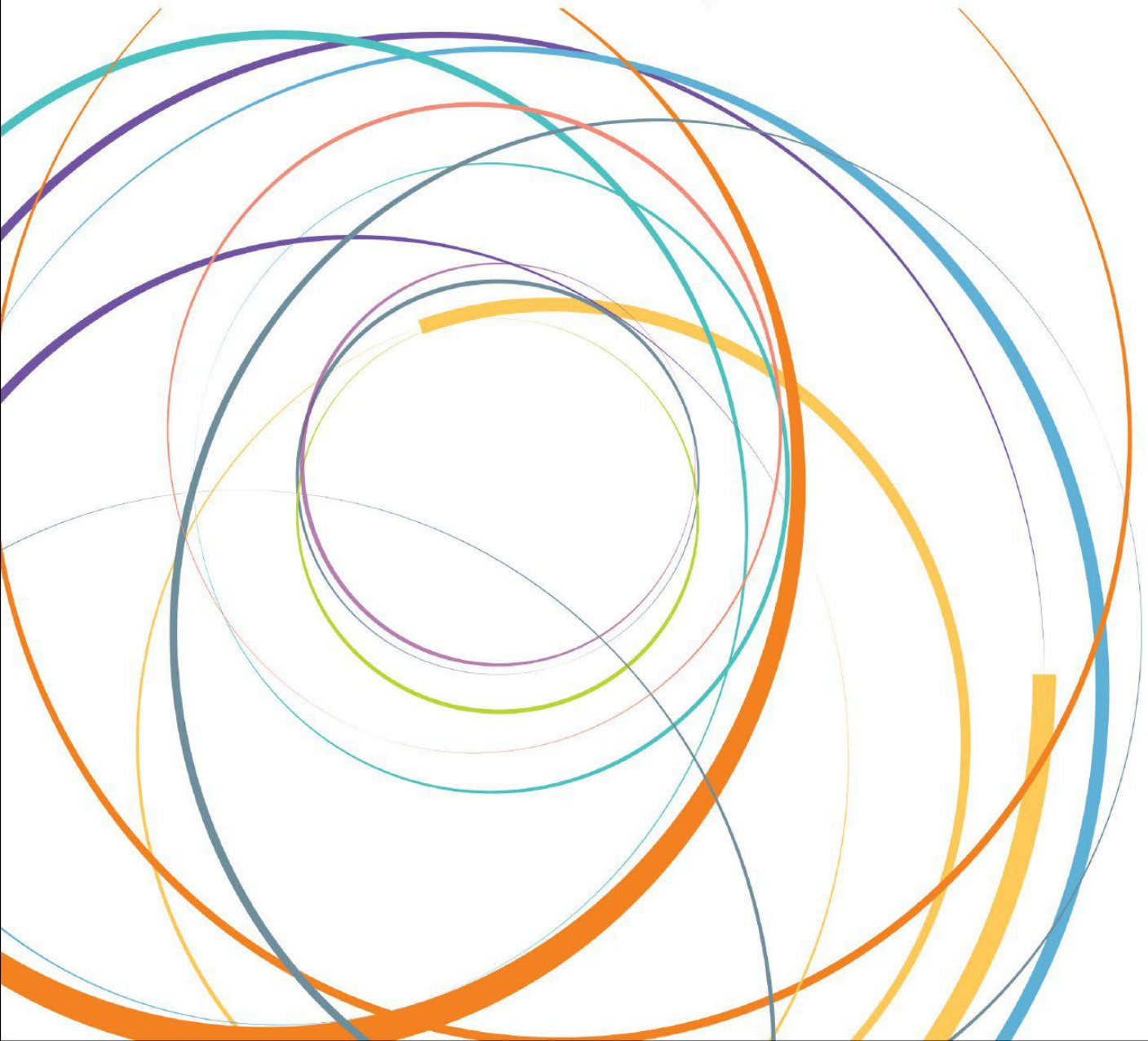
FOURTH EDITION

EdPsych Modules

Cheryl Cisero Durwin | Marla Reese-Weber



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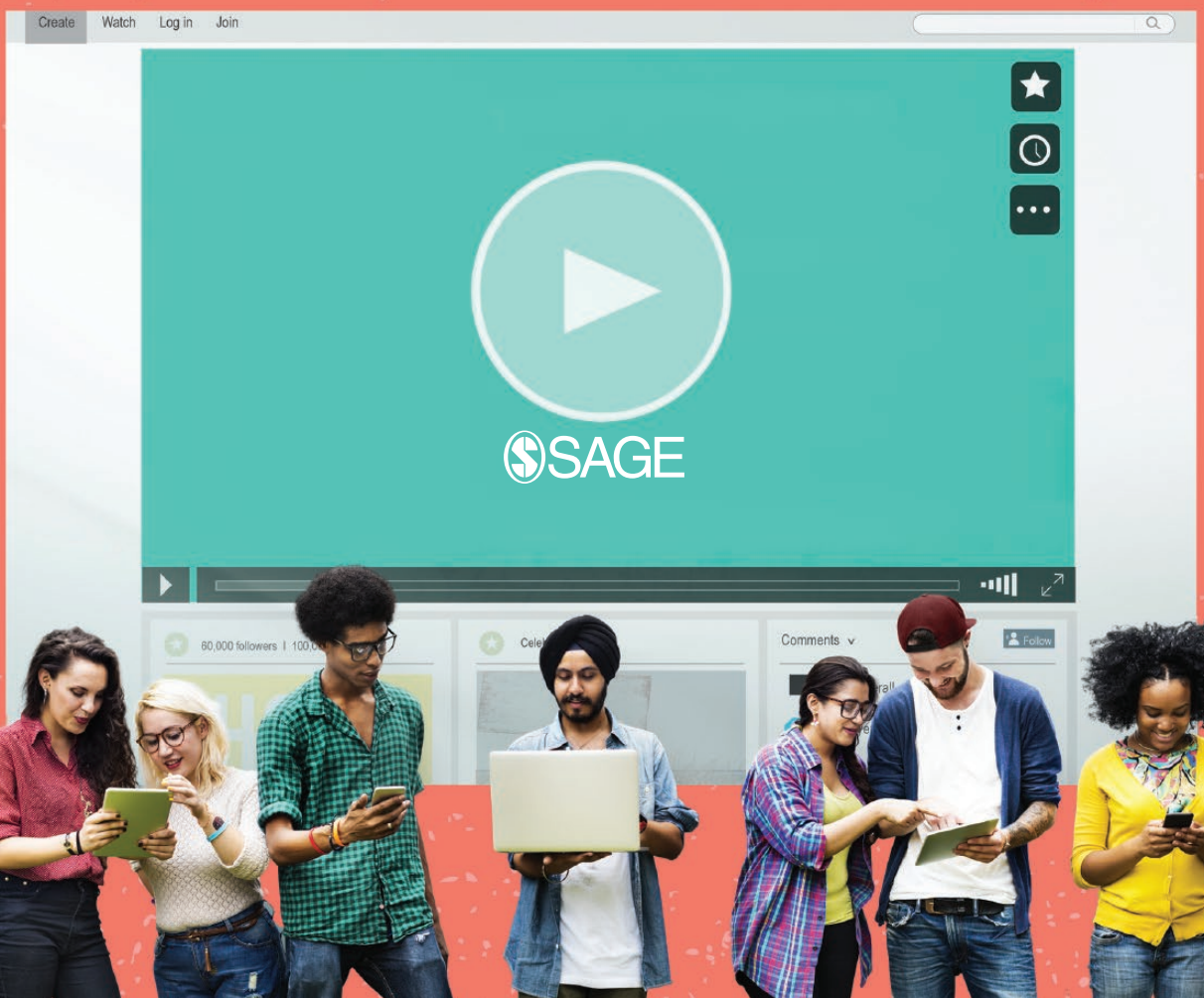

