discussion of differentiated instruction to include the importance of scaffolding note taking for students with disabilities and other historically low-achieving students.

- **Chapter 9:** Chapter title changed to "Strategies for Creating Effective Classroom and School Environments" (to more accurately reflect the chapter's content); introduction of *school climate* as a key term; new discussion regarding how poor teacher–student relationships can adversely affect teachers' as well as students' sense of relatedness and overall well-being; addition of "giving low grades" to the list of what *not* to use as a means of punishing students' misbehaviors; terms *positive behavior support* (PBS) and *schoolwide positive behavior support* changed to *positive behavioral interventions and supports* (PBIS) and *schoolwide positive behavioral interventions and supports* (SWPBIS), respectively, in line with current usage; new hotlinked Video Explanation that explains and illustrates the use of applied behavior analysis and functional analysis; new Application Exercises related to classroom arrangement, class rules, addressing behavior problems and student conflicts, and SWPBIS.

- **Chapter 10:** Increased emphasis on the use of a backward design; expanded discussion of rubrics, with a new illustrative example; updated and expanded discussions of how teachers might use technology in teacher assessments or student self-assessments; new discussion of how combining criterion-specific scores into a single criterion-referenced score can be problematic; expanded discussion of the downsides of basing final grades on improvement rather than on students' final achievement levels; new discussion of how computer technology can be used in standardized testing (e.g., via adaptive assessment); new discussion of the Every Student Succeeds Act (ESSA), which replaced the No Child Left Behind Act in late 2015; new section on the practice of using standardized achievement test results as possible indicators of teacher effectiveness (e.g., via value-added assessment); two new Video Explanations that (a) clarify and illustrate the difference between summative and formative assessments and (b) describe and illustrate formative assessment (e.g., via rubrics and checklists); new Application Exercises related to student feedback, good assessment practices, use of portfolios, high-stakes testing, and analysis of computer-generated reports of students' standardized achievement test results.

Our Rationale for This Book

The traditional approach to teaching and writing about educational psychology is to cover one theory at a time, explaining its assumptions and principles and then identifying implications for educational practice. But as we authors have gained increasing experience teaching educational psychology to college students, we've started to teach our courses differently, focusing more on commonalities than differences among theories. In fact, although researchers from different traditions have approached human cognition and behavior from many different angles, they sometimes arrive at more or less the same conclusions. The language they use to describe their observations is often different, to be sure, but beneath all the words are certain nuggets of truth that can be remarkably similar.

In this book, we've tried to bring educational psychology to the real world of children, teachers, and classrooms. We've also tried to integrate ideas from many theoretical perspectives into what is, for us, a general set of principles and strategies that psychology *as a whole* can offer beginning teachers. After a short introduction about the importance of research and study strategies (Chapter 1), we proceed to a discussion of the very essence of human experience: cognition (Chapter 2). From that foundation, we go in five different directions—to complex cognitive processes (Chapter 3), learning in various contexts (Chapter 4), motivation (Chapter 5), cognitive development (Chapter 6), and personal and social development (Chapter 7)—but always returning to basic cognitive processes that underlie various universal human phenomena. The last three chapters of the book build on the earlier ones to offer recommendations in instruction (Chapter 8), classroom management (Chapter 9), and assessment (Chapter 10).

Some of our colleagues in the field may be surprised to see our use of footnotes rather than APA style throughout the book. Our decision has been strictly a pedagogical one. Yes, students need to know that the principles and recommendations in this book are research-based. But we've found that APA style can be quite distracting for someone who is reading about psychology for the first time and trying to sort out what things are and are not important to learn and remember. Novice psychologists should be concerned more with the *ideas themselves* than with the people

behind the ideas, and by putting most of the people in small print at the bottom of the page, we can help novices better focus their attention on what things truly are most important to know and understand.

MYEDUCATIONLAB®

The most visible change in the fifth edition (and certainly one of the most significant changes) is the expansion of the digital learning and assessment resources embedded in the etext. Designed to bring you more directly into the world of K–12 classrooms and to help you see the very real impact that educational psychology concepts have on learning and development, these digital learning and assessment resources also

- Provide you with practice using educational psychology concepts in teaching situations,
- Help you and your instructor see how well you understand the concepts presented in the book and the media resources,
- Help you more deeply think about and process educational psychology and how to use it as a teacher (and as a learner).

The online resources in the Enhanced Etext with MyEducationLab include:

- **Video Examples.** In almost all chapters, embedded videos provide illustrations of educational psychology principles or concepts in action. These video examples most often show students and teachers working in classrooms. Sometimes they show students or teachers describing their thinking or experiences.
- **Video Explanations.** Throughout the text, one of us authors (Jeanne Ormrod) provides video explanations of essential concepts. Excerpted from her series of longer educational psychology Study Modules, these brief lectures include animated slides and worked examples.
- **Self-Checks.** Throughout the chapters you will find MyEducationLab: Self-Check quizzes. There are three to six of these quizzes in each chapter, with one at the end of each Big Idea section. They are meant to help you assess how well you have mastered the concepts covered in the section you just read. These self-checks are made up of self-grading multiple-choice items that not only provide feedback on whether you answered the questions correctly or incorrectly, but also provide you with rationales for both correct and incorrect answers.
- **Application Exercises.** Also at the end of each Big Idea section, you can find one or two application exercises that can challenge you to use chapter content to reflect on teaching and learning in real classrooms. The questions you answer in these exercises are usually constructed-response items. Once you provide your own answers to the questions, you receive feedback in the form of model answers written by experts.

