Educational Psychology

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# Educational Psychology: A Foundation for Teaching

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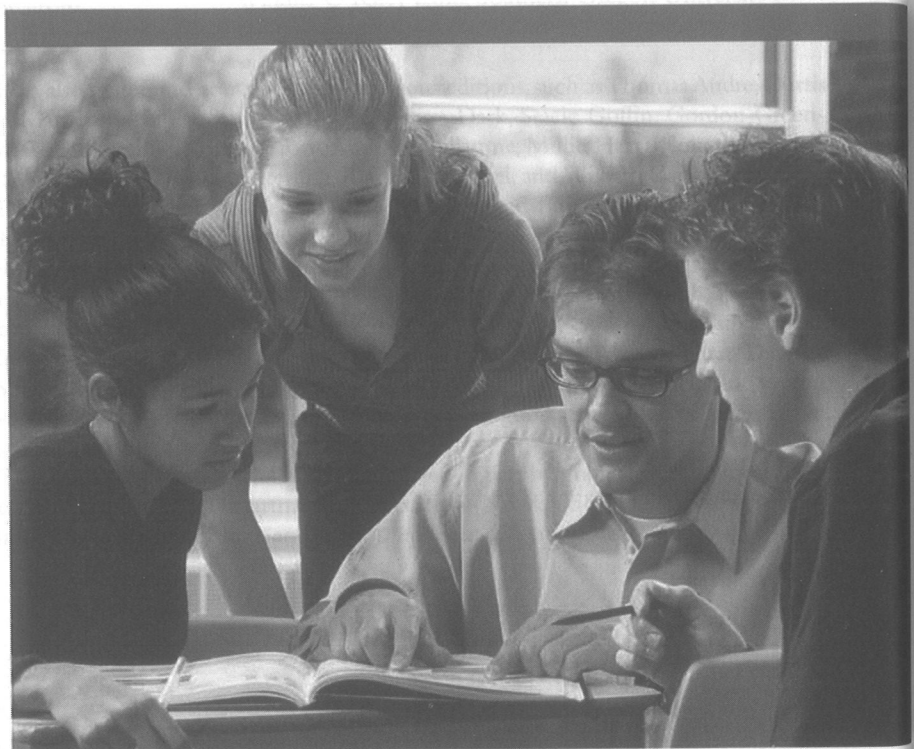
Learning Outcomes

At the end of this chapter, you should be able to:

- Identify attributes of effective teachers
- Describe the role of educational research in informing classroom practice
- Describe the research methods used in educational psychology and the rationale for each
- Discuss how you can become an intentional teacher
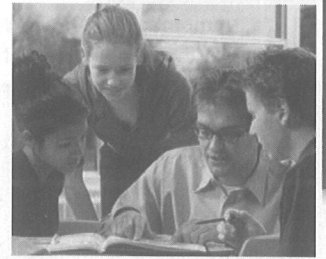
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Ellen Mathis is baffled. She is a new teacher trying to teach creative writing to her third-grade class, but things are just not going the way she'd hoped. Her students are not producing much, and what they do write is not very imaginative and full of errors. For example, she recently assigned a composition on "My Summer Vacation," and all that one of her students wrote was "On my summer vacation I got a dog and we went swimming and I got stinged by a bee."

Ellen wonders whether her students are just not ready for writing and need several months of work on such skills as capitalization, punctuation, and usage before she tries another writing assignment. However, one day Ellen notices some compositions in the hall outside of Leah Washington's class. Leah's third-graders are just like Ellen's, but their compositions are fabulous. The students wrote pages of interesting material on an astonishing array of topics. At the end of the day, Ellen catches Leah in the hall. "How do you get your kids to write such great compositions?" she asks.

Leah explains how she first got her children writing on topics they cared about and then gradually introduced "mini-lessons" to help them become better authors. She had the students work in small groups and help one another plan compositions. Then the students critiqued and helped edit one another's drafts, before finally "publishing" final versions.

"I'll tell you what," Leah offers. "I'll schedule my next writing class during your planning period. Come see what we're doing."

Ellen agrees. When the time comes, she walks into Leah's class and is overwhelmed by what she sees. Children are writing everywhere: on the floor, in groups, at tables. Many are talking with partners. Leah is conferencing with individual children. Ellen looks over the children's shoulders and sees one student writing about

her pets, another writing a gory story about ninjas, and another writing about a dream. Marta Delgrado, a student who is Mexican American, is writing a funny story about her second-grade teacher's attempts to speak Spanish. One student is even writing a very detailed story about her summer vacation!

After school, Ellen meets with Leah. She is full of questions. "How did you get students to do all that writing? How can you manage all that noise and activity? How did you learn to do this?"

"I did go to a series of workshops on teaching writing," Leah said. "But if you think about it, everything I'm doing is basic educational psychology."

Ellen is amazed. "Educational psychology? I got an A in that course in college, but I don't see what it has to do with your writing program."

"Well, let's see," said Leah. "To begin with, I'm using a lot of motivational strategies I learned in ed psych. For instance, when I started my writing instruction this year, I read students some funny and intriguing stories written by other classes, to arouse their curiosity. I got them motivated by letting them write about whatever they wanted, and also by having 'writing celebrations' in which students read their finished compositions to the class for applause and comments. My educational psychology professor was always talking about adapting to students' needs. I do this by conferencing with students and helping them with the specific problems they're having. I first learned about cooperative learning in ed psych, and later on I took some workshops on it. I use cooperative learning groups to let students give each other immediate feedback on their writing, to let them model effective writing for each other, and to get them to encourage each other to write. The groups also solve a lot of my management problems by keeping each other on task and dealing with many classroom routines. I

remember that we learned about evaluation in ed psych. I use a flexible form of evaluation. Everybody eventually gets an A on his or her composition, but only when it meets a high standard, which may take many drafts. I apply what we learned about child development just about every day. For example, I adapt to students' developmental levels and cultural styles by encouraging them to write about things that matter to them: If dinosaurs or video games are important right now, or if children are uncomfortable about being Jewish at Christmas time, that's what they should write about!"

Ellen is impressed. She and Leah arrange to visit each other's classes a few more times to exchange ideas and observations, and in time, Ellen's writers are almost as good as Leah's. But what is particularly important to her is the idea that educational psychology can really be useful in her day-to-day teaching. She drags out her old textbook and finds that concepts that had seemed theoretical and abstract in her ed psych class actually help her think about current teaching challenges.

What is **educational psychology?** An academic definition would perhaps say that educational psychology is the study of learners, learning, and teaching (Reynolds & Miller, 2003). However, for students who are or expect to be teachers, educational psychology is something more. It is the accumulated knowledge, wisdom, and seat-of-the-pants theory that every teacher should possess to intelligently solve the daily problems of teaching. Educational psychology cannot tell you as a teacher what to do, but it can give you the principles to use in making a good decision and a language to discuss your experiences and thinking. Consider the case of Ellen Mathis and Leah Washington. Nothing in this or any other educational psychology text will tell you exactly how to teach creative writing to a particular group of third-graders. However, Leah uses concepts of educational psychology to consider how she will teach writing and then to interpret and solve problems she runs into, as well as to explain to Ellen what she is doing. Educational psychologists carry out research on the nature of students and effective methods of teaching to understand principles of learning and give educators the information they need to think critically about their craft and make teaching decisions that will work for their students (Alexander, 2004).

What Makes a Good Teacher?

What makes a good teacher? Is it warmth, humor, and the ability to care about people? Is it planning, hard work, and self-discipline? What about leadership, enthusiasm, a contagious love of learning, and speaking ability? Most people would agree that all of these qualities are needed to make a good teacher, and they would certainly be correct (see Wayne & Youngs, 2003). But these qualities are not enough.

■ Knowing the Subject Matters (But So Does Teaching Skill)

There is an old joke that goes like this:

Question: What do you need to know to be able to teach a horse?
Answer: More than the horse!

educational psychology
The study of learning and teaching.

This joke makes the obvious point that the first thing a teacher must have is some knowledge or skills that the learner does not have; you must know the subject matter you plan to teach. But if you think about teaching horses (or children), you will soon realize that although subject matter knowledge is necessary, it is not enough. A rancher may have a good idea of how a horse is supposed to act and what a horse is supposed to be able to do, but if he doesn't have the skills to make an untrained, scared, and unfriendly animal into a good saddle horse, he's going to end up with nothing but broken ribs and teeth marks for his trouble. Children are a lot smarter and a little more forgiving than horses, but teaching them has this in common with teaching horses: Knowledge of how to transmit information and skills is at least as important as knowledge of the information and skills themselves. We have all had teachers (most often college professors, unfortunately) who were brilliant and thoroughly knowledgeable in their fields but who could not teach. Ellen Mathis may know as much as Leah Washington about what good writing should be, but she has a lot to learn about how to get third-graders to write well.

What characteristics of good teaching might this expert teacher possess? What behaviors does she demonstrate that might make her an effective teacher?

For effective teaching, subject matter knowledge is not a question of being a walking encyclopedia. Vast knowledge is readily available. However, effective teachers not only know their subjects but also can communicate their knowledge to students. The celebrated high school math teacher Jaime Escalante taught the concept of positive and negative numbers to students in a Los Angeles barrio by explaining that when you dig a hole, you might call the pile of dirt +1, the hole −1. What do you get when you put the dirt back in the hole? Zero. Escalante's ability to relate the abstract concept of positive and negative numbers to everyday experience is one example of how the ability to communicate knowledge goes far beyond simply knowing the facts.

■ Mastering Teaching Skills

The link between what a teacher wants students to learn and students' actual learning is called *instruction*, or **pedagogy.** Effective instruction is not a simple matter of one person with more knowledge transmitting that knowledge to another. If telling were teaching, this book would be unnecessary. Rather, effective instruction demands the use of many strategies.