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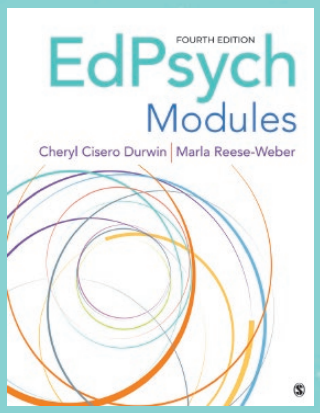

"The module approach with case studies makes this an accessible textbook for students new to and experienced with educational psychology who need to **APPLY** these concepts to themselves and practice."

—Heidi Legg Burross
University of Arizona

"This text offers a user-friendly and comprehensive approach to the field of educational psychology with its **DETAILED** supplements to **ENHANCE** the understanding of the content."

—Christine Feeley
Farmingdale State College

"This text is **STUDENT-FRIENDLY!** Students will find that they can easily understand and apply the concepts to their own life experiences and classrooms. There is an abundance of the **BEST** support material I've seen."

—Pamela C. Bradley
Sandhills Community College and St. Andrews University

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—Michael Shaughnessy
Eastern New Mexico University

EdPsych Modules

Fourth Edition

We would like to dedicate this book to our families who have stood patiently throughout the years as we worked to create this textbook. To our husbands, Mike and John, whose continued support has made our ability to complete this project possible. To our children, Mark, Andrea, Payton, and Reese, who inspire us every day to be the best mothers and educators that we can be. Also, we owe a special thank you to our children and their teachers for providing us with numerous real-life examples that have found their way into our modules and case studies.

EdPsych Modules

Fourth Edition

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TO THE INSTRUCTOR

Thank you for considering *EdPsych Modules* as a foundation for your course. Though both of us have had varied experiences in teaching educational psychology, we came together because of a singular need. We wanted a textbook that was flexible enough to meet our very different circumstances. Cheryl has taught small, writing-intensive classes with a focus on case studies to help students apply what they are learning, while Marla has taught larger classes of 50 or more students with an emphasis on research design and the science behind educational psychology. In each of our courses, we select varied topics to emphasize and order the topics very differently, and we have unique teaching styles. We wanted a textbook that would fit each of our needs and that would fit *every* instructor's needs.

EdPsych Modules is the first textbook purposefully and intentionally written from a modular approach. We want to provide students with succinct, stand-alone modules that are easily digestible. The modules are organized into themed units representing every subject matter found in a traditional chapter textbook. Because these are stand-alone, our modules can be combined or organized in any order, regardless of the order we decided to use in the table of contents. Instructors can even skip modules or entire units if they choose.

For those who teach with case studies, we provide four detailed classroom situations at the beginning of every unit, one for each educational level: early childhood, elementary, middle school, and high school. Again, instructors can choose one particular educational level, several, all levels, or may choose to skip the cases altogether. The only information you will find in the modules that relate to the case studies are the Reflect and Evaluate questions at the end of each module. So if you don't want to use case studies, these questions can just be ignored.

We are also both passionate about how to address issues of diversity. To us, diversity reflects fundamental aspects of human beings—sex, gender, race, ethnicity, language, socioeconomic background, and disability status—that give rise to individual differences found within various topics such as social-emotional development, intelligence, and motivation. Therefore, it is difficult to separate these individual differences from their context and treat them as a discrete topic within a single chapter as other textbooks do. From the early conception of the textbook, we wanted evidenced-based content on diversity to be woven into the relevant topics. To help you identify where issues of diversity are addressed, we have created a table that lists each issue within every module (see p. xxix).

A final feature of the textbook that we share with you is one that may not be immediately visible but is intricately woven throughout the book. Like many of you, we teach our courses using personal, relevant experiences, which often have included the encounters of our own children as they progressed through pre-K–12 education. When we started this textbook journey, our children were in preschool and elementary school, and now they are in high school and beyond. Many of our personal experiences involving our own children as they have grown and developed have found their way into examples within some of the modules and into some of the case studies from early childhood through high school. Therefore, we believe that these personal touches we have integrated throughout the textbook, in addition to many other real-life examples from our own research and collaboration with schools, will provide students with knowledge that is truly grounded within authentic educational contexts.

In conclusion, we believe that if our textbook is flexible enough to meet our very diverse needs, it can meet the needs of any instructor, including you.

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DETAILED CONTENTS

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PREFACE

Teaching is about making instructional decisions. To be highly effective, teachers need to understand the science underlying all aspects of education and know how to apply concepts, principles, and conclusions from educational and psychological theories and research to particular situations they encounter. Students in education certification programs are often taught the *what* and the *how* of teaching. For example, they may be taught what to do when students are fighting or how to develop and deliver a lesson. Educational psychology is about the *why*. For example, why are teacher education students told to use a particular conflict resolution strategy or a particular teaching method in a certain situation? The effectiveness of these approaches can be determined only by evaluating what we know from psychological research. Teachers need to understand why particular approaches, strategies, and methods work under various circumstances to make effective decisions. *EdPsych Modules* is not just for teachers. Any professional who works with pre-K–12 students can benefit from our textbook. Like teachers, school psychologists, school counselors and social workers, speech–language pathologists, and principals need to make effective, evidence-based decisions in their respective professions. Therefore, we wrote this book to help *all* students of educational psychology learn how to make better professional decisions. This fourth edition of *EdPsych Modules* will help students to do the following:

- Understand the importance of evidence-based, best practices that guide how they will make informed decisions
- Apply educational psychology theories and research findings to diverse instructional situations
- Understand student differences and learn ways to adapt instruction to individual student needs

Our Approach

FLEXIBLE: A book that adapts to your course

Our stand-alone modules and case studies allow content to be tailored to a particular course and student audience.