MyEdLab
Video Example 3.4.

In many content domains, one aspect of critical thinking is distinguishing between statements that are indisputable facts versus those that reflect personal opinions. What strategies does this sixth-grade teacher use to help students understand this distinction?

MyEdLab
Video Explanation 4.4.

This video illustrates the use of cognitive tools in a high school physics class.

In this chapter, you have learned about a wide variety of strategies for effectively planning and implementing instruction. In the hotlinked Self-Check quiz and Application Exercises that follow, you can check and apply your understandings related to Big Idea 8.4:

> *Different instructional strategies are appropriate for different instructional goals and objectives and for different students.*

MyEdLab **Self-Check 8.4**

MyEdLab **Application Exercise 8.6.** In this exercise, you can observe and analyze a bilingual lesson in high school history.

MyEdLab **Application Exercise 8.7.** In this exercise, you can apply what you have learned about planning and instruction to analyze an actual lesson plan.

- **Practice for Your Licensure Exam features.** Every chapter ends with an exercise that can give you an opportunity to apply the chapter's content while reading a case study

and then answering multiple-choice and constructed-response questions similar to those that appear on many teacher licensure tests. By clicking on the MyEducationLab hotlink at the end of a Practice for Your Licensure Exam exercise, you can complete the activity online and get feedback about your answers.

PRACTICE FOR YOUR LICENSURE EXAM

Vision Unit

Ms. Kontos is teaching a unit on human vision to her fifth-grade class. She shows her students a diagram of the various parts of the human eye, such as the lens, cornea, pupil, retina, and optic nerve. She then explains that people can see objects because light from the sun or another light source bounces off those objects and into their eyes. To illustrate this idea, she shows them Picture A.

   "Do you all understand how our eyes work?" she asks. Her students nod that they do.

   The next day Ms. Kontos gives her students Picture B.

   She asks students to draw one or more arrows on the picture to show how light enables the child to see the tree. More than half of the students draw arrows something like the one shown in Picture C.

A

B

C
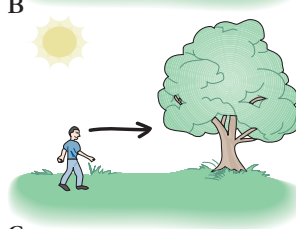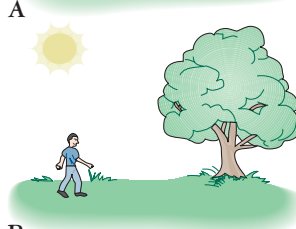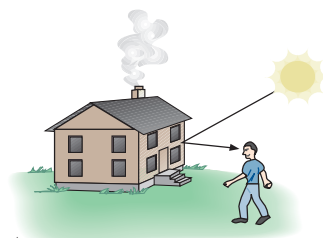
1. **Constructed-response question**

   Obviously, most of Ms. Kontos's students have not learned what she thought she had taught them about human vision.

   A. Explain why many students believe the opposite of what Ms. Kontos has taught them. Base your response on contemporary principles and theories of learning and cognition.

   B. Describe two different ways in which you might improve on this lesson to help students gain a more accurate understanding of human vision. Base your strategies on contemporary principles and theories of learning and cognition.

2. **Multiple-choice question**

   Many elementary-age children think of human vision in the way that Ms. Kontos's fifth graders do—that is, as a process that originates in the eye and goes outward toward objects that are seen. When students revise their thinking to be more consistent with commonly accepted scientific explanations, they are said to be

   a. acquiring a new script.

   b. acquiring procedural knowledge.

   c. undergoing conceptual change.

   d. revising their worldview.

   MyEdLab **Licensure Exam 2.1**

- **Classroom Management Simulations.** In Chapter 9 and in the left-hand navigation bar of MyEducationLab, you will be able to access interactive simulations that engage you in decision making about classroom management strategies. These interactive cases focus on the classroom management issues teachers most frequently encounter on a daily basis. Each simulation presents a challenge scenario at the beginning and then offers a series of choices to solve each challenge. Along the way, you receive mentor feedback on your choices and have the opportunity to make better choices if necessary.

- **Study Modules.** In the left-hand navigation bar of MyEducationLab, you will also find a set of Study Modules. These interactive, application-oriented modules provide opportunities to learn foundational educational psychology concepts in ways other than reading about them. The modules present content through screen-capture videos that include animations, worked examples, and classroom videos. Each module consists of three parts. In the first part, begin with the Learn section that presents several key concepts and strategies. Then work through the problems in the Apply section. These will give you practice applying the concepts and principles to actual teaching and learning scenarios. The third part of each module is a multiple-choice test in the Assess section. This test includes higher-order questions that assess not only what you can remember about the module's content but also how well you can apply the concepts and strategies you've learned to real-life classroom situations.

- **Video Analysis Tool.** Our widely anticipated Video Analysis Tool is also available in the left-hand navigation bar of MyEducationLab. The Video Analysis Tool helps you build your skills in analyzing teaching. Exercises provide classroom videos and rubrics to scaffold your analysis. Timestamp and commenting tools allow you to easily annotate the video and connect your observations to educational psychology concepts you have learned in the text.

OTHER BOOK FEATURES

The book's 10 chapters have a variety of features that can help readers better understand, remember, and apply what they're reading. First, each chapter begins with three to six **Big Ideas**—overarching principles that provide a general organizational scheme for the chapter's content, Self-Check quizzes, Application Exercises, and end-of-chapter summary. Then, boldfaced **Guiding Principles** and **Key Strategies** throughout the chapter highlight key principles and concrete recommendations that can guide teachers in their decision making and classroom practices.