For example, suppose Paula Ray wants to teach a lesson on statistics to a diverse class of fourth-graders. To do so, Paula must accomplish many related tasks. She must make sure that the class is orderly and that students know what behavior is expected of them. She must find out whether students have the prerequisite skills; for example, students need to be able to add and divide to find averages. If any do not, Paula must find a way to teach students those skills. She must engage students in activities that lead them toward an understanding of statistics, such as having students roll dice, play cards, or collect data from experiments; and she must use teaching strategies that help students remember what they have been taught. The lessons should also take into account the intellectual and social characteristics of students in the fourth grade and the intellectual, social, and cultural characteristics of these particular students. Paula must make sure that students are interested in the lesson and motivated to learn statistics. To see whether students are
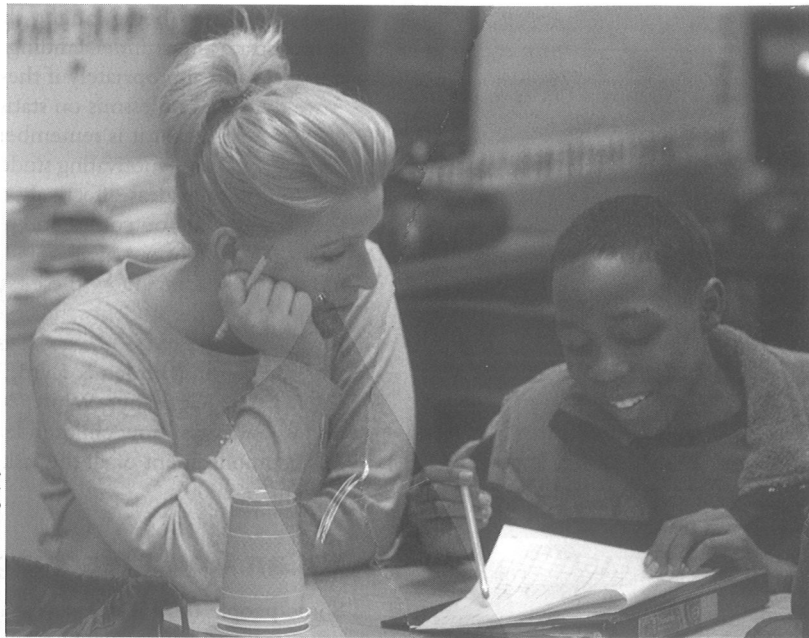
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1 Knowledge of Subject Matter

pedagogy

The study of teaching and learning with applications to the instructional process.

learning what is being taught, she may ask questions or use quizzes or have students demonstrate their understanding by setting up and interpreting experiments, and she must respond appropriately if these assessments show that students are having problems. After the series of lessons on statistics ends, Paula should review this topic from time to time to ensure that it is remembered.

These tasks—motivating students, managing the classroom, assessing prior knowledge, communicating ideas effectively, taking into account the characteristics of the learners, assessing learning outcomes, and reviewing information—must be attended to at all levels of education, in or out of schools. They apply as much to the training of astronauts as to the teaching of reading. How these tasks are accomplished, however, differs widely according to the ages of the students, the objectives of instruction, and other factors.

What makes a good teacher is the ability to carry out all the tasks involved in effective instruction (Burden & Byrd, 2003; Kennedy, 2006). Warmth, enthusiasm, and caring are essential (Cornelius-White, 2007; Eisner, 2006), as is subject matter knowledge and understanding of how children learn (Wiggins & McTighe, 2006). But it is the successful accomplishment of all the tasks of teaching that makes for instructional effectiveness (Shulman, 2000).

■ Can Good Teaching Be Taught?

Some people think that good teachers are born that way. Outstanding teachers sometimes seem to have a magic, a charisma that mere mortals could never hope to achieve. Yet research has begun to identify the specific behaviors and skills that make a "magic" teacher (Borman & Kimball, 2005). An outstanding teacher does nothing that any other teacher cannot also do—it is just a question of knowing the principles of effective teaching and how to apply them. Take one small example: In a high school history class, two students in the back of the class are whispering to each other, and they are not discussing the Treaty of Paris! The teacher slowly walks toward them without looking, continuing his lesson as he walks. The students stop whispering and pay attention. If you didn't know what to look for, you might miss this brief but critical interchange and believe that the teacher just has a way with students, a knack for keeping their attention. But the teacher is simply applying principles of classroom management that anyone could learn: Maintain momentum in the lesson, deal with behavior problems by using the mildest intervention that will work, and resolve minor problems before they become major ones. When Jaime Escalante gave the example of digging a hole to illustrate the concept of positive and negative numbers, he was also applying several important principles of educational psychology: Make abstract ideas concrete by using many examples, relate the content of instruction to the students' background, state rules, give examples, and then restate rules.

Can good teaching be taught? The answer is definitely yes. Good teaching has to be observed and practiced, but there are principles of good teaching that teachers need to know, which can then be applied in the classroom. The major components of effective instruction are summarized in Figure 1.1.

■ The Intentional Teacher

There is no formula for good teaching, no seven steps to Teacher of the Year. Teaching involves planning and preparation, and then dozens of decisions every hour. Yet one attribute seems to be characteristic of outstanding teachers: **intentionality.** Intentionality means doing things for a reason, on purpose. Intentional teachers will constantly think about the outcomes they want for their students and about how each decision they make moves children toward those outcomes. Intentional teachers know that maximum learning does not happen by chance. Yes, children do learn in unplanned ways all the time, and many will learn from even the most chaotic lesson. But to really challenge students, to

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5 Classroom Motivation and Management

"If only I could get to my ed psych text . . ."

intentionality

Doing things for a purpose; teachers who use intentionality plan their actions based on the outcomes they want to achieve.

FIGURE 1.1 Components of Good Teaching

Knowledge of subject and teaching resources

Critical-thinking and problem-solving skills

Decision Making

Self-Knowledge and Self-Regulation

GOOD TEACHING

Reflection

Application of Education Research

Knowledge of students and their learning

Teaching and communication skills
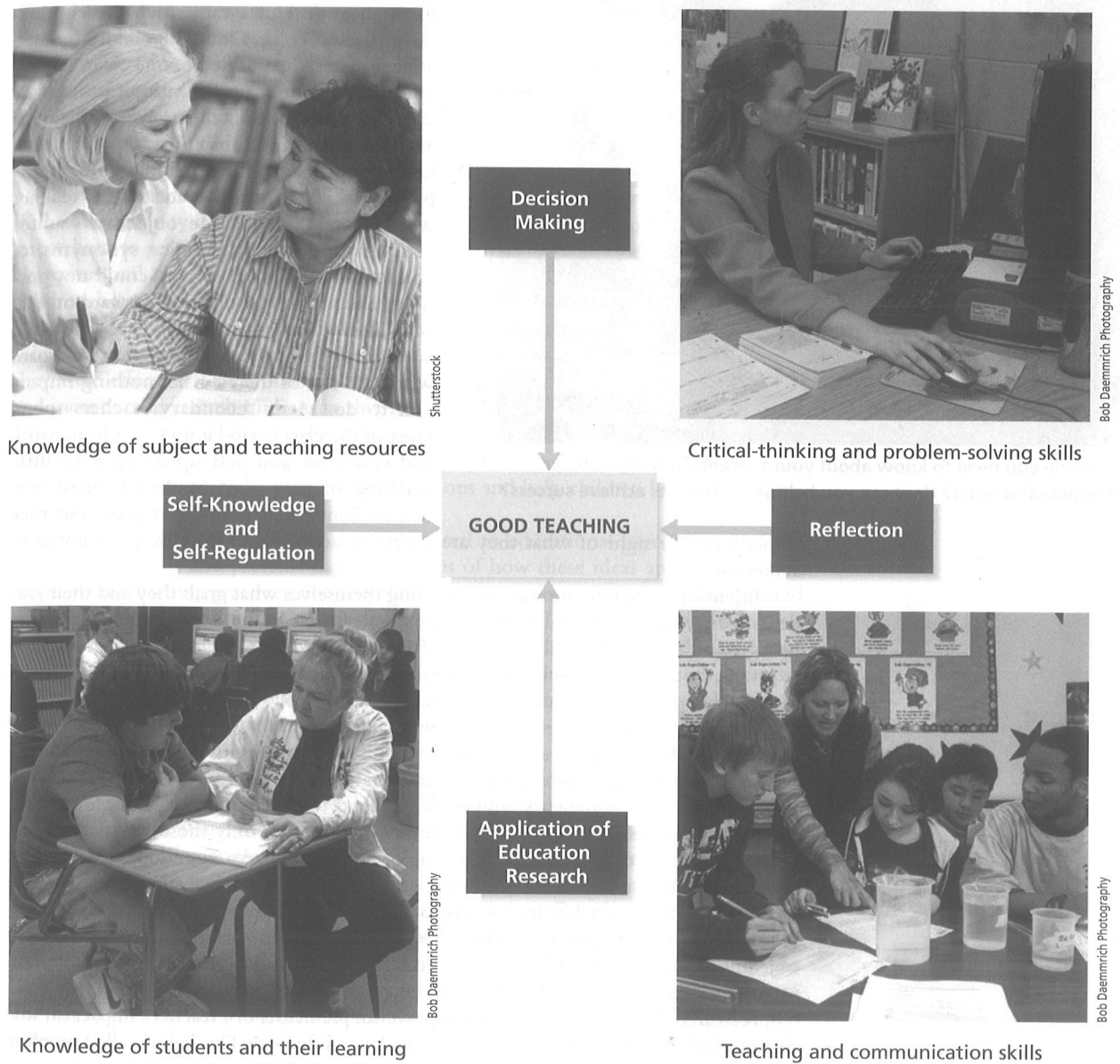
get their best efforts, to help them make conceptual leaps and organize and retain new knowledge, teachers need to be purposeful, thoughtful, and flexible, without ever losing sight of their goals for every child. In a word, they need to be *intentional*.

The idea that teachers should always do things for a reason seems obvious, and in principle it is. Yet in practice, it is difficult to constantly make certain that all students are engaged in activities that lead to important learning outcomes (Kennedy, 2008). Teachers very frequently fall into strategies that they themselves would recognize, on reflection, as being time fillers rather than instructionally essential activities. For example, an otherwise outstanding third-grade teacher once assigned seatwork to one of her reading groups. The children were given two sheets of paper with words in squares. Their task was to cut out the squares on one sheet and then paste them onto synonyms

What do you need to know about your students in order to be an intentional teacher? How can you help your students achieve success?

on the other. When all the words were pasted correctly, lines on the pasted squares would form an outline of a cat, which the children were then to color. Once the children pasted a few squares, the puzzle became clear, so they could paste the remainder without paying any attention to the words themselves. For almost an hour of precious class time, these children happily cut, pasted, and colored—not high-priority skills for third-graders. The teacher would have said that the objective was for children to learn or practice synonyms, of course; but in fact the activity could not possibly have moved the children forward on that skill. Similarly, many teachers have one child laboriously work a problem on the chalkboard while the rest of the class has nothing important to do. Many secondary teachers spend most of the class period going over homework and classwork and end up doing very little teaching of new content. Again, these may be excellent teachers in other ways, but they sometimes lose sight of what they are trying to achieve and how they are going to achieve it.