- Modular Approach: *EdPsych Modules* is the first and only text written with a modular approach rather than modifying conventional chapters to create a modular version. This intentionally designed format allows you flexibility in preparing and teaching your course. Our modules are succinct (about half the length of a typical chapter), stand-alone topics that represent every subject found in a traditional chapter textbook. The modules are organized into themed units that correspond to chapters found in conventional textbooks, such as development, learning, and motivation. With this modular approach, instructors can arrange the topics in any order and even skip entire modules or units if they choose. For example, neither of us uses every module, and we both start at different points in the textbook and order the modules in a different way.

- Case Studies: Our inclusion of case studies that span pre-K–12 grade levels also allows flexibility in designing the course. Each unit begins with four full-length case studies, one from each certification level: early childhood, elementary, middle school, and high school. Instructors can choose one particular educational level (only early childhood), several (elementary and high school), all levels, or may choose to skip the cases altogether. The only information found in the modules that relates to the case studies are the Reflect and Evaluate questions at the end of each module.

Applied: Opportunities for Practical Application of Theories and Concepts

In each module, our coverage of educational psychology theories and concepts includes examples that illustrate application and critical thinking about individual differences and instructional contexts.

- In every module, **Applications** sections help students tie theory and research to educational practice. Coverage is focused on evidence-based teaching methods and principles that are linked to research.
- **Case studies** (33 in all) provide opportunities for students to apply theories and concepts. Our case studies are rich, detailed glimpses into classroom and school settings. Each unit begins with four case studies—early childhood, elementary school, middle school, and high school—that are relevant to all modules in that unit.
    - At the end of each case study, Assess questions prompt students to assess their existing knowledge and to identify assumptions, preconceptions, and personal beliefs prior to reading a particular module.
    - Each module ends with Reflect and Evaluate questions based on the case studies at the beginning of each unit. These questions encourage students to check their comprehension of important concepts, to apply what they have learned about the research presented in the modules, and to evaluate the situations and instructional decisions presented in the case.
    - Our developmental approach of presenting cases at various certification levels enables students to meaningfully apply the concepts they are learning to the grade levels they intend to teach. Whether the cases studies are used out of class as homework or writing assignments or for in-class discussions, students will have the opportunity to practice applying what they've learned.

Extensive Coverage

Balance of Classical and Contemporary Topics

We present research on traditional topics, such as cognitive development, learning, information processing, and motivation, as well as more contemporary educational topics, such as the role of the brain in learning, social-emotional learning, differentiated instruction, response to intervention, and underserved populations.

Depth of Coverage

The scope of each module provides a deeper examination of core topics than the survey approach in traditional chapter textbooks. For example, while typical chapter textbooks have one larger chapter on complex cognitive processes, we treat these topics—metacognition, transfer, and higher order thinking—as separate modules to allow more meaningful discussion

of the theory, research, and practice. We also offer more in-depth coverage of topics that may be only minimally covered in chapter textbooks, such as constructivist teaching approaches, intelligence, grouping practices, and social-emotional development.

Integrated Issues of Diversity

Our book treats diversity—characteristics such as ethnicity, race, socioeconomic status, gender, and disabilities—not as a separate topic but as a facet of most instructional situations.

We have included a table to indicate where all the pertinent coverage of diversity appears throughout the modules (see p. xxix). We have chosen to emphasize information as a diversity issue only if it is supported by sufficient research or theoretically relevant. Within the modules, we integrate diversity by covering research findings that do the following:

- Indicate important similarities or differences among individuals of various diversity groups on psychological constructs such as intelligence, motivation, or language
- Reveal differences among individuals of various groups in values, practices, or social interactions
- Suggest differential responses to treatments, interventions, or teaching methods for individuals of varying diversity groups
- Highlight differential treatment of individuals from various diversity groups within the classroom

These findings are relevant because they provide essential information to help teachers and school professionals make informed decisions that affect the success and well-being of their students.

You will also find diversity in the case studies. We include students and teachers of diverse backgrounds in the case studies, and where appropriate, we present Reflect and Evaluate questions at the end of the modules that probe students to reevaluate their personal beliefs or assumptions about diversity.

New in This Edition

The fourth edition provides instructors and students with the same structure as our previous edition that instructors have become accustomed to and that students have appreciated. Our original motivation for writing a truly modular textbook was to ensure that our students actually read the pages that instructors assigned. Therefore, our intent has always been to provide students with an up-to-date treatment of theory and research on topics in a brief and easy-to-digest format. In our fourth edition, you will find the same 25 modules within eight themed units as in the third edition but with some important updates, such as the following:

- Expanded discussion of gender to include cisgender and transgender (Module 1)
- Research on cyberbullying in the context of peer relationships and classroom management (Modules 2 and 17)
- Inclusion of research and application of technology to development and classroom management (Modules 9 and 17)
- Updated research on the importance of parent–child interactions for early language experience and intellectual growth (Modules 7 and 20)
- Revised and expanded coverage of response to intervention for identification of specific learning disabilities (Module 21)

Our fourth edition also features the same case studies as in the third edition. As in the previous editions of our textbook, the case studies are based on real-life classroom situations.

In addition to these primary changes, we have ensured that all of our modules contain the most up-to-date research. We have included new research citations, including 330 new references over the 25 modules, and have expanded our coverage of diversity throughout the book wherever there was new diversity-related research.

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- **All tables and figures** from the textbook

SAGE edge for Students enhances learning in an easy-to-use environment that offers all this:

- Mobile friendly **flashcards** that strengthen understanding of key terms and concepts, as well as make it easy to maximize your study time—anywhere, anytime
- Mobile friendly practice **quizzes** that allow you to assess how much you've learned and where you need to focus your attention
- **Learning objectives** that reinforce the most important material
- **Video and multimedia resources** that bring concepts to life, are tied to learning objectives, and make learning easier

ABOUT THE AUTHORS

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Marla Reese-Weber received her PhD at The Ohio State University in 1998. She is Professor of Psychology and serves as the associate dean in the College of Arts and Sciences at Illinois State University. She has taught educational psychology for over 17 years in sections as small as 25 students and as large as 150 students. In addition, her course on educational psychology has included a focus on underserved populations, particularly in urban areas. Marla also teaches adolescent development at the undergraduate and graduate levels, as well as a course on developmental research methods. Her research interests include sibling and dating violence as well as romantic relationship development during emerging adulthood.