Immediately following the list of Big Ideas presented at the beginning of each chapter is a **case study** that introduces some of the ideas and issues we address in the chapter. Throughout each chapter, we periodically revisit the case to offer new insights and interpretations.

We often put readers themselves in the position of "learner" and ask them to engage in a short learning or thinking activity. Many of these **See for Yourself** exercises are similar to ones we've used in our own educational psychology classes. Our students have found them to be quite helpful in making concepts and principles more "real" for them—and hence more vivid, understandable, and memorable. An example of such an exercise follows.

SEE FOR YOURSELF
MARTIN'S PLIGHT

Imagine that you're in the ninth grade. You're walking quickly down the school corridor on your way to your math class when you see three boys from the so-called "popular" crowd cornering a small, socially awkward boy named Martin. The boys first make fun of Martin's thick glasses and unfashionable clothing, then they start taunting him with offensive names such as "fag" and "retard." What do you do?

a. You look the other way, pretending you haven't heard anything, and hurry on to class. If you were to stop to help, the boys might taunt you as well, and that will only make the situation worse.

b. You shoot Martin a sympathetic look and then head to class so that you won't be late. Afterward, you anonymously report the incident to the principal's office, because you know that the boys' behaviors have violated your school's antibullying policy.

c. You stop and say, "Hey, you jerks, cut it out! Martin's a really nice guy and doesn't deserve your insulting labels. Come on, Martin—let's go. We might be late for math class, so we need to hurry."

An additional feature comes in the form of **Think About It** questions in the margin that encourage readers to connect chapter content to their past experiences or current beliefs and in some cases also encourage readers to take concepts and principles in new directions.

If you quickly flip through the book, you'll see many classroom artifacts—that is, **examples of work created by actual students and teachers**. We use artifacts throughout the book to help readers connect concepts, principles, and strategies to students' behavior and to classroom practices.

think about it
Using what you've just learned about attention, explain why texting on a phone while driving is illegal in many places. (For an explanation, click **here**.)

To a considerable degree, we talk about concepts and principles that apply to children and adolescents at all grade levels. Yet 1st graders often think and act very differently than 6th graders, and 6th graders can, in turn, be quite different from 11th graders. Chapters 2 through 10 each have one or more **Developmental Trends** tables that highlight and illustrate developmental differences that teachers are apt to see in grades K–2, 3–5, 6–8, and 9–12.

Chapters 2 through 10 also each have two or more **Classroom Strategies** boxes that offer concrete suggestions and examples of how teachers might apply a particular concept or principle. These features should provide yet another mechanism to help our readers apply educational psychology to actual classroom practices. And beginning in Chapter 3, each chapter has a **Cultural Considerations** feature that describes cultural differences in specific areas—for instance, in behavior, reasoning, or motivation.

Although our approach in this book is to integrate the concepts, principles, and educational strategies that diverse theoretical perspectives offer, it's also important for future teachers to have some familiarity with specific psychological theories and with a few prominent theorists who have had a significant influence on psychological thinking (e.g., Jean Piaget, Lev Vygotsky, B. F. Skinner). We occasionally mention these theories and theorists in the text discussion, but we also highlight them in **Theoretical Perspectives** tables in Chapters 2, 5, and 6.

Supplementary Materials

Many supplements to the textbook are available to enhance readers' learning and development as teachers.

Online Instructor's Manual.   Available to instructors for download at www.pearsonhighered .com/educator is an *Instructor's Manual* with suggestions for learning activities, supplementary lectures, group activities, and additional media resources. These have been carefully selected to provide opportunities to support, enrich, and expand on what students read in the textbook.

Online PowerPoint® Slides.   PowerPoint slides are available to instructors for download at www.pearsonhighered.com/educator. These slides include key concept summarizations and other graphic aids to help students understand, organize, and remember core concepts and ideas.

Online Test Bank.   The *Test Bank* that accompanies this text contains both multiple-choice and essay questions. Some items (lower-level questions) simply ask students to identify or explain concepts and principles they have learned. But many others (higher-level questions) ask students to apply those same concepts and principles to specific classroom situations— that is, to actual student behaviors and teaching strategies. The lower-level questions assess basic knowledge of educational psychology. But ultimately, it is the higher-level questions that can best assess students' ability to use principles of educational psychology in their own teaching practice.

TestGen.   TestGen is a powerful test generator available exclusively from Pearson Education publishers. Instructors install TestGen on a personal computer (Windows or Macintosh) and create their own tests for classroom testing and for other specialized delivery options, such as over a local area network or on the web. A test bank, which is also called a Test Item File (TIF), typically contains a large set of test items, organized by chapter and ready for your use in creating a test, based on the associated textbook material. Assessments—including equations, graphs, and scientific notation—can be created in either paper-and-pencil or online formats.