Intentional teachers are constantly asking themselves what goals they and their students are trying to accomplish. Is each portion of their lesson appropriate to students' background knowledge, skills, and needs? Is each activity or assignment clearly related to a valued outcome? Is each instructional minute used wisely and well? An intentional teacher trying to build students' synonym skills during follow-up time might have them work in pairs to master a set of synonyms in preparation for individual quizzes. An intentional teacher might have all children work a given problem while one works at the board, so that all can compare answers and strategies together. An intentional teacher might quickly give homework answers for students to check themselves, ask for a show of hands for correct answers, and then review and reteach only those exercises missed by many students to save time for teaching of new content. An intentional teacher uses a wide variety of instructional methods, experiences, assignments, and materials to be sure that children are achieving all sorts of cognitive objectives, from knowledge to application to creativity, and that at the same time children are learning important affective objectives, such as love of learning, respect for others, and personal responsibility. An intentional teacher constantly reflects on his or her practices and outcomes.

Research finds that one of the most powerful predictors of a teacher's impact on students is the belief that what he or she does makes a difference. This belief, called **teacher efficacy** (Henson, 2002; Tschannen-Moran & Woolfolk Hoy, 2001), is at the heart of what it means to be an intentional teacher. Teachers who believe that success in school is almost entirely due to children's inborn intelligence, home environment, or other factors that teachers cannot influence are unlikely to teach in the same way as those who believe that their own efforts are the key to children's learning. An intentional teacher, one who has a strong belief in her or his efficacy, is more likely to put forth consistent effort, to persist in the face of obstacles, and to keep trying relentlessly until every student succeeds (Bandura, 1997). Intentional teachers achieve a sense of efficacy by constantly assessing the results of their instruction (Schmoker, 1999); trying new strategies if their initial instruction doesn't work; and continually seeking ideas from colleagues, books, magazines, workshops, and other sources to enrich and solidify their teaching skills (Corbett, Wilson, & Williams, 2005). Collective efficacy can have a particularly strong impact on student achievement (Goddard, Hoy, & Hoy, 2000). Groups of teachers, such as the entire faculty

teacher efficacy

The degree to which teachers feel that their own efforts determine the success of their students.

of an elementary school or all teachers in a given academic department, can attain collective efficacy by working together to examine their practices and outcomes, seeking professional development, and helping each other succeed (see Borko, 2004; Sachs, 2000; York-Barr, Sommerness, & Hur, 2008).

The most important purpose of this book is to give you, tomorrow's teacher, the intellectual grounding in research, theory, and practical wisdom you will need in order to become an intentional, effective teacher. To plan and carry out effective lessons, discussions, projects, and other learning experiences, teachers need to know a great deal. Besides knowing your subjects, you need to understand the developmental levels and needs of your students. You need to understand how learning, memory, problem-solving skill, and creativity are acquired and how to promote their acquisition. You need to know how to set objectives, organize activities designed to help students attain those objectives, and assess students' progress toward them. You need to know how to motivate children, how to use class time effectively, and how to respond to individual differences among students. Intentional teachers are continually experimenting with strategies to solve problems of instruction and then observing the results of their actions to see if they were effective (Duck, 2000). They pay attention to research on effective teaching and incorporate research findings in their daily teaching (Fleischman, 2006). Like Leah Washington in the vignette that opened this chapter, intentional teachers are constantly combining their knowledge of principles of educational psychology, their experience, and their creativity to make instructional decisions and help children become enthusiastic and effective learners.

This text highlights the ideas that are central to educational psychology and the related research. It also presents many examples of how these ideas apply in practice, emphasizing teaching practices, not only theory or suggestions, that have been evaluated and found to be effective. The text is designed to help you develop **critical-thinking** skills for teaching: a logical and systematic approach to the many dilemmas that are found in practice and research. No text can provide all the right answers for teaching, but this one tries to pose the right questions and to engage you by presenting realistic alternatives and the concepts and research behind them.

Many studies have looked at the differences between expert and novice teachers and between more and less effective teachers. One theme comes through these studies: Expert teachers are critical thinkers (Hogan, Rabinowitz, & Craven, 2003; Mosenthal, Lipson, Torncello, Russ, & Mekkelsen, 2004; Shulman, 2000). Intentional teachers are constantly upgrading and examining their own teaching practices, reading and attending conferences to learn new ideas, and using their own students' responses to guide their instructional decisions. There's an old saying to the effect that there are teachers with 20 years of experience and there are teachers with 1 year of experience 20 times. Teachers who get better each year are the ones who are open to new ideas and who look at their own teaching critically. Perhaps the most important goal of this book is to get you in the habit of using informed reflection to become one of tomorrow's expert teachers.

■ 21st Century Skills

Back when I was growing up, the 21st century was expected to be totally different from the 20th. The Jetsons, for example, projected an image of flying cars, robots in every home, and all sorts of amazing technology. More serious futurologists expected more or less the same. The reality has turned out to be a little more prosaic, but nevertheless, developments in technology and globalization have dramatically changed key aspects of our economy and society. In particular, economic security, for both individuals and for nations, depends more than ever on innovation, creativity, and design. The ability to work cooperatively with others, to see many solutions to problems, and to be flexible and responsive to rapid change are all becoming keys to success, as traditional "strong back" jobs disappear to be replaced by "strong mind" careers.

critical thinking

Evaluation of conclusions through logical and systematic examination of the problem, the evidence, and the solution.

All of these changes have profound significance for education. They lead educators to put a strong value on skills, attitudes, and ways of working that more closely resemble new workforce conditions. It should go without saying that students need extensive experience with technology, but that is not enough. They also need extensive experience working in groups, solving problems, and learning to read critically and think creatively. Ironically, these kinds of experiences are at the core of the progressive philosophy of John Dewey and many others, which date back to the beginning of the 20th century (Rotherham & Willingham, 2009). What has changed is that these ideas are no longer optional, as they happen to correspond to today's needs. Moreover, these skills are now needed for everyone, from the executive office to the shop floor.

Consistent with this line of reasoning, a Partnership for 21st Century Skills has been created to promote policies defining and supporting student outcomes that align with today's needs (see P. Johnson, 2009; Partnership for 21st Century Skills, 2009). The Partnership has created a framework that organizes 21st century skills in four categories, synthesizing suggestions from dozens of stakeholder groups at all levels of education:

1. Core subjects and 21st century themes (such as language arts, mathematics, science, global awareness, and financial literacy) (see Cutshall, 2009; Hersh, 2009; Trefil & O'Brien-Trefil, 2009; Zhao, 2009)

2. Learning and innovation skills (such as creativity, critical thinking, and problem solving) (see Azzam, 2009; Graseck, 2009)

3. Information, media, and technology skills (see Barab, Gresalfi, & Arici, 2009; Ferriter, 2009a,b; Sprenger, 2009)

4. Life and career skills (such as initiative and self-direction) (see Gerdes & Ljung, 2009)

Throughout this book, a new feature presents information on 21st century learning that relates to the topic of the chapter. Beyond this, 21st century skills are discussed throughout the main parts of the text, as appropriate.

Educational policies and practices usually lag behind changes in society and the economy. The emphasis on 21st century skills is intended to help you think more deeply about how each of the decisions you make about curriculum, teaching methods, use of technology, assessments, and so on contribute to helping students succeed not only by today's standards, but also in tomorrow's world.

What Is the Role of Research in Educational Psychology?

Teachers who are intentional, critical thinkers are likely to enter classrooms equipped with knowledge about research in educational psychology. Every year, educational psychologists discover or refine principles of teaching and learning that are useful for practicing teachers. Some of these principles are just common sense backed up with evidence, but others are more surprising. One problem educational psychologists face is that almost everyone has ideas on the subject of educational psychology. Most adults have spent many years in schools watching what teachers do. Add to that a certain amount of knowledge of human nature, and *voila!* Everyone is an amateur educational psychologist. For this reason, professional educational psychologists are often accused of studying the obvious (see Ball & Forzani, 2007).

However, as we have painfully learned, the obvious is not always true. For example, most people assume that if students are assigned to classes according to their ability, the resulting narrower range of abilities in a class will let the teacher adapt instruction to the specific needs of the students and thereby increase student achievement. This assumption

Connections

For more on ability grouping, see Chapter 9, pages 253–254.

turns out to be false. Many teachers believe that scolding students for misbehavior will improve conduct. Many students will indeed respond to a scolding by behaving better, but for others, scolding may be a reward for misbehavior that actually increases it. Some "obvious" truths even conflict with one another. For example, most people would agree that students learn better from a teacher's instruction than by working alone. This belief supports teacher-centered direct instructional strategies, in which a teacher actively works with the class as a whole. However, most people would also agree that students often need instruction tailored to their individual needs. This belief, also correct, would demand that you divide your time among individuals, or at least among groups of students with differing needs, which would result in some students working independently while others received your attention. If schools could provide tutors for every student, there would be no conflict; direct instruction and individualization could coexist. In practice, however, classrooms typically have 20 or more students; as a result, more direct instruction (the first goal) almost always means less individualization (the second goal). Your task as an intentional teacher is to balance these competing goals according to the needs of particular students and situations.

■ The Goal of Research in Educational Psychology

The goal of research in educational psychology is to carefully examine obvious as well as less-than-obvious questions, using objective methods to test ideas about the factors that contribute to learning (Levin, O'Donnell, & Kratochwill, 2003; McComb & Scott-Little, 2003). The products of this research are principles, laws, and theories. A **principle** explains the relationship between factors, such as the effects of alternative grading systems on student motivation. Laws are simply principles that have been thoroughly tested and found to apply in a wide variety of situations. A **theory** is a set of related principles and laws that explains a broad aspect of learning, behavior, or another area of interest. Without theories the facts and principles that are discovered would be like disorganized specks on a canvas. Theories tie together these facts and principles to give us the big picture. However, the same facts and principles may be interpreted in different ways by different theorists. As in any science, progress in educational psychology is slow and uneven. A single study is rarely a breakthrough, but over time evidence accumulates on a subject and allows theorists to refine and extend their theories.