INTRODUCTION

Using Science to Inform Classroom Practices

CASE STUDY

MIDDLE SCHOOL: ACHIEVEMENT GAP

PREPARE

As you read the case, make notes:

1. **WHO** are the central characters in the case? Describe them.
2. **WHAT** is taking place?
3. **WHERE** is the case taking place? Is the environment a factor?
4. **WHEN** is the case taking place? Is the timing a factor?

Jarrod and Tamara Patterson met during college and are both teachers in the Chicago area. They live in the suburbs, where Jarrod teaches third grade. Tamara completed her student teaching at an inner-city school. She wanted to continue in a similar school district, so she takes the train into the city each day to teach history in a public middle school.

Over the years, Jarrod and Tamara have had a number of arguments about education. Some of their disagreements stem from the developmental differences in their students (Jarrod works with younger students), but their liveliest disagreements involve the differences between suburban and urban classrooms. Ninety percent of Tamara's students are African American and live in households where the median annual income is around $33,000. In contrast, 79% of Jarrod's students are White, 9% are Latino, 8% are Hispanic, and only 3% are African American. The median annual income for households in Jarrod's school district is $83,000.

As they drive into the city to run errands on Saturday morning, Tamara reminds Jarrod that she needs to stop by her classroom to pick up some papers. She forgot them yesterday and needs to finish grading them before Monday morning. Jarrod doesn't respond—he has taken

the opportunity to read the newspaper while Tamara drives.

"Listen to this," he begins. "A new study examined the 'achievement gap'—you know, the idea that African Americans perform more poorly compared to Whites. Says here that some researchers found that the differences in achievement levels between African Americans and Whites no longer exist."

Tamara responds skeptically, "How did they determine that?"

"Well, it says that the researchers found no differences in the GPAs of students from several ethnic backgrounds, including African American and White students," replies Jarrod.

Tamara pushes the issue. "Who were the students? How did they get information about GPA? Did they use the official records?"

Jarrod replies, "It doesn't give that many details."

As they pull into the school parking lot, Tamara announces, "The newspaper shouldn't

print those statements without supplying more details." She grabs the newspaper out of Jarrod's hands and says, "Come on. While we are inside getting my papers, we can probably find more information about the study on the web."

"Do we have to do this today?" moans Jarrod, wishing he had kept his mouth shut.

"Yes," replies Tamara.

As they enter Tamara's classroom, Jarrod says, "I still can't get over how old everything seems in the building. When are they going to update the decor, not to mention your textbooks and computers?"

Tamara ignores his comment. She turns on the only computer in the room and retrieves her papers while she waits for the computer to get up and running. Then she launches her Internet browser and begins to alphabetize her papers because she knows it will take several minutes before the computer is ready.

Jarrod waits impatiently. "How long is this going to take?"

"Well, if we had new computers with wireless Internet connections like you have at your school, we'd be out of here by now. But I don't have those perks, so just give me a couple of minutes."

Tamara uses the researchers' names from the newspaper article to find the original study online. "Good, it was published early this year," she says and sends the print job to the printer in the main office. "Come on. I'll grab the printout. I can read while you drive."

As they walk to the office, Tamara can't help herself. "I suppose you have your own printer in your classroom and don't have to walk to the main office all the time."

"As a matter of fact, I do," replies Jarrod. "You know you could get a job in my school district anytime. Remember, you chose to work here. Don't give me a hard time because I chose not to."

As they drive to their next stop, Tamara begins to read and launches into a tirade: "Well, they used college students, not K–12 students. Oh, can you believe this? They didn't even use official records to find GPAs. They simply asked students to provide their GPA on a survey."

"Why do you care so much? It's just one newspaper article in the back of the paper," replies Jarrod.

Tamara continues her tirade. "Because parents and most other teachers won't take the time to read the actual study and see that the newspaper article is misleading. People won't realize that the achievement gap is still present in K–12 classrooms and will expect all teachers to have students with similar achievement levels. That's unrealistic. If journalists were actually trying to inform the public, they would explain why the achievement gap exists. It's not even about ethnicity; it's about socioeconomic status."

"Maybe you should write a letter to the editor," suggests Jarrod.

"Maybe I will," Tamara says.

Assess

1. How might the different schools in which Tamara and Jarrod work influence the importance each places on understanding achievement differences?
2. Should teachers be concerned with what type of students participate in research studies like the one reported in the newspaper article? Why or why not?
3. How would you respond to a parent whose child is not achieving as well as others but who believes that all students should perform equally well?

MODULE 1

USING SCIENCE TO INFORM CLASSROOM PRACTICES

Outline	Learning Goals
Educational Psychology: A Resource for Teachers	
	1 Explain why educational psychology is an important resource for teachers.
Educational Psychology: The Science	
• Research Designs • Samples • Measures	2 Describe three elements of research studies that help determine which studies are worthy of consideration.
Educational Psychology: Classroom Practices	
• Best Practices • Addressing Diversity • Using a Case Study Approach	3 Define best practices and explain why it is important for teachers to base them on scientific evidence. 4 Describe five diversity characteristics that can define an individual's group membership and explain why teachers need to understand differences between groups.

Educational Psychology: A Resource for Teachers

1 Explain why educational psychology is an important resource for teachers.

People who work outside educational settings may assume that good teaching practices are simply common sense. Yet commonsense approaches to classroom management and instruction often are ineffective or even counterproductive. Assume, for example, that an elementary student continues to get out of his seat during a lesson. A commonsense approach would be to politely ask the student to sit down. However, if the student is misbehaving to attract attention from the teacher and classmates, this approach might simply encourage the behavior.

Research suggests that a more effective approach would be to ignore the unwanted behavior, *depending on the individual characteristics of the student*. Hence, scientific evidence helps teachers determine the best practices for effective teaching. As a teacher, you will encounter situations for which, despite all your training, you are unprepared. When that happens, research can help you formulate an informed response.

When teachers need help dealing with issues of diversity, motivation, achievement differences, behavioral problems, and other concerns, they turn to the field of educational psychology. **Educational psychology** links the science of psychology to educational practice and provides teachers with evidence-based knowledge to support their day-to-day decision-making in the classroom. Teachers who implement research-based practices have students with more academic engagement and fewer disruptive behaviors (Sanetti, Collier-Meek, Long, Kim, & Kratochwill, 2014). In short, educational psychology can help teachers become better teachers. We are writing this text to provide theories and empirical evidence you can use to develop a repertoire of skills and knowledge on your path to becoming an effective teacher.