The tests can be downloaded in the following formats:

TestGen Testbank file—PC

TestGen Testbank file—MAC

TestGen Testbank—Blackboard 9 TIF

TestGen Testbank—Blackboard CE/Vista (WebCT) TIF

Angel Test Bank (zip)

D2L Test Bank (zip)

Moodle Test Bank

Sakai Test Bank (zip)

Artifact Case Studies: Interpreting Children's Work and Teachers' Classroom Strategies.   One of us authors, Jeanne Ormrod, has written *Artifact Case Studies* (ISBN 0-13-114671-8) as a supplement to the textbook. It's especially useful for helping students learn to apply psychological concepts and principles related to learning, motivation, development, instruction, and assessment. The case studies, or *artifact cases,* within this text offer work samples and instructional materials that cover a broad range of topics, including literacy, mathematics, science, social studies, and art. Every artifact case includes background information and questions to consider as readers examine and interpret the artifact. Instructors should contact their local Pearson Education sales representative to order a copy of this book and its accompanying Instructor's Manual.

Case Studies: Applying Educational Psychology.   With the assistance of Linda Pallock and Brian Harper, Jeanne Ormrod and Dinah Jackson McGuire have coauthored *Case Studies: Applying Educational Psychology* (2nd ed., ISBN 0-13-198046-7) to give students more in-depth practice in applying educational psychology to real children, teachers, and classrooms. The 48 cases in the book address many topics in educational psychology (learning and cognition, child and adolescent development, student diversity, motivation, instruction, classroom management, and assessment) across a variety of grade levels (preschool through high school). This book, too, is accompanied by an Instructor's Manual.

Acknowledgments

Although the title page lists us as the authors of this book, we've hardly written it alone. We're greatly indebted to the countless psychologists, educators, and other scholars whose insights and research findings we have pulled together in these pages. We also owe more thanks than we can possibly express to Kevin Davis, vice president and editor-in-chief at Pearson, who has guided our journey (in Jeanne's case, for more than 25 years) as we've tried to navigate through the myriad new topics, controversies, and technological changes that have encompassed both the field of educational psychology and the publishing world. And we are incredibly appreciative of the collective efforts of Alicia Reilly, Pam Bennett, Norine Strang, Lauren Carlson, and many others who have attended to the gazillion (and sometimes mysterious) details of turning this book into both concrete and virtual realities.

On the home front have been the many students and teachers whose examples, artifacts, and interviews illustrate some of the concepts, developmental trends, and classroom strategies we describe in the book: Aleph Altman-Mills, Andrew Belcher, Katie Belcher, Noah Davis, Shea Davis, Barbara Dee, Tina Ormrod Fox, Amaryth Gass, Anthony Gass, Ben Geraud, Darcy Geraud, Macy Gotthardt, Colin Hedges, Philip Hilbert, Erin Islo, Jesse Jensen, Sheila Johnson, Jack Jones, Mia Jones, Shelly Lamb, Michele Minichiello, Susan O'Byrne, Alex Ormrod, Jeff Ormrod, Isabelle Peters, Laura Riordan, Corey Ross, Ashton Russo, Alex Sheehan, Connor Sheehan, Matt Shump, Melinda Shump, Grace Tober, Ashleigh Utzinger, Grant Valentine, Caroline Wilson, Hannah Wilson, and Brian Zottoli.

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We must also acknowledge the contributions of our professional colleagues around the country who've reviewed the first, second, third, and fourth editions of the book and offered many invaluable insights and suggestions: Lynley H. Anderman, University of Kentucky; Heidi Andrade, State University of New York at Albany; Bonnie Armbruster, University of Illinois at Urbana-Champaign; Ty Binfet, Loyola Marymount University; Bryan Bolea, Grand Valley State University; Kym Buchanan, University of Wisconsin–Stevens Point; Jessica Chittum, East Carolina University; Rhoda Cummings, University of Nevada at Reno; Emily de la Cruz, Portland State University; Karen A. Droms, Luzerne County Community College; Randi A. Engle, University of California, Berkeley; Robert B. Faux, University of Pittsburgh; William M. Gray,

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J. E. O.
B. D. J.

Brief Contents

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ESSENTIALS OF EDUCATIONAL PSYCHOLOGY

BIG IDEAS TO GUIDE EFFECTIVE TEACHING

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1

Introduction to Educational Psychology

Big Ideas to Master in this Chapter

1.1 Effective teachers use research findings and research-based theories to make decisions about instructional strategies, classroom management, and assessment practices.

1.2 Effective teachers continually work to enhance their professional knowledge and skills.

1.3 Learners read, study, and learn more efficiently when they plan appropriately and use effective strategies.

CASE STUDY: THE "NO D" POLICY

Anne Smith is a ninth-grade English teacher with 10 years of teaching experience, and by all accounts she's an excellent teacher. Even so, in previous years many of her students haven't invested much time or energy in their writing assignments and seemingly haven't been bothered by the Cs and Ds they've earned in her classes. In an effort to more fully engage this year's students in their schoolwork, Ms. Smith begins the school year by initiating two new policies. First, to pass her course, students must earn at least a C; she won't give anyone a final grade of D. Second, students will have multiple opportunities to revise and resubmit assignments. She'll give whatever feedback students need on the assignments—and, if necessary, one-on-one instruction—to help them improve their work. She solicits students' questions and concerns about the new policies, gains their agreement to "try something new," and engages them in a discussion of specific, concrete characteristics of A-quality, B-quality, and C-quality work. Then, as the school year progresses, she regularly administers brief surveys to get students' feedback about her innovations, asking such questions as "How is the 'no D' policy working for you?" "Do you think your grade is an accurate reflection of your learning?" and "Any suggestions?"