■ The Value of Research in Educational Psychology to You the Teacher

It is probably true that the most important knowledge teachers gain is learned on the job—in internships, while student teaching, or during their first years in the classroom (Darling-Hammond, Gendler, & Wise, 1990). However, you as a teacher make hundreds of decisions every day, and each decision has a theory behind it, regardless of whether you are aware of it. The quality, accuracy, and usefulness of those theories are what ultimately determine your success. For example, one teacher may offer a prize to the student with the best attendance, on the theory that rewarding attendance will increase it. Another may reward the student whose attendance is most improved, on the theory that it is poor attenders who most need incentives to come to class. A third may not reward anyone for attendance but instead try to increase attendance by teaching more interesting lessons. Which teacher's plan is most likely to succeed? This depends in large part on the ability of each teacher to understand the unique combination of factors that shape the character of her or his classroom and therefore to apply the most appropriate theory.

■ Teaching as Decision Making

The aim of research in educational psychology is to test the various theories that guide the actions of teachers and others involved in education. There are many common

principle

Explanation of the relationship between factors, such as the effects of alternative grading systems on student motivation.

theory

A set of principles that explains and relates certain phenomena.

situations, such as the following example, in which a teacher might use educational psychology.

Mr. Harris teaches an eighth-grade social studies class. He has a problem with Tom, who frequently misbehaves. Today, Tom makes a paper airplane and flies it across the room when Mr. Harris turns his back, to the delight of the entire class.

What should Mr. Harris do?

As an intentional teacher, Mr. Harris considers a range of options for solving this problem, each of which comes from a theory about why Tom is misbehaving and what will motivate him to behave more appropriately.

Action	**Theory**
1. Reprimand Tom.	1. A reprimand is a form of punishment. Tom will behave to avoid punishment.
2. Ignore Tom.	2. Attention may be rewarding to Tom. Ignoring him would deprive him of this reward.
3. Send Tom to the office.	3. Being sent to the office is punishing. It also deprives Tom of the (apparent) support of his classmates.
4. Tell the class that it is everyone's responsibility to maintain a good learning environment and that if any student misbehaves, 5 minutes will be subtracted from recess.	4. Tom is misbehaving to get his classmates' attention. If the whole class loses out when he misbehaves, the class will keep him in line.
5. Explain to the class that Tom's behavior is interfering with lessons that all students need to know and that his behavior goes against the rules the class set for itself at the beginning of the year.	5. The class holds standards of behavior that conflict with both Tom's behavior in class and the class's reaction to it. By reminding the class of its own needs (to learn the lesson) and its own rules set at the beginning of the year, the teacher might make Tom see that the class does not really support his behavior.

Each of these actions is a common response to misbehavior. But which theory (and therefore which action) is correct?

The key might be in the fact that his classmates laugh when Tom misbehaves. This response is a clue that Tom is seeking their attention. If Mr. Harris scolds Tom, this might increase Tom's status in the eyes of his peers and thus reward his behavior. Ignoring misbehavior might be a good idea if a student is acting up to get your attention, but in this case it is apparently the class's attention that Tom is seeking. Sending Tom to the office does deprive him of his classmates' attention and therefore may be effective. But what if Tom is looking for a way to get out of class to avoid work? What if he struts out to confront the powers that be, to the obvious approval of his classmates? Making the entire class responsible for each student's behavior is likely to deprive Tom of his classmates' support and to improve his behavior; but some students may think that it is unfair to punish them for another student's misbehavior. Finally, reminding the class (and Tom) of its own interest in learning and its usual standards of behavior might work if the class does, in fact, value academic achievement and good behavior.

Research in education and psychology bears directly on the decision Mr. Harris must make. Developmental research indicates that as students enter adolescence, the peer group becomes all-important to them, and they try to establish their independence

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9 Professional Commitment and Responsibility

from adult control, often by flouting or ignoring rules. Basic research on behavioral learning theories shows that when a behavior is repeated many times, some reward must be encouraging the behavior, and that if the behavior is to be eliminated, the reward must first be identified and removed. This research would also suggest that Mr. Harris consider problems with the use of punishment (such as scolding) to stop undesirable behavior. Research on specific classroom management strategies has identified effective methods to use both to prevent a student like Tom from misbehaving in the first place and to deal with his misbehavior when it does occur. Finally, research on rule setting and classroom standards indicates that student participation in setting rules can help convince each student that the class as a whole values academic achievement and appropriate behavior, and that this belief can help keep individual students in line.

Teachers face a number of difficult, and sometimes unexpected, decisions every day and have to be able to respond quickly and appropriately. How can you become an intentional teacher?

Armed with this information, Mr. Harris can choose a response to Tom's behavior based on an understanding of why Tom is doing what he is doing and what strategies are available to deal with the situation. He may or may not make the right choice, but because he knows several theories that could explain Tom's behavior, he will be able to observe the outcomes of his strategy and, if it is ineffective, to learn from that and try something else that will work. Research does not give Mr. Harris a specific solution; that requires his own experience and judgment. But research does give Mr. Harris basic concepts of human behavior to help him understand Tom's motivations and an array of proven methods that might solve the problem. And using research to help him make teaching decisions is one way Mr. Harris can achieve a sense of his own efficacy as a teacher.

Theory into Practice
Teaching as Decision Making

If there were no educational problems to solve, there would be no need for teachers to function as professionals. Professionals distinguish themselves from nonprofessionals in part by the fact that they must make decisions that influence the course of their work.

You must decide (1) how to recognize problems and issues, (2) how to consider situations from multiple perspectives, (3) how to call up relevant professional knowledge to formulate actions, (4) how to take the most appropriate action, and (5) how to judge the consequences.

For example, Ms. O'Hara has a student named Shanika in her social studies class. Most of the time, Shanika is rather quiet and withdrawn. Her permanent record indicates considerable academic ability, but a casual observer would never know it. Ms. O'Hara asks herself the following questions:
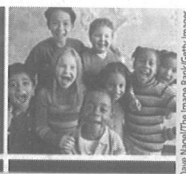
1. What problems do I perceive in this situation? Is Shanika bored, tired, uninterested, or shy, or might her participation be inhibited by something I or others are doing or not doing? What theories of educational psychology might I consider?

2. I wonder what Shanika thinks about being in this class. Does she feel excluded? Does she care about the subject matter? Is she concerned about what I or others think about her lack of participation? Why or why not? What theories of motivation will help me make a decision?

3. What do I know from theory, research, or practice that might guide my actions to involve Shanika more directly in class activities?

4. What might I actually do in this situation to enhance Shanika's involvement?

5. How would I know if I were successful with Shanika?

If Ms. O'Hara asks and tries to answer these questions—not only in the case of Shanika, of course, but at other times as well—she will improve her chances to learn about her work from doing her work. Philosopher John Dewey taught that the problems teachers face are the natural stimuli for reflective inquiry. Intentional teachers accept challenges and think productively about them.

■ Research + Common Sense = Effective Teaching

As the case of Mr. Harris illustrates, no theory, no research, no book can tell teachers what to do in a given situation. Making the right decisions depends on the context within which the problem arises, the objectives you have in mind, and many other factors, all of which must be assessed in the light of educated common sense. For example, research in mathematics instruction usually finds that a rapid pace of instruction increases achievement (Good, Grouws, & Ebmeier, 1983). Yet you may quite legitimately slow down and spend a lot of time on a concept that is particularly critical or may let students take time to discover a mathematical principle on their own. It is usually much more efficient (that is, it takes less time) to teach students skills or information directly than it is to let them make discoveries for themselves, but if you want students to gain a deeper understanding of a topic or to know how to find information or to figure things out for themselves, then the research findings about pace can be temporarily shelved.

The point is that although research in educational psychology can sometimes be translated directly to the classroom, it is best to apply the principles with a hefty dose of common sense and a clear view of what is being taught to whom and for what purpose.

■ Research on Effective Programs

Research in educational psychology not only provides evidence for principles of effective practice but also about the effectiveness of particular programs or practices (Fleischman, 2006). For example, in the vignette at the beginning of this chapter, Leah Washington uses a specific approach to creative writing instruction that has been extensively evaluated as a whole (Harris & Graham, 1996a). In other words, there is evidence that, on average, children whose teachers are using such methods learn to write better than those whose teachers use more traditional approaches. There is evidence on the effectiveness of dozens of widely used programs, from methods in particular subjects to strategies for reforming entire schools (see, for example, Dynarski, 2008/2009; Ellis, 2001b; Gunter, Estes, & Schwab, 2003; Slavin, Cheung, Groff, & Lake, 2008; Slavin & Lake, 2008; Slavin, Lake, Chambers, et al., 2009; Slavin, Lake, & Groff, 2009). An intentional teacher should be aware of research on programs for his or her subject and grade level and should be

willing to seek out professional development opportunities in methods known to make a difference for children.

ON THE WEB

For educator-friendly reviews of research on effective programs, see www.bestevidence.org and www.ies.ed.gov/ncee/wwc.

■ Impact of Research on Educational Practice

Many researchers and educators have bemoaned the limited impact of research in educational psychology on teachers' practices (see, for example, Kennedy, 2008). Indeed, research in education has nowhere near as great an impact on practice as research in medicine (Riehl, 2006). Yet research in education does have a profound indirect impact on educational practice (Hattie & Marsh, 1996), even if teachers are not aware of it. It affects educational policies, professional development programs, and teaching materials. For example, the Tennessee class size study (Finn, Pannozzo, & Achilles, 2003), which found important effects of class size in the early grades on student achievement, had a direct impact on state and federal proposals for class size reduction (Wasley, 2002). Research on beginning reading (National Reading Panel, 2000) has begun to dramatically transform curriculum, instruction, and professional development for this subject. Research on the effects of career academies in high schools (Kemple, 1997) has led to a substantial increase in such programs.