To make the most of educational psychology, teachers need both a basic understanding of scientific principles (the science) and an awareness of how these principles can apply to real situations (classroom practices). In this text, you will be considering the same major challenges that scholars face in this field:

- The science: formulating theories and conducting research studies
- Classroom practices: developing applications of current theories and research to enhance teaching and learning

Educational Psychology: The Science

2 Describe three elements of research studies that help determine which studies are worthy of consideration.

The science of educational psychology involves formulating **theories**—sets of ideas that are used to explain a phenomenon and make predictions about behavior—and then conducting research to determine how well those theories explain the phenomenon. The relationship between theory and research is reciprocal. Research findings may support a theory, but researchers also may alter theories or develop new ones based on accumulated evidence. This process is ongoing—scientists today are building upon (or tearing down) the work of 20th century scientists.

For today's teachers, the amount and variety of research material available can be intimidating. The first step in evaluating research is to find appropriate resources (see Guidelines 1.1). After you have located good research articles, you need to determine which studies are worthy of consideration. To evaluate the quality of research, you need to understand three elements of it:

1. Design: What was the purpose of the study (to describe, to show cause and effect)?
2. Sample: Who was being studied (elementary-aged children, college students)?
3. Measures: How were constructs of interest measured (surveys, observations)?

Research Designs

Researchers must choose a method for investigating variables of interest. **Variables** are events, characteristics, or behaviors that can be measured, such as age, family divorce, medication, diagnosis of attention deficit hyperactivity disorder (ADHD), math scores, or aggression. To focus on a specific question about certain variables, researchers choose a particular **research design**—a method for investigating how and whether the variables selected are related. Table 1.1 describes four designs that are commonly used in educational research.

▼ GUIDELINES 1.1

Finding Reputable Research

Teachers need to become informed consumers of research. News stories and websites commonly misinterpret scientific findings. The first step in evaluating research is to find appropriate resources. Follow these guidelines to obtain reputable research:
• Don't use newspaper and magazine articles because they are not research articles.
• Don't do Internet searches using search engines because they may not yield credible sources.
• Do find peer-reviewed articles in scholarly journals at a local university library.
• Do find peer-reviewed articles in databases such as ERIC and PsycINFO.
• Do visit websites of professional associations to see if they have links to educational research groups such as the American Educational Research Association (AERA) and the American Psychological Association (APA).

▼ TABLE 1.1

Summary of Research Designs

	Descriptive	Correlational	Experimental	Quasi-Experimental
Definition	To systematically explain a situation factually and accurately	To assess how changes in one variable correspond with changes in another variable	To establish a cause–effect relationship between variables	To infer a cause–effect relationship between variables when the researchers cannot manipulate the independent variable
Researcher's questions	What percentage of students passed a state mastery test? Does the percentage differ by grade level or socioeconomic status?	To what extent are reading achievement scores correlated with socioeconomic status? How are science project scores correlated with parents' level of interest in science?	How is third-grade reading achievement affected by classroom reading training? (Researchers randomly assign students into two groups, one with reading training and one without, and then compare scores on reading achievement tests.)	How is third-grade reading achievement affected by classroom reading training? (Researchers study two existing classrooms at the same school, one with reading training and one without, and then compare scores on reading achievement tests.)
Limitations	Cannot show connections between different variables	Can show connections between variables, but cannot prove one variable causes changes in the other	Requires random assignment into experimental and control groups, which is often not possible	Can show connections between variables and even infer causation, but cannot confirm that the results were due solely to the independent variable

Descriptive designs provide basic information about variables in a population without making connections between behaviors, events, or conditions. For example, a descriptive research study might determine what percentage of school-age children are diagnosed with ADHD.

Two descriptive designs can provide in-depth perspectives:

- *Case study* research examines a single individual and creates a rich picture of that individual's psychological functioning. Researchers might observe a child diagnosed with autism both at home and at school, interview teachers and parents, and examine test scores, school records, and other sources of information.
- *Ethnographic study* research closely examines a particular group through direct participation within the group. For example, a researcher might attend a school of predominately Latino students, taking extensive field notes to capture the unique educational values and social challenges of this ethnic group.

To move beyond simply *describing* behaviors, researchers use **correlational designs,** which answer questions about the connections between two variables. For example, in exploring the connection between study time and grades, the researcher might ask whether students who spend more time studying get better grades. These connections are expressed in a statistical computation called a *correlation coefficient*, a number between –1.0 and +1.0 that indicates the type and strength of the relationship between two variables.

- The sign (positive or negative) indicates the type of relationship between the two variables. A positive correlation (+) between study time and grades means that as study time increases, grades also increase. A negative correlation (–) between school absences and grades means that as absences increase, grades decrease.

- The closer a correlation coefficient is to +1 or −1, the stronger the relationship between the two variables. For example, a correlation coefficient of −.56 indicates a stronger connection than a correlation coefficient of +.43 because the absolute value of the number is larger.

Although correlation studies measure the relationships between different variables, they *cannot* determine cause and effect. Although we may find that study time and grades are positively correlated, increased study time may or may not *cause* better grades. Instead, this positive correlation may suggest several possibilities: (a) more study time causes better grades, (b) better grades cause a person to enjoy academics and therefore to study more, or (c) some other variable, such as parental involvement, accounts for the high levels of study time and grades.

When researchers want to establish whether a cause–effect relationship exists, they turn to experimental and quasi-experimental designs. **Experimental designs** are used to establish a cause–effect relationship between an independent variable and a dependent variable. An independent variable is the variable of interest that is presumed to have an effect on the dependent variable, which is the outcome of the study. Researchers conduct experimental studies in two steps:

1. Randomly assign participants to one of two groups: an experimental group and a control group
2. Manipulate the independent variable (a treatment or intervention) with the experimental group but not the control group

Suppose researchers want to determine whether using computers in elementary classrooms (independent variable) affects the academic achievement of students (dependent variable). They might give an academic achievement test to students and then randomly assign some to a computer classroom (experimental group) and others to a no-computer classroom (control group). The experimental group would use computers in the classroom over a specified period of time, while the control group would not. At the end of the study, researchers would give the same academic achievement test to each student. If the experimental group showed greater improvement over time than the control group, researchers could make a claim about a cause–effect relationship: that the independent variable (the use of computers in the classroom) affected the dependent variable (academic achievement).

In situations in which researchers cannot randomly assign individuals to groups or manipulate an independent variable, they use **quasi-experimental designs** to *infer* a cause–effect relationship. Obviously, researchers cannot randomly assign children to divorced and nondivorced families, abusive and nonabusive homes, male and female genders, or high and low socioeconomic groups. In other cases, researchers' actions may be limited by school district rules or by time or expense, making the manipulation of experimental and control groups impossible. As a result, quasi-experimental designs cannot establish that an independent variable directly affects a dependent variable; therefore, they leave open the possibility that the outcome of the study may be due to other variables the researcher could not control. Say, for example, that researchers study an existing group of students in a computer classroom and compare their achievement to that of students enrolled in a no-computer classroom. Changes in the academic achievement of students in the computer classroom (dependent variable) may not depend *solely* on the presence of computers (independent variable) but may also be affected by variables beyond the researchers' control: the computer classroom having more high-level readers, fewer behaviorally challenging children,

or a teacher with more teaching experience than the teacher in the no-computer classroom. Researchers employ safeguards to account for and control all other possible variables that might affect the experimental and control groups, but their presence and the lack of random group assignment are limiting factors.