Students' responses on the surveys are overwhelmingly positive. Students mention noticeable improvements in the quality of their writing and increasingly report that they believe themselves to be in control of both their learning and their grades. Furthermore, they begin to see their teacher in a new light—"as one who will help them achieve their best work, not as one who just gives out grades . . . as a coach encouraging them along the long race of learning." Final course grades also confirm the value of the new policies: A much higher percentage of students earn grades of C or better than has been true in past years.[1]

- Effective teachers don't simply transmit new information and skills to students; they also work hard to help students *master* the information and skills. In the case study just presented, what strategies does Ms. Smith use to foster her students' writing development?

———————————————

Teaching other people—especially teaching the generation that will follow you into the adult world—can be one of the most rewarding professions on the planet. It can also be a very challenging profession. Certainly effective teaching involves presenting a topic or skill in such a way that students can understand and master it. Yet it involves many other things as well. For instance, teachers must motivate students to *want* to learn the subject matter, must help students recognize what true mastery involves, and—to appropriately individualize instruction—must assess where each student currently is in his or her learning and development. And, in general, effective teachers create an environment in which students believe that if they work hard and have reasonable support, they can achieve at high levels. In the opening case study, Anne Smith does all of these things.

How children and adolescents think and learn, what knowledge and skills they have and haven't mastered, where they are in their developmental journeys, what their interests and

[1] Action research project described in A. K. Smith, 2009.

priorities are—all of these factors influence the effectiveness of various classroom strategies. Thus, the decisions *teachers* make in the classroom—decisions about what topics and skills to teach (*planning*), how to teach those topics and skills (*instruction*), how to keep students on task and supportive of one another's learning efforts (creating an effective *classroom environment*), and how best to determine what students have learned (*assessment*)—must ultimately depend on students' existing characteristics and behaviors.

Of course, as we saw from Anne Smith in the opening case study, teachers' classroom strategies also change what *students* know, think, and can do. Thus, the relationship between student characteristics and behaviors, on the one hand, and teacher strategies, on the other, is a two-way street. Furthermore, as you'll discover in later chapters, planning, instruction, the classroom environment, and assessment practices influence one another, as depicted in Figure 1.1. Notice how student characteristics and behaviors are at the center of the figure, because these must drive almost everything that teachers do in the classroom. Such an approach to teaching is sometimes known as **learner-centered instruction**.[2]

The purpose of this book is to help you understand children and adolescents—how they learn and develop, how they're likely to be similar to but also different from one another, what activities and assignments are apt to engage them in the classroom, and so on. It will also give you a toolbox of strategies for planning and carrying out instruction, creating an environment that keeps students motivated and on task, and assessing students' progress and achievement. Such topics are the domain of **educational psychology**, which is an academic discipline that (a) systematically studies the nature of human learning, development, motivation, and related topics and (b) applies its research findings to the identification and development of effective instructional practices. We begin by exploring how teachers can use different types of research findings to make instructional decisions.

FIGURE 1.1 A learner-centered model of instruction
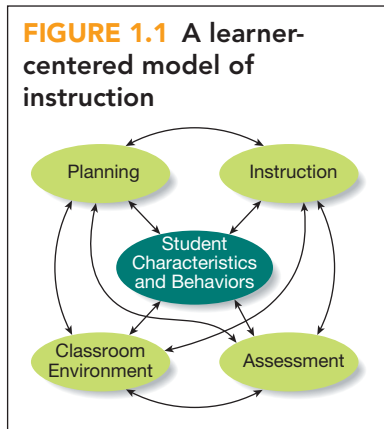
1.1 USING RESEARCH FINDINGS TO MAKE INSTRUCTIONAL DECISIONS

Big Idea 1.1 Effective teachers use research findings and research-based theories to make decisions about instructional strategies, classroom management, and assessment practices.

Teachers make instructional decisions based on their prior experiences, advice from others, knowledge and skills they learned in their formal schooling, and so on. Although many of these sources of information are potentially useful to teachers' instructional decisions, effective teachers rely on research findings and research-based theories to inform their practices. In the principles that follow, we discuss why teachers need to understand research, we examine the different types of research conducted by educational psychologists, and we explain how this research can be synthesized and organized to be helpful to teachers.

The effectiveness of various classroom practices can best be determined through systematic research.

You yourself have been a student for many years now, and you've undoubtedly learned a great deal about how individuals learn and develop and about how teachers can foster their learning and development. But exactly how much *do* you know? To help you find out, one of us authors has developed a short pretest titled *Ormrod's Own Psychological Survey (OOPS)*.

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[2] For good general discussions of learner-centered instructional practices, see McCombs, 2005; National Research Council, 2000. You may also want to look at the American Psychological Association's (APA's) 14 *Learner-Centered Psychological Principles* on the APA website at www.apa.org; type "learner-centered principles" in the search box on APA's home page.

ORMROD'S OWN PSYCHOLOGICAL SURVEY (OOPS)

Decide whether each of the following statements is *true* or *false.*

True/False

_____ 1. Some children are predominantly left-brain thinkers, whereas others are predominantly right-brain thinkers.

_____ 2. The best way to learn and remember a new fact is to repeat it over and over.

_____ 3. Students often misjudge how much they know about a topic.

_____ 4. Anxiety sometimes helps students learn and perform more successfully in the classroom.

_____ 5. Instruction is most effective when it is tailored to students' individual learning styles.

_____ 6. Children's personalities are largely the result of their home environments.

_____ 7. Playing video games can enhance children's cognitive development.

_____ 8. The ways in which teachers assess students' learning influence what and how students actually learn.

Now let's see how well you did on the OOPS. The answers, along with an explanation for each one, are as follows:

1. Some children are predominantly left-brain thinkers, whereas others are predominantly right-brain thinkers. FALSE—With the development of new medical technologies in recent years, researchers have learned a great deal about how the human brain works and which parts of it specialize in which aspects of human thinking. As we'll discover in Chapter 2, the two halves, or *hemispheres,* of the brain do seem to have somewhat different specialties, but they continually communicate and collaborate in tackling even the simplest of daily tasks. Practically speaking, there's no such thing as left-brain or right-brain thinking.[3]

2. The best way to learn and remember a new fact is to repeat it over and over. FALSE—Although repeating new information several times is better than doing nothing at all with it, repetition of specific facts is a relatively *in*effective way to learn. Students learn new information more easily and remember it longer when they connect it with things they already know. One especially effective strategy is elaboration: using prior knowledge to expand or embellish on a new idea in some way, perhaps by drawing inferences from a historical fact, identifying new examples of a scientific concept, or thinking of situations in which a mathematical procedure might be helpful. Chapter 2 describes several cognitive processes that help students learn and remember school subject matter effectively.

3. Students often misjudge how much they know about a topic. TRUE—Contrary to popular opinion, students are usually *not* the best judges of what they do and don't know. For example, many students think that if they've spent a long time studying a textbook chapter, they must know its contents very well. Yet if they've spent most of their study time inefficiently—perhaps by "reading" while thinking about something else altogether or by mindlessly copying definitions—they may know far less than they think they do. We'll consider this *illusion of knowing* further in Chapter 3.

4. Anxiety sometimes helps students learn and perform more successfully in the classroom. TRUE—Many people think that anxiety is always a bad thing. In fact, a little bit of anxiety can actually *improve* learning and performance, especially when students perceive a task to be something they can accomplish with reasonable effort. For instance, a small, manageable amount of anxiety can spur students to complete their work carefully and to study for tests. We'll explore the effects of anxiety and other emotions in Chapter 5.

5. Instruction is most effective when it is tailored to students' individual learning styles. FALSE—Contrary to a popular belief, most measures of supposed "learning styles" merely reflect students' self-reported *preferences,* and tailoring instruction to such preferences doesn't

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[3] Schlegel, Alexander, & Tse, 2016.

noticeably enhance students' learning or academic achievement.[4] It is far more important that teachers base their instructional practices on knowledge of the cognitive processes that underlie how virtually *all* students think and learn. We'll learn more about students' preferences and *cognitive styles* in Chapter 6.

6. **Children's personalities are largely the result of their home environments.** FALSE—Certainly children's home environments shape their behaviors to some extent. But heredity also has a significant impact. From birth, infants are noticeably different in the extent to which they're calm or fussy, shy or outgoing, fearful or adventurous, and so on. As we'll see in Chapter 7, such differences in *temperament* appear to have their roots in biology and genetics, and they persist throughout the childhood years and into adulthood.

7. **Playing video games can enhance children's cognitive development.** TRUE or, more accurately, SOMETIMES TRUE—A great deal of time spent playing video games *instead of* reading, doing homework, and engaging in other school-related activities can definitely interfere with children's long-term academic success. But some video games can be powerful tools for promoting important cognitive abilities, such as spatial abilities and the flexible use of attention.[5] And educational technologists have increasingly been designing highly motivating video games that simulate real-world problems and foster complex problem-solving skills.[6] In upcoming chapters (especially Chapter 4 and Chapter 8), we'll examine many ways in which computer technologies can support students' learning and cognitive development.

8. **The ways in which teachers assess students' learning influence what and how students actually learn.** TRUE—What and how students learn depend, in part, on how they expect their learning to be assessed. For example, in the opening case study, Anne Smith's "No D" and multiple-submission policies encourage students to seek feedback about their work, benefit from their mistakes, and enhance their writing skills. In Chapter 10 we'll look more closely at the potential effects of classroom assessment practices on students' learning.

How many of the OOPS items did you answer correctly? Did some of the false items seem convincing enough that you marked them true? Did some of the true items contradict certain beliefs you had? If either of these was the case, you're hardly alone. College students often agree with statements that seem obvious but are, in fact, partially or completely incorrect.[7] Furthermore, many students in teacher education classes reject research findings when those findings appear to contradict their personal beliefs and experiences.[8]

It's easy to be persuaded by "common sense" and assume that what seems logical must be true. Yet common sense and logic don't always give us the real scoop about how people actually learn and develop, nor do they always give us appropriate guidance about how best to help students succeed in the classroom. Educational psychologists believe that knowledge about teaching and learning should come from a more objective source of information—that is, from systematic research. Increasingly, educators and policy makers alike are calling for **evidence-based practices**—the use of instructional methods and other classroom strategies that research has consistently shown to bring about significant gains in students' development and academic achievement.[9]

Educational psychologists focus on the scientific study of psychological principles that are relevant to education.