It is important for you to become an intelligent consumer of research, not to take every finding or every expert's pronouncement as truth from Mount Olympus (Fleischman, 2006). The following section briefly describes the methods of research that most often produce findings of use to educators.

"In light of research on class size, we're not cutting class, we're helping our classmates get a better education!"

Theory into Practice
How to Be an Intelligent Consumer of Educational Psychology Research

Let's say you're in the market for a new car. Before laying out your hard-earned money, you'll probably review the findings from various consumer research reports. You may want to know something about how various cars have performed in crash tests, which cars have the best gas mileage, or the trade-in values of particular models. Before embarking on this major investment, you want to feel as confident as you can about your decision. If you've been in this situation before, you probably remember that all of your research helped you make an informed decision.

Now that you are about to enter the profession of teaching, you should apply a similar consumer orientation in your decision making. As a teacher, you will be called on to make hundreds of decisions each day. Your car-buying decision is influenced by a combination of sound research findings and common sense, and your decisions about teaching and learning should follow this same pattern. Teaching and learning are complex concepts subject to a wide variety of influences, so your knowledge of relevant research will serve to guide you into making informed choices.

How can knowing the simple formula *research + common sense = effective teaching* help you to be a more intelligent consumer of educational psychology research? The following recommendations show how you can put this formula into practice:

INTASC

9 Professional Commitment and Responsibility

1. *Be a consumer of relevant research.* It's obvious you can't apply what you don't know. As a professional, you have a responsibility to maintain a working knowledge of relevant research. In addition to your course textbooks, which will be excellent resources for you in the future, you should become familiar with the professional journals in your field. You may want to review the following journals, which typically present research that has direct application for classroom practices: *Educational Psychologist, Journal of Educational Psychology,* and *American Educational Research Journal.* In addition, check out *Annual Editions: Educational Psychology,* a yearly publication that reprints articles from various professional journals. Also, don't overlook the value of networking with other teachers, face to face or via the Internet. The example of Ellen Mathis and Leah Washington is an excellent illustration of how collaboration can expand your research base.

2. *Teach intentionally.* Although there is no recipe for the ingredients that make up a commonsense approach to teaching, the behaviors consistent with being an intentional teacher are about as close as we can get. Intentional teachers are thoughtful. Like Mr. Harris, you should consider multiple perspectives on classroom situations. When you take action, be purposeful and think about why you do what you do. Like other intentional teachers, you can follow your actions with careful reflection, evaluating whether your actions have resulted in the desired outcomes. You probably learned about the "scientific method" sometime during high school. Intentional teachers employ such a method in teaching, formulating a working hypothesis based on observations and background knowledge, collecting data to test the hypothesis, effectively organizing and analyzing the data, drawing sound conclusions based on the data, and taking a course of action based on the conclusions. For many experienced teachers, this cycle becomes automatic and internalized. When applied systematically, these practices can serve to validate research and theory and, as a result, increase your growing professional knowledge base.

3. *Share your experiences.* When you combine knowledge of research with your professional common sense, you will find yourself engaged in more effective practices. As you and your students experience success, share your findings. Avenues for dissemination are endless. In addition to publishing articles in traditional sources such as professional journals and organizational newsletters, don't overlook the importance of preparing schoolwide in-service demonstrations, papers for state and national professional conferences, and presentations to school boards. In addition, the Internet offers various newsgroups where teachers engage in ongoing discussions about their work.

What Research Methods Are Used in Educational Psychology?

How do we know what we know in educational psychology? As in any scientific field, knowledge comes from many sources. Sometimes researchers study schools, teachers, or students as they are, and sometimes they create special programs, or **treatments,** and study their effects on one or more **variables** (anything that can have more than one value, such as age, sex, achievement level, or attitudes). There is no one best or most useful approach to research; any method can be useful when applied to the right set of questions. The principal methods educational researchers use to learn about schools, teachers, students, and instruction are experiments, correlational studies, and descriptive research (see Henig, 2008/2009; Mertler & Charles, 2011; Slavin, 2008b).

treatment

A special program that is the subject of an experiment.

variable

Something that can have more than one value.

■ Experiments

In an **experiment,** researchers can create special treatments and analyze their effects. In one classic study, Lepper, Greene, and Nisbett (1973) set up an experimental situation in which children used felt-tipped markers to draw pictures. Children in the experimental group (the group that received a treatment) were given a prize (a "good player award") for drawing pictures. Children in a control group received no prizes. At the end of the experiment, all students were allowed to choose among various activities, including drawing with felt-tipped markers. The children who had received the prizes chose to continue drawing with felt-tipped markers about half as frequently as did those who had not received prizes. This result was interpreted as showing that rewarding individuals for doing a task they already liked could reduce their interest in doing the task when they were no longer rewarded.

The Lepper study illustrates several important aspects of experiments. First, the children were randomly assigned to receive prizes or not. For example, the children's names might have been put on slips of paper that were dropped into a hat and then drawn at random for assignment to a "prize" or "no-prize" group. **Random assignment** ensured that the two groups were essentially equivalent before the experiment began. This equivalence is critical because if we were not sure that the two groups were equal before the experiment, we would not be able to tell whether it was the prizes that made the difference in their subsequent behavior.

A second feature of this study characteristic of experiments is that everything other than the treatment itself (the prizes) was kept the same for the prize and no-prize groups. The children played in the same rooms with the same materials and with the same adults present. The researcher who gave the prize spent the same amount of time watching the no-prize children draw. Only the prize itself was different for the two groups. The goal was to be sure that it was the treatment, not some other factor, that explained the difference between the two groups.

LABORATORY EXPERIMENTS   The Lepper and colleagues (1973) study is an example of a **laboratory experiment.** Even though the experiment took place in a school building, the researchers created a highly artificial, structured setting that existed for a very brief period of time. The advantage of laboratory experiments is that they permit researchers to exert a very high degree of control over all the factors involved in the study. Such studies are high in **internal validity,** which is to say that we can confidently attribute any differences they find to the treatments themselves (rather than to other factors). The primary limitation of laboratory experiments is that they are typically so artificial and so brief that their results may have little relevance to real-life situations. For example, the Lepper et al. study, which was later repeated several times, was used to support a theory that rewards can diminish individuals' interest in an activity when the rewards are withdrawn. This theory served as the basis for attacks on the use of classroom rewards, such as grades and stars. However, later research in real classrooms using real rewards has generally failed to find such effects (see Cameron & Pierce, 1994). This finding does not discredit the Lepper and colleagues study; it does show that theories based on artificial laboratory experiments cannot be assumed to apply to all situations in real life but must be tested in the real settings.

RANDOMIZED FIELD EXPERIMENTS   Another kind of experiment that is often used in educational research is the **randomized field experiment,** in which instructional programs or other practical treatments are evaluated over relatively long periods in real classes under realistic conditions (Levin et al., 2003; Mosteller & Boruch, 2002). For example, Pinnell, Lyons, DeFord, Bryk, and Seltzer (1994) compared four approaches to reading instruction for at-risk first-graders for reading failure, including Reading Recovery, a one-to-one tutoring model for at-risk first-graders that requires extensive training. In each of 10 schools, the 10 lowest-performing students were identified. Four

experiment

Procedure used to test the effect of a treatment.

random assignment

Selection by chance into different treatment groups; intended to ensure equivalence of the groups.

laboratory experiment

Experiment in which conditions are highly controlled.

internal validity

The degree to which an experiment's results can be attributed to the treatment in question rather than other factors.

randomized field experiment

Experiment conducted under realistic conditions in which individuals are assigned by chance to receive different practical treatments or programs.

were assigned at random to the **experimental group** using Reading Recovery, and 6 were assigned to a control group. **Control group** students continued to receive the reading program and remedial services they would have received anyway.

After 4 months (in February), all children were tested. Reading Recovery children scored significantly higher than control students on each of four measures. The following October, students were tested again, and Reading Recovery students still performed significantly better than control students.

Note the similarities and differences between the Pinnell and colleagues (1994) randomized field experiment and the Lepper and colleagues (1973) laboratory experiment. Both used random assignment to make sure that the experimental and control groups were essentially equal at the start of the study. Both tried to make all factors except the treatment equal for the experimental and control groups, but the Pinnell and colleagues study was (by its very nature as a field experiment) less able to do this. For example, experimental and control students were taught by different teachers. Because many teachers were involved, this factor probably balanced out, but the fact remains that in a field setting, control is never as great as in a laboratory situation (see Pressley & Harris, 1994). On the other hand, the fact that the Pinnell and colleagues study took place over a long period of time in real classrooms means that its **external validity** (real-life validity) is far greater than that of the Lepper and colleagues study. That is, the results of the Pinnell and colleagues study have direct relevance to reading instruction for first-graders who are at risk.

Both laboratory experiments and randomized field experiments make important contributions to the science of educational psychology. Laboratory experiments are primarily important in researchers' efforts to build and test theories, whereas randomized field experiments are the acid test for evaluating practical programs or improvements in instruction. For example, the writing process approach of Leah Washington has been evaluated many times in comparison to traditional methods and found to be highly effective (Harris, Graham, & Pressley, 2001). This finding is not a guarantee that this method will work in every situation, but it does give you a good direction to follow to improve writing.

Recently, the U.S. Department of Education has begun to strongly emphasize research as a basis for practice in education. For example, in the No Child Left Behind Act of 2001, the phrase "based on scientifically-based research" appeared 110 times in reference to programs expected to be used under federal funding. In this context "scientifically-based research" primarily refers to studies in which experimental and control groups are assigned at random (see U.S. Department of Education, 2003), although well-designed studies comparing matched groups are also valued. These policies, and new funding to support randomized experiments, have greatly increased interest in this type of research. You can expect to see many more randomized studies in the coming years, and these studies will matter a great deal for policy and practice (see Mosteller & Boruch, 2002; Slavin, 2003).

Randomized field experiments are very difficult to conduct in education, as it is rare that teachers are willing to be assigned by chance to one group or another. For this reason, field experiments more often use matching, in which teachers or schools using one method would be matched with those using a different method or with a control group. For example, Calderón, Hertz-Lazarowitz, and Slavin (1998) evaluated a program called Bilingual Cooperative Integrated Reading and Composition (BCIRC) in El Paso, Texas, elementary schools. English learners in three schools using BCIRC were matched with control groups, based on prior achievement levels, socioeconomic status, and other factors. After pretesting, both sets of schools were followed for 2 years. Students in the BCIRC schools scored higher on reading measures than those in the control schools.