Despite these shortcomings, quasi-experimental research does allow researchers to examine questions involving differences between groups or differences over time. Two examples are cross-sectional studies and longitudinal designs, described here:

1. *Cross-sectional studies* examine two or more groups to compare behaviors. Researchers might examine whether middle school students have more or fewer hours of homework than high school students.
2. *Longitudinal designs* examine the same group of people repeatedly over time to provide information about how behaviors change or how earlier events can be connected to later events. A longitudinal study might follow children over time to determine whether children whose parents divorce in elementary school have more academic difficulties in adolescence than children whose parents did not divorce.

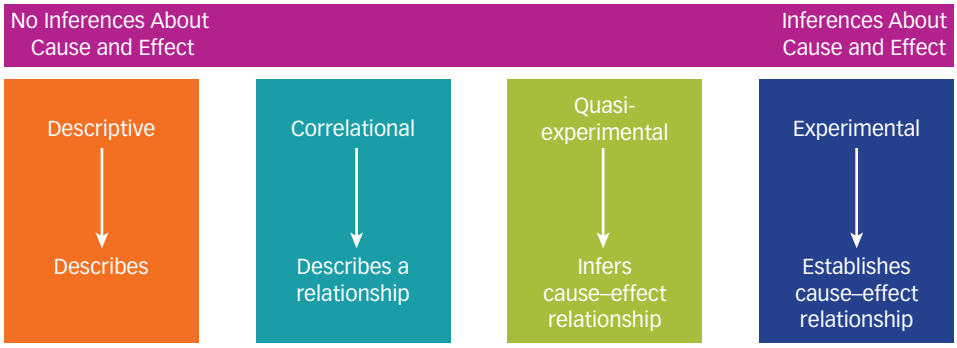
To use science effectively in decision-making, teachers need to be informed consumers of research. When you encounter scientific evidence presented in the media, in journals, or at workshops, you should be aware of the various inferences that can be made with each research design, as shown in Figure 1.1. Experimental studies are the only type that can answer questions about cause–effect relationships. However, correlational and quasi-experimental designs are more common in educational research because they are more practical than experimental designs for investigating many hypotheses regarding teaching and learning. They also provide more information than descriptive designs. Nevertheless, you must be cautious when interpreting correlational and quasi-experimental designs. You should always question whether other variables not identified in the studies might account for the findings.

Samples

Once the research design is determined, researchers must identify the population of interest and select a sample. Suppose researchers want to study how students of different ages respond to the stress of transferring to a new school. Because the researchers cannot observe or survey all transferring students—the population of interest—they rely on a **sample**, a smaller set of

▼ FIGURE 1.1

A Continuum of Research Design. This design dictates what inferences we can make from educational research studies.



Research Measures. Observations allow researchers to view the behaviors of teachers and students during instruction, such as whether boys or girls are called on more frequently by teachers.

individuals from the population of interest. The sample needs to be representative, meaning that it has gender, ethnicity, and age characteristics similar to the population of interest. The best method for ensuring a representative sample is to use a **random sample**, meaning every person in the population of interest has an equal chance of being included. Many computer programs can take a large list of individuals (for example, all students registered in a school district) and create a random subset of individuals to be included in a study.

Even when a random sample of individuals within the population is selected, not all the people selected will agree to participate in the research study. (How many website surveys have you declined?) This is called **volunteer bias,** the tendency of those who choose to participate in research studies to differ in some way from those who do not participate. Typically, individuals who have strong feelings or opinions, or who are invested in the outcome of a particular research study, are more likely to participate than are those who do not have a vested interest. For example, a college student might be more willing to participate in surveys and interviews regarding opinions on the effectiveness of the university's financial aid office and less likely to participate in research on the effectiveness of the university president.

Measures

Once researchers have chosen a research design and representative sample, they must decide on a method for taking measurements, which will provide a framework for gathering information. If researchers are investigating the amount of time students spend during school hours completing assignments, they must decide whether to ask students verbally, have them complete a paper-and-pencil survey, or observe them within the school setting. Some measures commonly used in educational research are these:

- **Observations**, or watching or viewing the behavior of individuals, might be used to examine how many times a teacher calls on a girl versus a boy in relation to the number of students from each gender who raise their hands.
- **Interviews**, or questions presented to participants, can be highly structured lists of simple questions (*How many hours do you spend on homework each night?*) or can include open-ended questions (*How do you study for a test?*). Even though open-ended questions allow more information to be gathered, they often result in less consistency across participants. Participants might talk about the number of hours spent studying, the use of a study guide, or strategies they use for reading, note-taking, memorizing, and testing themselves.
- **Tests and surveys** typically are paper-and-pencil measures that include a number of questions. Test and survey research can be done very easily with large groups of individuals in a relatively short amount of time. One requirement for participation in survey research is the ability to read and write. This might exclude younger children and individuals with language barriers.

When you examine research findings, consider the measurement strategy the researchers chose. Each measurement approach has limitations. In interviews, the researcher must speak the same language as the participant. On a test or survey, the participant must be able to read and write in the same language. Observation research is less valid for measurements of internal states of mind such as self-confidence or sadness.

Consider the following research scenarios and see if you can classify them according to research design.

1. There are two sections of a class. Both sections are taught by the same instructor, cover the same content, and have the same number of students. In one class, the teacher uses a $150 textbook, and in the other class, the teacher uses no textbook. The final exam scores are compared to determine which practice is a better option.
2. An educational psychologist examines how students' levels of motivation toward studying compare with their IQ scores.
3. In an effort to decrease obesity and increase movement among students, a superintendent has all the gym teachers in a district record the average number of hours in a week spent doing cardio work in gym class.
4. A researcher goes to an urban school and a rural school to observe differences. After much study, the researcher writes a report comparing and contrasting the two schools.

Educational Psychology: Classroom Practices

3 Define best practices and explain why it is important for teachers to base them on scientific evidence.

4 Describe four diversity characteristics that can define an individual's group membership and explain why teachers need to understand differences between groups.

In addition to understanding educational research, teachers must be able to translate practical findings of specific research studies into school settings—diverse school settings. To do this, every teacher needs a systematic process for developing his or her personal educational philosophies.