Integrating evidence-based practices into your teaching takes time and practice, of course. But it also takes knowledge of topics within the discipline of educational psychology, including knowledge of human learning and motivation, developmental trends, individual and group differences, classroom assessment and standardized testing, and effective classroom practices. Educational psychologists

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[4] Kirschner & van Merriënboer, 2013; Kozhevnikov, Evans, & Kosslyn, 2014; Krätzig & Arbuthnott, 2006; Mayer & Massa, 2003.
[5] Green, 2014; Rothbart, 2011; Tobias & Fletcher, 2011.
[6] Blumberg, 2014; Squire, 2011.
[7] Gage, 1991; L. S. Goldstein & Lake, 2000; Woolfolk Hoy, Davis, & Pape, 2006.
[8] Gregoire, 2003; Holt-Reynolds, 1992; T. M. McDevitt & Ormrod, 2008; Patrick & Pintrich, 2001.
[9] Cook, Smith, & Tankersley, 2012. For example, see Darling-Hammond & Bransford, 2005; Waterhouse, 2006.

develop this knowledge by solving problems in the field of education through the use of rigorous scientific methods.[10] Topics in educational psychology are also studied by researchers in closely related disciplines, such as education, instructional design and technology, learning science, cognitive science, and other overlapping areas of psychology (e.g., behavioral, cognitive, developmental, social, and school psychology). In addition, neurologists, cognitive psychologists, and researchers from other disciplines are working together to discover how the *brain* influences people's behavior and learning and, conversely, how people's behavior and learning experiences can influence brain development. This rapidly expanding field, known as *cognitive neuroscience,* is making many noteworthy contributions to our understanding of human learning. As Figure 1.2 shows, educational psychology informs and is informed by many different disciplines.

One way that individuals contribute to the field of educational psychology is to publish their research findings in academic journals and books. Many educational psychologists also belong to regional, national, and international organizations to share their research and discuss ideas with others (see Figure 1.3 for examples). We authors synthesized much of this research in developing the Big Ideas presented in this book.

When educational psychologists write about and present their research, they identify the particular research articles, books, conference presentations, and other sources on which they base their claims. Most educational psychology publications and conferences require authors to follow APA style, guidelines prescribed by the American Psychological Association for identifying sources and preparing references.[11] In APA style, a source is cited by presenting the author(s) and date of publication in the body of the text. For example, this sentence from a prior paragraph would be cited as follows in APA style: College students often agree with statements that seem obvious but are, in fact, partially or completely incorrect (Gage, 1991; Goldstein & Lake, 2000; Woolfolk Hoy, Davis, & Pape, 2006). In this book, we've intentionally deviated from APA style by presenting the references in footnotes. We hope this style will help you focus on the *ideas* instead of on the names and dates provided in the references. But when you find some of the book's ideas especially interesting, exciting, or surprising, we urge you to read the footnoted sources firsthand by finding the detailed citations in the book's References list.

FIGURE 1.2 Educational psychology informs and is informed by other disciplines.
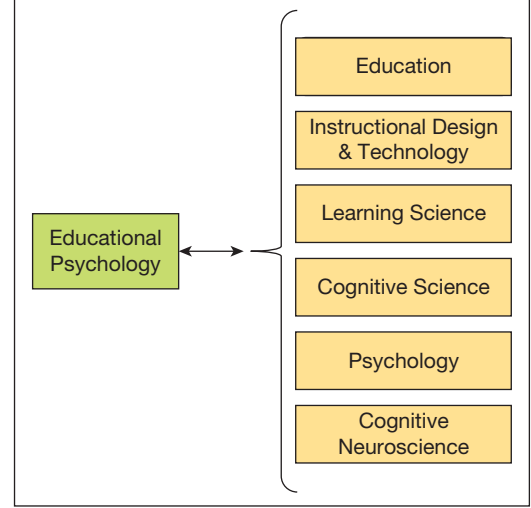
FIGURE 1.3 Examples of organizations that represent educational psychology

Organizations	Website URL
American Educational Research Association (AERA)	http://aera.net/
American Psychological Association (APA)	http://www.apa.org/
Association for Psychological Science (APS)	http://www.psychologicalscience.org/
International Society of the Learning Sciences (ISLS)	https://www.isls.org/

Research can provide quantitative information, qualitative information, or both.

Many research studies involve quantitative research: They yield numbers that reflect percentages, frequencies, or averages related to certain characteristics or phenomena. For example, a quantitative study might provide information about students' scores on achievement tests, students' responses to rating-scale questionnaires, or school district records of students' attendance and dropout rates.

Other studies involve qualitative research: They yield nonnumeric data—perhaps in the form of verbal reports, written documents, pictures, or maps—that capture many aspects of a complex situation. For example, a qualitative study might involve lengthy interviews in which students describe their hopes for the future, a detailed case study of interpersonal relationships within a tight-knit clique of adolescent girls, or in-depth observations of several teachers who create distinctly different psychological atmospheres in their classrooms.

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[10] Harris, Graham, & Urdan, 2012; Reynolds & Miller, 2013.

[11] For more information on APA style, see its *Publication Manual* (APA, 2010) or visit www.apastyle.org