Matching is much more practical than random assignment, but its results must be carefully interpreted because there may be reasons that one group of educators took on one method whereas another group did not. Were the teachers in the treatment group more motivated? Did they have greater resources? On the other hand, were they more desperate to try something new? In a matched study, these possibilities need to be considered and ruled out as much as possible (Mertler & Charles, 2011).

experimental group

Group that receives treatment during an experiment.

control group

Group that receives no special treatment during an experiment.

external validity

Degree to which results of an experiment can be applied to real-life situations.

SINGLE-CASE EXPERIMENTS   One experimental method occasionally used in educational research is the **single-case experiment** (see Franklin, Allison, & Gorman, 1997; Neuman & McCormick, 1995). In one typical form of this type of experiment, a single student's behavior may be observed for several days. Then a special program is begun, and the student's behavior under the new program is observed. Finally, the new program is withdrawn. If the student's behavior improves under the special program but the improvement disappears when the program is withdrawn, the implication is that the program has affected the student's behavior. Sometimes the "single case" can be several students, an entire class, or a school given the same treatment.

An example of a single-case experiment is a classic study by Barrish, Saunders, and Wolf (1969). In this study, a fourth-grade class was the single case. Observers recorded the percentage of time that at least one student in the class was talking out (talking without permission) or out of their seat during reading and math periods. After 10 days, a special program was introduced. The class was divided into two large teams, and whenever any student on a team misbehaved, the team was given a check mark. At the end of each day, the team with fewer check marks (or both teams if both received fewer than five check marks) could take part in a 30-minute free period.

The results of this study are illustrated in Figure 1.2. Before the Good Behavior Game began (baseline), at least one student in the math class was talking out 96 percent of the time, and at least one student was out of their seat without permission 82 percent of the time. When the game was instituted in math, the class's behavior improved dramatically. When the game was withdrawn, the class's behavior got worse again but improved once more when the game was reintroduced. Note that when the game was also introduced in reading class, student behaviors again improved. The fact that the program made a difference in both math and reading gives us even greater confidence that the Good Behavior Game is effective.

One important limitation of the single-case experiment is that it can be used only to study outcomes that can be measured frequently. For this reason, most single-case studies involve observable behaviors, such as talking out and being out of seat, which can be measured every day or many times per day.

■ Correlational Studies

Perhaps the most frequently used research method in educational psychology is the **correlational study.** In contrast to an experiment, in which the researcher deliberately changes one variable to see how this change will affect other variables, in correlational research the researcher studies variables as they are to see whether they are related. Variables can be positively correlated, negatively correlated, or uncorrelated. An example of a **positive correlation** is the relationship between reading achievement and mathematics achievement. In general, someone who is better than average in reading will also be better than average in math. Of course, some students who are good readers are not good in math, and vice versa; but on the average, skills in one academic area are positively correlated with skills in other academic areas: When one variable is high, the other tends also to be high. An example of a **negative correlation** is days absent and grades. The more days a student is absent, the lower his or her grades are likely to be; when one variable is high, the other tends to be low. With **uncorrelated variables,** in contrast, there is no correspondence between them. For example, student achievement in Poughkeepsie, New York, is probably completely unrelated to the level of student motivation in Portland, Oregon.

One classic example of correlational research is a study by Lahaderne (1968), who investigated the relationship between students' attentiveness in class and their achievements and IQs. She observed 125 students in 4 sixth-grade classes to see how much of the time students were paying attention (e.g., listening to the teacher and doing assigned work). She then correlated attentiveness with achievement in reading, arithmetic, and language and with students' IQs and attitudes toward school. The advantage of correlational studies is that they allow the researcher to study variables as they are, without creating artificial situations.

single-case experiment

Experiment that studies a treatment's effect on one person or one group by contrasting behavior before, during, and after application of the treatment.

correlational study

Research into the relationships between variables as they naturally occur.

positive correlation

Relationship in which high levels of one variable correspond to high levels of another.

negative correlation

Relationship in which high levels of one variable correspond to low levels of another.

uncorrelated variables

Variables for which there is no relationship between levels of one compared to another.

FIGURE 1.2 **Results of Successful Single-Case Experiments**

The effect of rewarding good behavior in fourth-grade math and reading classes is clear from these graphs. They show that misbehavior was high during the baseline period (before the Good Behavior Game was introduced) but fell during the game. For instance, in reading session 13, before the game was introduced, students were out of their seats during nearly 100 percent of the observed time intervals. In reading session 53, however, when the game was in use, the percentage of time intervals in which out-of-seat students approached zero. In single-case experiments on treatments affecting behaviors that can be frequently measured, graphs like these can prove a treatment's effectiveness.
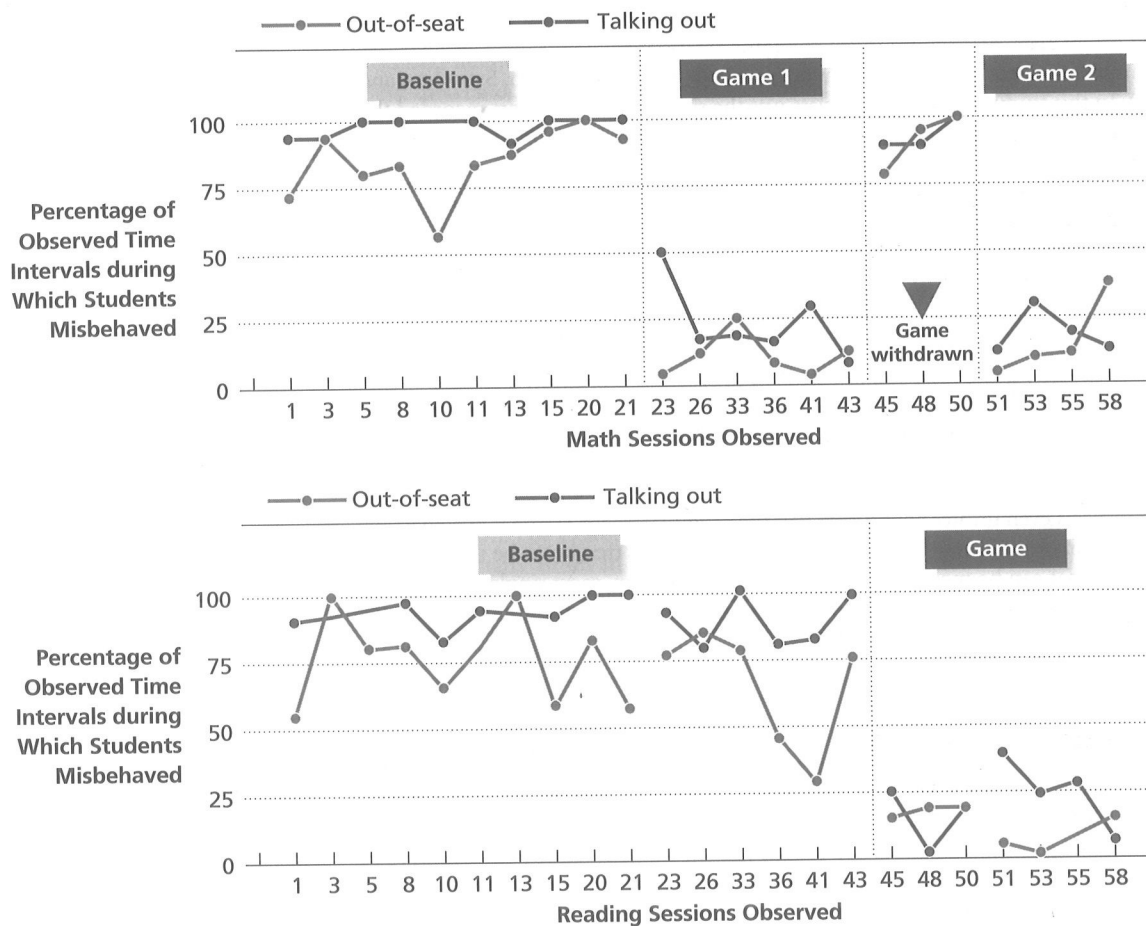
Source: Adapted from H. H. Barrish, M. Saunders, and M. M. Wolf, "Good Behavior Game: Effects of Individual Contingencies for Group Consequences on Disruptive Behavior in a Classroom," *Journal of Applied Behavior Analysis, 2,* 1969, pp. 119–124. Copyright 1969 by the *Journal of Applied Behavior Analysis.* Reprinted by permission.

Many important research questions can be studied only in correlational studies. For example, if we wanted to study the relationship between gender and math achievement, we could hardly randomly assign students to be boys or girls! Also, correlational studies let researchers study the interrelationships of many variables at the same time.

The principal disadvantage of correlational methods is that though they may tell us that two variables are related, they do not tell us what causes what. The Lahaderne study of attentiveness, achievement, and IQ raised the question: Does student attentiveness cause high achievement, or are high–ability, high–achieving students simply more attentive than other students? A correlational study cannot answer this question completely. However, correlational researchers do typically use statistical methods to try to determine what causes what. In Lahaderne's study, it would have been possible to find out whether, among students with the same IQ, attentiveness was related to achievement.
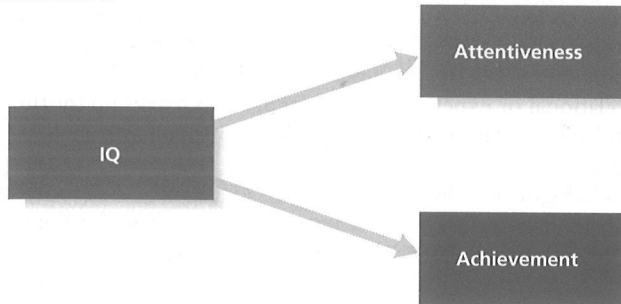
Explanation A

Attentiveness → **Achievement**

Explanation B

IQ → **Attentiveness**

Achievement

FIGURE 1.3 Possible Explanations for Correlations between Attentiveness, Achievement, and IQ

Correlational studies can show that variables are related, but such studies cannot prove what causes what. In Lahaderne's (1968) study, for example, did the attentiveness of the students cause higher achievement scores (Explanation A), or did a third factor—intelligence—determine both attentiveness and performance on achievement tests (as diagrammed in Explanation B)? Both explanations are partially correct.