Best Practices

Effective teachers develop **best practices** for instruction, classroom management, and assessment. Best practices are evidence-based strategies determined by science to help inform decisions. They are not a list of specific strategies that one should and should not use. For example, many states are relying on a new set of academic standards, Common Core. However, the Common Core standards do not inform teachers *how* to teach and *what* material to teach. Instead, educators must develop a set of skills needed to determine best practices for having students reach these standards. Education programs training our next generation of teachers use the standards set forth by the Interstate Teacher Assessment and Support Consortium (InTASC) to evaluate skills and competencies of preservice teachers. Table 1.2 shows the standards set forth by InTASC.

Note that best practices today may not be the same best practices in 5, 10, or 20 years from now. Best practices are fluid, changing with new research findings. We don't use the same teaching strategies, or best practices, from 50 years ago. It's likely we won't be using the best practices of today 50 years from now. The fluid nature of best practices means that teachers

▼ TABLE 1.2

InTASC Core Teaching Standards 2011

The standards have been grouped into four general categories to help users organize their thinking about them.
The Learner and Learning
Standard #1: Learner Development. The teacher understands how learners grow and develop, recognizing that patterns of learning and development vary individually within and across the cognitive, linguistic, social, emotional, and physical areas, and designs and implements developmentally appropriate and challenging learning experiences.
Standard #2: Learning Differences. The teacher uses understanding of individual differences and diverse cultures and communities to ensure inclusive learning environments that enable each learner to meet high standards.
Standard #3: Learning Environments. The teacher works with others to create environments that support individual and collaborative learning, and that encourage positive social interaction, active engagement in learning, and self-motivation.
Content
Standard #4: Content Knowledge. The teacher understands the central concepts, tools of inquiry, and structures of the discipline(s) he or she teaches and creates learning experiences that make the discipline accessible and meaningful for learners to assure mastery of the content.
Standard #5: Application of Content. The teacher understands how to connect concepts and use differing perspectives to engage learners in critical thinking, creativity, and collaborative problem-solving related to authentic local and global issues.
Instructional Practice
Standard #6: Assessment. The teacher understands and uses multiple methods of assessment to engage learners in their own growth, to monitor learner progress, and to guide the teacher's and learner's decision-making.
Standard #7: Planning for Instruction. The teacher plans instruction that supports every student in meeting rigorous learning goals by drawing upon knowledge of content areas, curriculum, cross-disciplinary skills, and pedagogy, as well as knowledge of learners and the community context.
Standard #8: Instructional Strategies. The teacher understands and uses a variety of instructional strategies to encourage learners to develop deep understanding of content areas and their connections and to build skills to apply knowledge in meaningful ways.
Professional Responsibility
Standard #9: Professional Learning and Ethical Practice. The teacher engages in ongoing professional learning and uses evidence to continually evaluate his or her practice, particularly the effects of his or her choices and actions on others (learners, families, other professionals, and the community), and adapts practice to meet the needs of each learner.
Standard #10: Leadership and Collaboration. The teacher seeks appropriate leadership roles and opportunities to take responsibility for student learning, to collaborate with learners, families, colleagues, other school professionals, and community members to ensure learner growth, and to advance the profession.

Source: Council of Chief State School Officers. (2011, April). *Interstate Teacher Assessment and Support Consortium (InTASC) Model Core Teaching Standards: A Resource for State Dialogue*. Washington, DC: Author. Retrieved from http://www.ccsso.org/Documents/2011/InTASC_Model_Core_Teaching_Standards_2011.pdf

must continue to seek out evidence-based information, or current research, to assist them in making sound decisions regarding classroom management, instruction, and assessment.

Addressing Diversity

Determining effective classroom practices is made more complex by the increasingly diverse nature of the student body in U.S. schools. Aspects of diversity will shape your teaching and

Best Practices. Teachers need to examine current resources and up-to-date scientific evidence in making decisions about instructional methods and techniques, rather than relying on techniques used decades ago.
Lambert/Archive Photos/Getty Images
Klaus Vedfelt/Taxi/Getty Images

the choices you make about the methods, techniques, and strategies you employ in the classroom. Because diversity can be found in all educational interactions, we discuss issues of diversity within specific educational contexts. To provide a basic understanding of diversity, some of the most important guidelines and concepts related to diversity and effective classroom practices are summarized in this section.

Effective teachers are aware of the diversity they are likely to encounter in the classroom. Individuals and environments can exhibit a wealth of diverse characteristics. To begin to understand individual and group differences, researchers often ask participants of studies to report their ethnicity or race, sex or gender, socioeconomic status, and disabilities. By grouping people based on these characteristics, researchers can divide any population into subsets for analysis. For example, in the 2010 U.S. Census, respondents were asked to report their race by choosing among the following categories:

- White
- Black or African American
- American Indian or Alaska Native
- Asian (with specific check box responses for Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese, Other Asian, Native Hawaiian, Guamanian or Chamorro, Samoan, or Other Pacific Islander)
- Some other race (Individuals of "multiracial, mixed, interracial, or a Hispanic, Latino, or Spanish group" could respond in a write-in space under this category. Also, people of two or more races could fill in multiple race response check boxes and provide additional responses.)

A group may be considered a **minority group** if it has less power than the majority group, even if the group is not smaller in number. For example, more women than men live in the United States, but women are considered a minority group due to their relative lack of power in business (lower paying jobs), politics (fewer political positions), and religion

(in some religions, women still are not allowed to hold leadership positions). Let's examine group membership further:

- The terms *ethnicity* and *race* are often used interchangeably to express cultural differences, but they actually have different meanings (Spencer, 2014). Although each term has a definition that is so complex entire courses are taught to differentiate the two, our purpose here is to provide a basic distinction. **Ethnic group** includes people who share a similar culture—an environment with a unique history, traditions, rules, attitudes, and perhaps a specific language. In contrast, **racial group** categorizes people who share common biological traits (such as hair texture and skin color). The biological traits that distinguish races are socially defined. In other words, there is nothing particularly important about hair texture or skin color. Our society could have chosen, or defined as important, other biological traits (eye color, height, and so on). Certain traits were most likely chosen to establish social standing among groups (Markus, 2017; Moya & Markus, 2010). Most often, a person's ethnicity and racial group overlap. However, because ethnicity is based on environment and race is based on biology, they can diverge. For example, how would researchers categorize the race and ethnicity of an Asian-born child who is adopted and raised by a middle-class White family living in the rural Midwestern United States? Classrooms today are rich with such complexity.

- Like ethnicity and race, the terms *sex* and *gender* are often used interchangeably but differ technically. **Sex** refers to the biological status of male (penis) or female (vagina), whereas **gender** is a socially constructed definition or internal view of one's self. Traditionally, gender was binary, including only two categories (boy or girl). More recently, gender has been viewed as nonbinary, meaning a person may not identify as only boy or girl, but may identify as both or somewhere on a spectrum. Similar to race and ethnicity, sex and gender may overlap such that an individual who is born biologically as a male and who also identifies as male is labeled *cisgender*. Individuals who are born a particular sex and have a different gender identity are labeled *transgender*.

