

Educational Psychology: A Tool for Effective Teaching



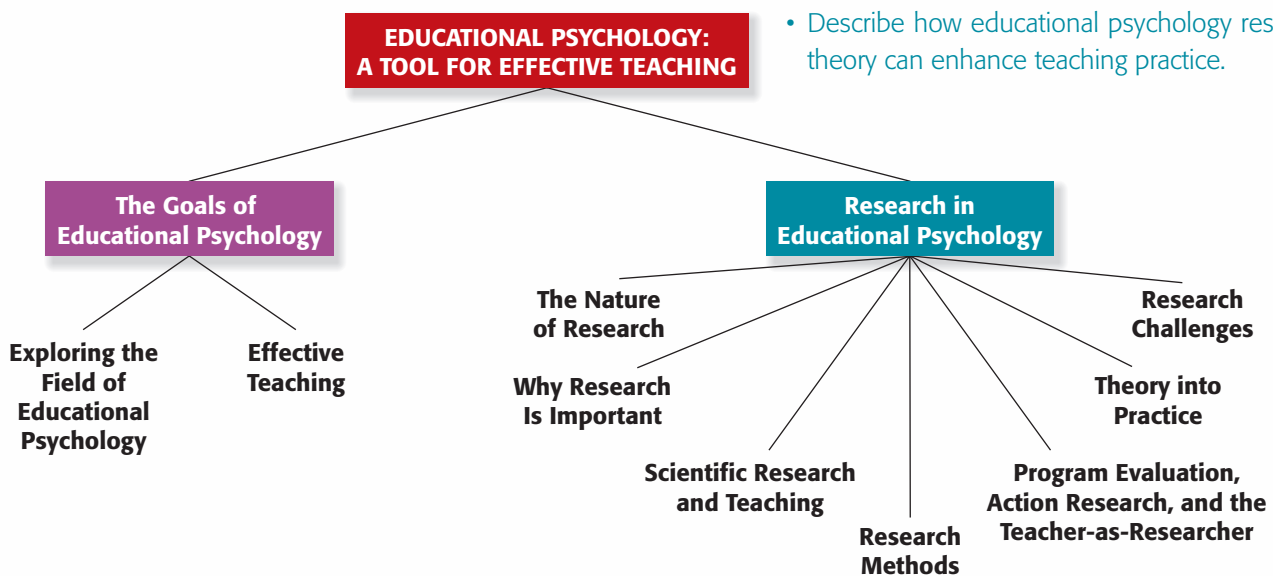
Preview

In the quotation on page three, Canadian astronaut Julie Payette comments that education opens the door to the future. As a teacher you will open this door for your students, and you will help shape that future by helping the youth of today become the leaders of tomorrow. In this chapter we will examine what the field of educational psychology is about.

LEARNING GOALS

After reading and reflecting on this chapter, you should be able to:

- Identify the goals of educational psychology.
- Describe challenges associated with the craft of teaching.
- Discuss the “art” versus “science” components of teaching.
- Identify the attitudes and skills of effective teachers.
- Discuss the nature of research.
- Describe how educational psychology research and theory can enhance teaching practice.



Education opens the door to the future. It gives us options. It helps us reason. It is always in motion.

Julie Payette

Canadian astronaut, contemporary

Teaching Stories

When preparing for the writing of this text, we asked teachers from around the country to reflect on the craft of teaching. Almost everyone we surveyed included some comments or words of advice for those who were beginning their teaching careers. Below, four award-winning educators from across Canada offer suggestions about how to make teaching a positive experience for yourself and your students.

"I've learned that a teacher's job is never truly finished, so it's important to find a healthy balance between your extended professional life and your personal life. For example, while participating in school co-curricular activities can provide teachers with valuable insights about students' personalities and interests—information that can be used when planning lessons and for classroom management—assuming too many of these responsibilities is problematic for some teachers. Select one or two co-curricular activities that you enjoy but that still leave time for yourself and your family and friends."¹

"Teachers need to teach students how to learn, but teachers also need to continue in their own professional development and learning. I recommend

that teachers attend national or international conferences in their specific subject or interest area. These large conventions can help teachers develop a sense of career direction and focus. They also provide a host of valuable teaching materials and instructional ideas for classroom use."²

"Beginning teachers should strive to be flexible and open to new ideas. Teaching the same concept from a variety of perspectives makes your lessons engaging and addresses the learning styles of the students in your classroom. Being flexible also means being sensitive to the perspectives of students and parents. Parents are depending on you to create the best learning environment possible for their children. Put yourself in their shoes and plan accordingly."³

"One of the best pieces of advice I'd offer a beginning teacher is to remember to celebrate your students' successes. Acknowledge your students' efforts and accomplishments. If you believe in them and show them that their efforts are valued and recognized, they will respond accordingly. After all, helping students learn to succeed is what teaching is all about."⁴

1 Dan Forbes: 18 years elementary/middle years teacher, Manitoba; TOBA Award for Physical Education Program, 2001; Roy C. Hill Award for Important Educational Innovation, 1999; Prime Minister's Certificate of Achievement for Teaching Excellence, 1997

2 Anita Ghazariansteja: secondary-school science/chemistry teacher; recipient of the 2002 Ontario Secondary School Teachers' Federation Status of Women Award for Outstanding Female Educator