For example, given two students of average intelligence, will the one who is more attentive tend to achieve more? If not, then we may conclude that the relationship between attentiveness and achievement is simply the result of high-IQ students being more attentive and higher achieving than other students, not the result of any effect of attention on achievement.

Figure 1.3 illustrates two possible explanations for the correlation of attentiveness to achievement and IQ. In Explanation A, attentiveness causes achievement. In Explanation B, both attentiveness and achievement are assumed to be caused by a third variable, IQ. Which is correct? Evidence from other research on this relationship suggests that both explanations are partially correct—that even when the effect of IQ is removed, student attentiveness is related to achievement.

Another illustration of correlational research is a study by Lubienski and Lubienski (2006) that used data from the National Assessment of Education Progress (NAEP) to ask whether public or private schools produce better reading and math performance. Of course, students in private schools have higher achievement scores, but statistically controlling for students' ethnicity, wealth, and other background factors, the researchers found that public school students scored at least as well as similar students in private schools.

■ Descriptive Research

Experimental research and correlational research look for relationships between variables. However, some research in educational psychology simply seeks to describe a situation of interest. For example, the National Institute of Child Health and Human Development (NICHD) Early Child Care Research Network (2005) did a national observational study in 780 third-grade classrooms to describe the wide range of classroom environments children experience. Among other things, the study found that most time in third grade focuses on basic skills, with little time for higher-order skills, but there was enormous variation. In another example, Mosenthal and colleagues (2004) observed and described six schools in Vermont that consistently had extraordinary reading scores, finding that such schools had particularly focused teachers who constantly evaluated their own teaching. One type of **descriptive research** is a survey

descriptive research

Research study aimed at identifying and gathering detailed information about a topic of interest.

or interview. Another, called *ethnography,* involves observation of a social setting (such as a classroom or school) over an extended period. As an example of ethnography, Anagnostopoulos (2006) spent a year in a Chicago high school observing and interviewing teachers and students to understand their response to a new policy that required students to pass a test for promotion to the next grade. She found that both students and teachers mentally divided retained students into two categories—"true demotes" and "real students"—in which the "true demotes" were "bad kids" who deserved to be retained and the "real students" were students who, they thought, did not really deserve to be retained. Descriptive studies provide a much more complete story of what happens in schools and classrooms than could studies that boil down findings into cold, hard numbers. Descriptive research usually does not have the scientific objectivity of correlational or experimental research, but it makes up for this lack in richness of detail and interpretation (Creswell, 2002; Northcutt & McCoy, 2004; Rossman & Rallis, 2003).

Developmental psychologists use descriptive research extensively to identify characteristics of children at different ages. The most important research in developmental psychology was done by the Swiss psychologist Jean Piaget (1952b), who began by carefully observing his own children. As a result of his observations, he developed a theory that describes the cognitive development of children from infancy through adolescence (Wadsworth, 2004).

■ Action Research

Action research is a particular form of descriptive research that is carried out by educators in their own classrooms or schools (A. P. Johnson, 2009; Mills, 2007, Stringer, 2008). In action research, a teacher or principal might try out a new teaching method or school organization strategy, collect information about how it worked, and communicate this information to others. Because the people involved in the experiment are the educators themselves, action research lacks the objectivity sought in other forms of research, but it can provide deeper insight from front-line teachers or administrators than would be possible in research done by outsiders.

How Can I Become an Intentional Teacher ?

Think about the best, most intentional teachers you ever had—the ones who seemed so confident, so caring, so skilled, so enthusiastic about their subject. Chances are, when they took educational psychology, they were as scared, uncertain, and overwhelmed about becoming a teacher as you might be today. Yet they kept at it and made themselves the great teachers you remember. You can do the same.

■ Teacher Certification

Before you can become an *intentional* teacher, you have to become a *certified* teacher. Each state, province, and country has its own requirements, but in most places you at least have to graduate from a 4-year college with a specified distribution of courses, although various alternative certification programs exist as well. You also will need to have a satisfactory student teaching experience. In most states, however, these are not enough. You also have to pass a teacher certification test, or licensure test. Many states base their requirements on the 10 principles of effective teaching shown in Figure 1.4. Developed by the Interstate New Teacher Assessment and Support Consortium (INTASC), they

action research

Research carried out by educators in their own classrooms or schools.

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1. **Knowledge of Subject Matter:** The teacher understands the central concepts, tools of inquiry, and structures of the subject being taught and can create learning experiences that make these aspects of subject matter meaningful for students.

2. **Knowledge of Human Development and Learning:** The teacher understands how children learn and develop and can provide learning opportunities that support their intellectual, social, and personal development.

3. **Adapting Instruction for Individual Needs:** The teacher understands how students differ in their approaches to learning and creates instructional opportunities that are adapted to diverse learners.

4. **Multiple Instructional Strategies:** The teacher uses various instructional strategies to encourage students' development of critical thinking, problem solving, and performance skills.

5. **Classroom Motivation and Management:** The teacher uses an understanding of individual and group motivation and behavior to create a learning environment that encourages positive social interaction, active engagement in learning, and self-motivation.

6. **Communication Skills:** The teacher uses knowledge of effective verbal, nonverbal, and media communication techniques to foster active inquiry, collaboration, and supportive interaction in the classroom.

7. **Instructional Planning Skills:** The teacher plans instruction based upon knowledge of subject matter, students, the community, and curriculum goals.

8. **Assessment of Student Learning:** The teacher understands and uses formal and informal assessment strategies to evaluate and ensure the continuous intellectual, social and physical development of the learner.

9. **Professional Commitment and Responsibility:** The teacher is a reflective practitioner who continually evaluates the effects of his or her choices and actions on others (students, parents, and other professionals in the learning community) and who actively seeks out opportunities to grow professionally.

10. **Partnerships:** The teacher fosters relationships with school colleagues, parents, and agencies in the larger community to support students' learning and well-being.

Source: Council of Chief State School Officers. (1992). The Interstate New Teacher Assessment and Support Consortium (INTASC) standards were developed by the Council of Chief State School Officers and member states. Copies may by downloaded from the council's website at www.ccsso.org. Model standards for beginning teacher licensing, assessment, and development: A resource for state dialogue. Washington, DC: Author. www.ccsso.org/content/pdfs/corestrd.pdf.

form the basis for most teacher certification tests, whether developed by INTASC, by the Education Testing Service, or by individual state departments of education (see Darling-Hammond, 2008).

INTASC has developed its own Test for Teaching Knowledge (TTK). This test assesses new teachers' knowledge of child development; theories of teaching and learning, assessment, and language acquisition; the role of student background in the learning process; and other basic knowledge and skills important for teaching. Some states are beginning to use this test. To read more about the TTK, visit the Council of Chief State School Officers (CCSSO) website at www.ccsso.org/intasc.

The Praxis Series™ Professional Assessments for Beginning Teachers, developed by the Educational Testing Service, is the most common test used by states to certify teachers. The Praxis Series includes three categories of assessment that correlate to significant stages in teacher development: Praxis I: Academic Skills Assessment for entering a teacher training program, Praxis II: Subject Assessments for licensure for entering the profession, and Praxis III: Classroom Performance Assessments after the first year of teaching. Praxis II is the test you would take on completing your teacher preparation program. It offers three Principles of Learning and Teaching (PLT) tests that relate to the content in educational psychology—for grades K to 6, 5 to 9, and 7 to 12. These tests cover content in four areas: students as learners, instruction and assessment, communication techniques, and teacher professionalism.

Each PLT test presents four scenarios followed by three short-answer questions related to the scenario. There are also 24 multiple-choice questions, for a total of 36 questions. Detailed information about the Praxis series of tests can be found at www.ets .org/praxis. From this website you can access the tests-at-a-glance page, which includes test outlines, sample questions with explanations for the best answers, and test-taking strategies. There is also a list of state-by-state requirements to determine which Praxis tests each state uses, if any. Note that individual universities may also use Praxis, even if their states do not require it.

Each state, province, or institution that uses the Praxis tests sets its own passing requirements. The passing score for each test for each state is listed on the website and in a booklet you receive with your score report.

Many states, including California, Texas, Florida, and New York, have developed or are developing their own teacher certification tests. These usually include sections much like the Praxis Principles of Learning and Teaching.

Throughout this book you will find tips on topics likely to appear on teacher certification tests. These marginal notes, called *Certification Pointers,* highlight knowledge that is frequently required on state teacher licensure exams, including Praxis Principles of Learning and Teaching. Also see the new Appendix at the end of the book that correlates the content of each chapter to corresponding topics within the Praxis Principles of Learning and Teaching exam.

Connections

For additional help in preparing for licensure, see the Appendix at the end of the book.

■ Beyond Certification

Getting a teaching certificate is necessary but not sufficient to become an intentional teacher. Starting with your student teaching experience and continuing into your first job, you can create or take advantage of opportunities to develop your skills as an intentional teacher in a number of ways.

SEEK MENTORS Experienced teachers who are themselves intentional teachers are your best resource (Nieto, 2009). Not only are they highly effective, but they also understand and can describe what they're doing (and, hopefully, can help you learn to do those things). Talk with experienced teachers in your school, observe them teaching, and ask them to observe you and share ideas, as Ellen Mathis did in the vignette at the beginning of this chapter. Many school systems provide induction programs to help new teachers develop in the crucial first years, but even if yours does not, you can create one for yourself by seeking out experienced and helpful mentors.

Certification Pointer

Teacher certification tests include a section on teacher professionalism. One aspect that is emphasized is being able to read and understand research on current ideas and debates about teaching practices.

SEEK PROFESSIONAL DEVELOPMENT Districts, universities, state departments of education, and other institutions provide all sorts of professional development workshops for teachers on a wide range of topics. Take advantage of every opportunity to partici-

pate. The best professional development includes some sort of coaching or follow-up, in which someone who knows a given technique or program comes to your class to observe you trying to use the program and gives you feedback (see Darling-Hammond & Richardson, 2009; Hirsh & Hord, 2008; Neufield & Roper, 2003). Workshops in which many teachers from your school participate together, and then have opportunities to discuss successes and challenges, can also be very effective (see Calderón, 1999).