- Sexual orientation is another concept that has been used to denote diversity. The term **sexual orientation** refers to the romantic and sexual attraction one has to others with the same gender (homosexuality), the opposite gender (heterosexuality), both genders (bisexuality), or neither gender (asexual). Though typically referred to by these categories, one's sexual orientation may actually be more fluid.

- Many people believe that **socioeconomic status** (SES) is based solely on income, with families who have higher incomes being considered high-SES and families with low incomes considered low-SES. A more accurate definition of SES relies on the educational level and occupation of family members rather than on their level of income. Although in most circumstances educational attainment and occupation are highly related to income (more education and/or more prestigious occupations lead to higher incomes), in many circumstances less-educated individuals have higher incomes than those who are highly educated. An example would be an electrician or plumber who only attended trade school for a few months, but whose income is actually modest.

- **Disability** refers to being limited in one's ability to perform some behavior, task, or skill. The term can refer to physical disabilities (hearing impairment, cerebral palsy), cognitive disabilities (intellectual disabilities, learning disabilities, language delays), or behavioral or emotional disabilities (ADHD, anxiety). We consider disability to be a diversity characteristic because a student's disability will result in different learning needs and perhaps different levels of achievement in comparison with students who have no disabilities.

Effective teachers attempt to understand the possible causes of differences among groups. Teachers who understand why differences exist can learn to be sensitive to the individual needs of students from various backgrounds. Typically, environmental differences, not biological or genetic differences, are the root of group differences. Consider SES as an example. Students from high-SES homes tend to score higher on achievement tests, receive higher grades, and stay in school longer than students in lower SES homes (Dawson-McClure et al., 2015; Harwell, Maeda, Bishop, & Xie, 2017). These outcomes can be traced to several environmental differences (Goodman & Burton, 2012; National Center for Education Statistics, 2015):

- Poorer nutrition and more exposure to pollution in lower SES homes
- Less exposure to school readiness materials such as books and computers in lower SES homes due to lack of financial resources or lack of knowledge about the importance of reading to children at a young age
- Less parental involvement in lower SES homes, which may be due to work schedules or less education
- Fewer well-qualified teachers and higher turnover rates among teachers in lower SES schools and preschools

Culturally responsive pedagogy:
See Module 18

Intelligence and SES:
See Module 20

One might think these factors are most influential in early childhood, but the SES achievement gap for math actually widens around age 12, typically during the transition to middle school (Caro, McDonald, & Willms, 2009; Crawford, Macmillan, & Vignoles, 2017).

Social and political events have highlighted the connection between SES and academic achievement in underserved areas such as urban and rural communities. For example, in 2003 the University of Chicago Urban Education Institute began a two-year master's program for Urban Teacher Education. Similarly, the City University of New York (CUNY) Graduate Center has developed a doctoral program in Urban Education. Both programs focus on training individuals to work in urban educational systems and conducting research to determine the best classroom practices in these areas.

In a similar fashion, many universities have centers that are focused on rural education within their states. Washington State University has a Rural Education Center that focuses on exchanging information among rural schools and providing a voice in policy development. Likewise, Kansas State University established the Center for Rural Education and Small Schools, which focuses on improving education in those areas. Finally, the National Research Center on Rural Education Support (NRCRES) housed at the University of Nebraska–Lincoln was established in 2004 with funding from the U.S. Department of Education. The research center examines issues related to retaining qualified teachers, increasing opportunities for advanced courses, and decreasing student dropout rates in rural schools. Knowledge of current research can help inform teachers' best practices. For example, teachers may take extra time with students who lack readiness skills, allow students to borrow books from the

Achievement and SES. Achievement differences stemming from socioeconomic status may be due to differences in access to resources such as books and computers.

classroom for use at home, or find creative ways to involve parents in their children's education, particularly during the transition to middle school.

Effective teachers address and embrace diversity. Their teaching is not guided by assumptions about individuals from diverse groups. **Prejudice feelings** are rigid and irrational generalizations about a group or category of people. Prejudice feelings appear to emerge very early in life and peak at about 5 to 7 years of age, with more than half of 6-year-old White children and 85% of 5-year-old White children showing signs of pro-White, anti-Black biases (Gonzalez, Steele, & Baron, 2017; Katz, 2003; Raabe & Beelmann, 2011). Almost all individuals have some prejudice feelings toward one or more groups, even though they may not be aware of those feelings. Teachers themselves may believe that lower achieving students need to focus on basic skills. They may assume that students from lower socioeconomic backgrounds are lower achievers, that girls are not as capable in math as boys, that Asian American students are naturally smarter than members of other ethnic groups, and that gifted students are socially immature. Prejudice feelings tend to become more intense over time due to confirmation bias and belief perseverance. **Confirmation bias** is the tendency for people to seek evidence that confirms what they already believe to be true, rather than searching for facts that might refute their beliefs (Gregg, Mahadevan, & Sedikides, 2017; Nickerson, 1998). **Belief perseverance** is the tendency to continue or persevere in our beliefs even when presented with contradictory evidence (MacLean & Dror, 2016; Savion, 2009). For example, if a woman believes that green-eyed people are exceptionally intelligent, she will notice or pay attention to all instances in which a green-eyed person says something intelligent (confirmation bias). Likewise, she will ignore or assume it was just a fluke when a green-eyed person says something silly or unintelligent (belief perseverance).

Prejudice feelings can affect the way a teacher makes decisions about instruction, grouping, motivation, and assessment. Treating individuals differently based on prejudice feelings or biased beliefs about a particular group is **discrimination**. Research has found that 6- to 7-year-old White children discriminated against Black children when distributing coins, even in the presence of an adult. Slightly older White children, 9 to 10 years of age, also discriminated against Black children in the same task, but only when the adult was out of the room (Monteiro, de Franca, & Rodrigues, 2009). Children are not the only ones who might discriminate.

Teachers and educators must identify their own feelings of prejudice and educate themselves on the scientific evidence regarding diversity issues. However, even scientific evidence that points to group differences should be interpreted with caution due to individual differences within each group. For example, Figure 1.2 shows that average math scores are higher for boys than girls, but the amount of overlap in scores is great.

Consider your own experiences and group membership. Have you ever treated someone differently because of the person's race, socioeconomic status, gender, or disability? If you have experienced prejudice feelings—or been on the receiving end of prejudice feelings—how and why have those beliefs persevered?

Using a Case Study Approach

Did you read the opening case study on page 2? You may have skipped it, thinking, *Why do I need to read this? How will reading this before I read the content help me?* Case studies allow