Table 1.1 • Contrasting Various Types of Research			
	QUALITATIVE RESEARCH	**QUANTITATIVE RESEARCH**		
	Descriptive Studies	Descriptive Studies	Correlational Studies	Experimental and Quasi-Experimental Studies
General Nature and Purposes	• Portray the complex, multifaceted nature of human behavior, especially in real-world social settings	• Capture the current state of affairs regarding a real-world issue or problem	• Identify associations among characteristics, behaviors, and/or environmental conditions • Enable predictions about one variable, given knowledge of the degree or quantity of another variable • Provide an alternative when experimental manipulations are unethical or impossible	• Manipulate one (independent) variable in order to observe its possible effect on another (dependent) variable • Eliminate other plausible explanations for observed outcomes (especially in carefully controlled experimental studies) • Enable conclusions about cause-and-effect relationships
Limitations	• Don't enable either predictions or conclusions about cause-and-effect relationships	• Don't enable either (1) predictions about one variable based on another variable or (2) conclusions about cause-and-effect relationships	• Enable only imprecise predictions, with many exceptions to the general relationships observed • Don't enable conclusions about cause-and-effect relationships	• May not completely eliminate alternative explanations for observed outcomes (especially true for quasi-experimental studies) • In some cases, involve artificial laboratory conditions that don't resemble real-life learning environments (true for many tightly controlled experimental studies)
Examples of Questions That Might Be Addressed	• What things do high-achieving students say they do "in their heads" when they read and study their textbooks? • What distinct qualities characterize high schools in which members of various adolescent gangs interact congenially and respectfully? • In what ways do teachers' instructional practices change when their jobs and salaries depend on their students' scores on statewide or national achievement tests?	• How pervasive are gender stereotypes in popular children's literature? • What kinds of aggressive behaviors occur in schools, and with what frequencies? • How well have students performed on a recent national achievement test?	• Are better readers also better spellers? • Are students more likely to be aggressive at school if they often see violence at home or in their neighborhoods? • To what extent are students' class grades correlated with their scores on achievement tests?	• Which of two reading programs produces greater gains in reading comprehension? • Which method is most effective in reducing aggressive behavior—reinforcing appropriate behavior, punishing aggressive behavior, or a combination of both? • Do different kinds of tests (e.g., multiple-choice vs. essay tests) encourage students to study in different ways?

Ultimately educators gain a better understanding of students and effective classroom practices when they consider findings from *both* quantitative and qualitative research. Research that includes both quantitative and qualitative elements is called **mixed methods research**.[12] For example, in the research project described in the opening case study, Anne Smith tabulates students' responses to various survey questions and computes the percentages of various final class grades—all of which are quantitative information. But when she collects students' completed surveys, she also looks closely at their specific comments and suggestions, which provide qualitative information.

Different kinds of research lead to different kinds of conclusions.

In addition to yielding either quantitative or qualitative data (or both), research studies typically fall into one of four general categories: descriptive, correlational, experimental, or quasi-experimental. These various kinds of studies enable different kinds of conclusions and are appropriate for different types of research questions (see Table 1.1).

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[12] Creswell, 2014.

A **descriptive study** does exactly what its name implies: It *describes* a situation. Descriptive studies might give us information about the characteristics of students, teachers, or schools. They might also provide information about how frequently certain events or behaviors occur. Descriptive studies allow us to draw conclusions about the way things are—the current state of affairs. Virtually all qualitative studies are primarily descriptive in nature, and some quantitative studies fall into the descriptive category as well.

A **correlational study** explores possible relationships among two or more variables. For example, it might tell us how closely various human characteristics are associated with each other, or it might give us information about the consistency with which certain human behaviors occur in conjunction with certain environmental conditions. In general, correlational studies enable us to draw conclusions about **correlation**: the extent to which two characteristics or phenomena tend to be found together or to change together. Two variables are correlated when one increases as the other increases (a *positive correlation*) or when one *decreases* as the other increases (a *negative correlation*) in a somewhat predictable manner. The bottom row of the fourth column in Table 1.1 presents three examples of possible correlational relationships: those between (1) reading and spelling ability, (2) aggressive behavior at school and violence at home, and (3) class grades and achievement test scores. Correlations are often described numerically with statistics known as *correlation coefficients*, described in Appendix A.

If a correlation exists between two variables, knowing the status of one variable allows us to make *predictions* about the other variable. For example, if we find a positive correlation between reading ability and spelling ability, we can predict that, on average, students who are proficient readers will also be good spellers. Our predictions will be imprecise at best, with exceptions to the general rule; for instance, we may occasionally see very good readers who are poor spellers. A more significant limitation of correlational studies is that although they may demonstrate that a relationship exists, they never tell us for certain *why* it exists. They don't tell us what specific factors—previous experiences, personality, motivation, or perhaps other things we haven't thought of—are the cause of the relationship we see. In other words, *correlation does not necessarily indicate causation.*

Descriptive and correlational studies describe things as they exist naturally in the environment. In contrast, an **experimental study**, or **experiment**, is a study in which the researcher somehow changes, or *manipulates,* one or more aspects of the environment (called *independent variables*) and then measures the effects of such changes on something else (called the *dependent variable*). In educational research the dependent variable is often some aspect of student behavior—perhaps end-of-year grades, skill in executing a complex physical movement, persistence in tackling difficult math problems, or ability to interact appropriately with peers.[13] In a good experiment a researcher *separates and controls variables,* testing the possible effects of one variable while keeping constant all other potentially influential variables. When carefully designed and conducted, experimental studies enable us to draw conclusions about causation—about what variables cause or influence certain other variables.

Often experimental studies involve two or more groups that are treated differently. Consider these examples:

- A researcher uses two different instructional methods to teach reading comprehension skills to two different groups of students. (Instructional method is the independent variable.) The researcher then assesses students' reading ability (the dependent variable) and compares the average reading-ability scores of the two groups.
- A researcher gives three different groups of students varying amounts of practice with woodworking skills. (Amount of practice is the independent variable.) The researcher subsequently scores the quality of each student's woodworking project (the dependent variable) and compares the average scores of the three groups.
- A researcher gives one group of students an intensive instructional program designed to improve their study skills. The researcher gives another group of students no instruction and gives a third group instruction in subject matter unrelated to study skills. (Presence

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[13] You might think of the distinction this way: Student behavior (the dependent variable) *depends* on instructional practice or some other aspect of the environment (the independent variable).