TALK TEACHING   Talk to your colleagues, your former classmates, your friends who teach, even your friends who don't teach. Share your successes, your failures, your questions. Teaching can be an isolating experience if it's just you and your students. Take every opportunity to share ideas and commiserate with sympathetic colleagues (Nieto, 2009). Join a book club to discuss articles and books on teaching (Hoerr, 2009).

ON THE WEB

When your friends and colleagues are worn out from your passion for teaching, try virtual colleagues on the Web. The following examples are just a few of the many teacher-oriented websites and blogs that offer opportunities to share advice, opinions, and observations (Ferriter, 2009a,b).

Blogger (www.blogger.com)

Edublogs (www.edublogs.com)

Education World (www.education-world.com)

The Knowledge Loom (www.knowledgeloom.org)

K–12 Professional Circle (www.nces.ed.gov/practitioners/teachers.asp)

Typepad (www.typepad.com)

The Vent (www.proteacher.com)

There are websites for elementary teachers (www.wmtps.org/techini/bestsite/bestsite.html), for middle school teachers (www.middleweb.com/10TeachingSites.html), and for teachers of various subjects, by topic (www.assortedstuff.com/top101/?page_id=2). Resources for middle school science teachers can be found at www.sldirectory.com/teachf/scied.html. Resources for teachers using technology in their classrooms can be found at the Networked Learning Community (http://learnweb.harvard.edu/ent/home).

PROFESSIONAL PUBLICATIONS AND ASSOCIATIONS   Intentional teachers do a lot of reading. Your school may subscribe to teacher-oriented journals, or you might choose to do so. For example, look for *Teacher Magazine, Theory Into Practice, Learning, Young Children, Phi Delta Kappan, Educational Leadership,* or subject-specific journals such as *Reading Teacher* and *Mathematics Teacher.*

In addition, check out professional associations in your subject area or area of interest. The national teachers' unions—the American Federation of Teachers (AFT) and National Education Association (NEA)—have publications, workshops, and other resources from which you can benefit greatly. Your state department of education, regional educational laboratory, or school district office may also have useful resources. A few useful websites include the following:

American Educational Research Association: www.aera.net

American Federation of Teachers: www.aft.org

✔ Certification Pointer

The teacher professionalism section of Praxis II and other certification tests may ask you to identify the titles of several professional journals in your particular field of teaching (e.g., *Journal of Educational Psychology, Educational Leadership, Phi Delta Kappan*).

✔ Certification Pointer

Teaching certification tests might expect you to know which professional associations offer meetings, publications, and dialogue with other teachers (e.g., American Educational Research Association, International Reading Association, American Federation of Teachers, National Education Association).

Canadian Educational Research Association: www.cea–ace.ca

Council for Exceptional Children: www.cec.sped.org

International Reading Association: www.reading.org

National Association for Bilingual Education: www.nabe.org

National Association for the Education of Young Children: www.naeyc.org

National Association of Black School Educators: www.nabse.org

National Council for the Social Studies: www.ncss.org

National Council of Teachers of English: www.ncte.org

National Council of Teachers of Mathematics: www.nctm.org

National Education Association: www.nea.org

National Institute for Literacy: www.nifl.gov

National Middle School Association: www.nmsa.org

National Science Teachers Association: www.nsta.org

Chapter 1 Summary

What Makes a Good Teacher ?

Good teachers know their subject matter and have mastered pedagogical skills. They accomplish all the tasks involved in effective instruction with warmth, enthusiasm, and caring. They are intentional teachers, and they use principles of educational psychology in their decision making and teaching. They combine research and common sense.

What Is the Role of Research in Educational Psychology ?

Educational psychology is the systematic study of learners, learning, and teaching. Research in educational psychology focuses on the processes by which information, skills, values, and attitudes are communicated between teachers and students in the classroom and on applications of the principles of psychology to instructional practices. Such research shapes educational policies, professional development programs, and teaching materials.

What Research Methods Are Used in Educational Psychology ?

Experimental research involves testing particular educational programs or treatments. Random assignment of experimental subjects into groups before the testing helps to ensure that groups are equivalent and findings will be valid. An experimental group receiving the treatment is matched with a control group whose members do not receive treatment. Laboratory experiments are highly structured and short term. All the variables involved are strictly controlled. Randomized field experiments are less structured and take place over a long period of time under realistic conditions in which not all variables can be controlled. A single-case experiment involves observation of one student or group of students over a specified period before and after treatment. Cor-

relational studies examine variables to see whether they are related. Variables can be positively correlated, negatively correlated, or uncorrelated. Correlational studies provide information about variables without manipulating them or creating artificial situations. However, they do not indicate the causes of relationships between variables. Descriptive research uses surveys, interviews, and observations to describe behavior in social settings.

How Can I Become an Intentional Teacher ?

Before you can become an intentional teacher, you have to become a certified teacher. Each state has its own requirements regarding education, student teaching, and licensure testing. These include the Test for Teaching Knowledge and the Praxis series. You can further develop your skills as an intentional teacher by seeking mentors, pursuing professional development, and talking to colleagues and friends about your experiences.

Key Terms

Review the following key terms from the chapter.

action research   20
control group   16
correlational study   17
critical thinking   7
descriptive research   19
educational psychology   2
experiment   15
experimental group   16
external validity   16
intentionality   4
internal validity   15
laboratory experiment   15

negative correlation   17
pedagogy   3
positive correlation   17
principle   9
random assignment   15
randomized field experiment   15
single-case experiment   17
teacher efficacy   6
theory   9
treatment   14
uncorrelated variables   17
variable   14

Self-Assessment: Practicing for Licensure

Directions: The chapter-opening vignette addresses indicators that are often assessed in state licensure exams. Re-read the chapter-opening vignette and then respond to the following questions.

1. In the first paragraph, Ellen Mathis does not understand why her students are nonproductive and unimaginative. According to educational psychology research, which of the following teacher characteristics is Ellen most likely lacking?

   a. Classroom management skills

   b. Content knowledge

   c. Intentionality

   d. Common sense

2. Leah Washington talks with Ellen Mathis about getting students to write interesting compositions. Which of the following statements summarizes Leah's approach to teaching writing?

   a. Select teaching methods, learning activities, and instructional materials that are appropriate and motivating for students.

   b. Have students of similar abilities work together so the teacher can adapt instruction to meet the needs of each group.

   c. When working on writing activities, consider the teacher to be the instruction center.

   d. Individualization is the first goal of instruction; direct instruction is the second goal.

3. According to research on expertise development, what characteristic separates novice teachers from expert teachers?

   a. Novice teachers tend to rely on their pedagogical skills because their content knowledge is less complex than that of experts.

   b. Expert teachers do more short-term memory processing than novices because their thinking is more complex.

   c. Novice teachers have to constantly upgrade and examine their own teaching practices, whereas experts use a "best practices" approach.

   d. Expert teachers are critical thinkers.

4. Educational psychologists are often accused of studying the obvious. However, they have learned that the obvious is not always true. All of the following statements demonstrate this idea except one. Which one is obvious *and* supported by research?

   a. Student achievement is increased when students are assigned to classes according to their ability.

   b. Scolding students for misbehavior improves student behavior.

   c. Whole-class instruction is more effective than individualized instruction.

   d. Intentional teachers balance competing goals according to the needs of particular students and situations.

5. Leah Washington discusses many of her teaching strategies with Ellen Mathis. One can easily see that Leah views teaching as a decision-making process. She recognizes problems and issues, considers situations from multiple perspectives, calls on her professional knowledge to formulate action, and

   a. selects the most appropriate action and judges the consequence.

   b. chooses a strategy that agrees with her individual beliefs about teaching.

   c. consults with expert teachers and administrators to assist with her plan of action.

   d. allows students to make instructional decisions based on their interests and needs.

6. The products of research are principles, laws, and theories. Leah Washington describes many principles and theories of educational psychology as she speaks with Ellen Mathis about teaching students to write compositions. First, describe an instruction action with which Ellen Mathis is having difficulties (e.g., Ellen assigns all students the same topic), and then describe principles and theories she can use to engage her students in exciting and meaningful lessons.

7. The goal of research in educational psychology is to examine questions of teaching and learning using objective methods. These research methods include experiments, correlational studies, descriptive research, and action research. Think of a research question, and then describe how you would go about answering your question using these methods.

8. Intentional teachers are aware of resources available for professional learning. They continually refine their practices to address the needs of all students. List four actions you could take to find information to help you teach your students with limited English proficiency.

myeducationlab

Go to the Topic **Research Methods and Teacher Reflection** in the MyEducationLab (www.myeducationlab.com) for your course, where you can:

- Find learning outcomes for **Research Methods and Teacher Reflection** along with the national standards that connect to these outcomes.

- Complete Assignments and Activities that can help you more deeply understand the chapter content.

- Apply and practice your understanding of the core teaching skills identified in the chapter with the Building Teaching Skills and Dispositions learning units.

- Access video clips of CCSSO National Teachers of the Year award winners responding to the question "Why Do I Teach?" in the Teacher Talk section.

- Check your comprehension of the content covered in the chapter by going to the Study Plan in the Book Resources for your text. Here you will be able to take a chapter quiz; receive feedback on your answers; and then access Review, Practice, and

Enrichment activities to enhance your understanding of chapter content.

- Watch author Bob Slavin present Personal Reflections podcasts on *Adapting* and *Using Research to Inform Teaching* in the Book Resources for your text. Then, respond to the reflection questions that follow.
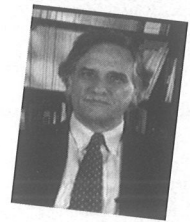
Adapting

YOUR REFLECTIONS How is my work with Mark a demonstration of critical thinking? Consider this experience as well as that of Leah Washington in the Chapter 1 opening vignette. What can you learn from these experiences that will help you become an intentional teacher?

Using Research to Inform Teaching

YOUR REFLECTIONS Why was my study ruined? What lesson can you learn from this example about using research to be an effective teacher?

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Cognitive, Language, and Literacy Development

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