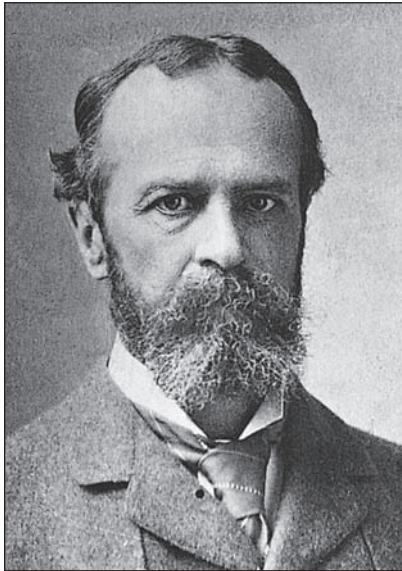
3 David Tallach Miller: secondary-school science, mathematics, & computer science teacher; recipient of the Teacher of the Year Award

4 Jane Witte: family studies teacher; independent educational consultant; part-time instructor, Faculty of Education, University of Western Ontario; Recipient of the Phyllis Meiklejohn Leadership Award

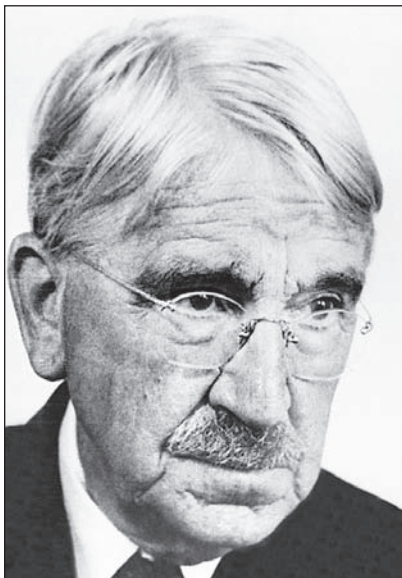
The Goals of Educational Psychology

Exploring the Field of Educational Psychology

Effective Teaching



William James



John Dewey

THE GOALS OF EDUCATIONAL PSYCHOLOGY

Educational psychology is a vast landscape that will take us an entire book to describe. In this introduction we will explore what the field of educational psychology is about, examine the nature of teaching, consider what is involved in being an effective teacher, and discuss how teachers use educational psychology in their practice.

Exploring the Field of Educational Psychology

Historical Background The field of educational psychology was founded by several pioneers in psychology just before the start of the twentieth century. One of those pioneers was William James (1842–1910). Soon after launching the first psychology textbook, *Principles of Psychology* (1890), he gave a series of lectures called *Talks to Teachers* (James, 1899/1993) in which he discussed the applications of psychology to educating children. James argued that laboratory psychology experiments often can't tell us how to effectively teach children. He argued for the importance of observing teaching and learning in classrooms for improving education. One of his recommendations was to start lessons at a point just beyond the child's level of knowledge and understanding, in order to stretch the child's mind.

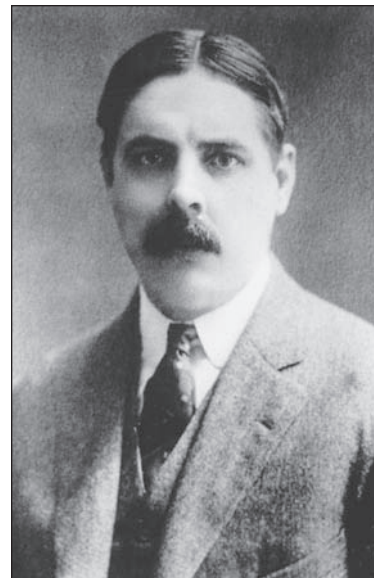
A second major figure in shaping the field of educational psychology was John Dewey (1859–1952), who became a driving force in the practical application of psychology. Dewey established the first major educational psychology laboratory in the United States, at the University of Chicago in 1894.

We owe many important ideas to John Dewey. First, we owe to him the view of the child as an active learner. Before Dewey it was believed that children should sit quietly in their seats and passively learn in a rote manner. In contrast, Dewey believed that children learn best by doing. Second, we owe to Dewey the idea that education should focus on the whole child and emphasize the child's adaptation to the environment. Dewey believed that children should not be narrowly educated in academic topics but should learn how to think and adapt to a world outside school. He especially thought that children should learn how to be reflective problem solvers. Third, we owe to Dewey the belief that all children deserve to have a competent education. This democratic ideal was not in place at the beginning of Dewey's career in the latter part of the nineteenth century, when education was reserved for a small portion of children,

many of whom were boys from wealthy families. Dewey was one of the influential psychologist-educators who pushed for a competent education for all children—girls and boys, as well as children from different socioeconomic and ethnic groups.

Another pioneer was E. L. Thorndike (1874–1949), who initiated an emphasis on assessment and measurement and promoted the scientific underpinnings of learning. Thorndike argued that one of schooling's most important tasks is to hone children's reasoning skills, and he excelled at doing exacting scientific studies of teaching and learning (Beatty, 1998).

Thorndike especially promoted the idea that educational psychology must have a scientific base and that it should focus strongly on measurement (O'Donnell & Levin, 2001).



E. L. Thorndike

James, Dewey, and Thorndike created and shaped the field of educational psychology. What were some of their ideas?

Educational Psychology: Art or Science? Educational psychology is the branch of psychology that specializes in understanding teaching and learning in educational settings. Both science and practice

Diversity and Education



Canadians in the Early History of Educational Psychology

The formal study of educational psychology in Canada dates back to the turn of the twentieth century. The most prominent figures in the early history of educational psychology were individuals such as William James, John Dewey, and E. L. Thorndike in the United States; and James Baldwin and Samuel Ralph Laycock in Canada. After the Second World War, more women began to fill academic and research positions in Canadian institutions. Two Canadian women pioneers in psychology were Mary Salter Ainsworth and Katharine M. Banham.

Mary Salter Ainsworth was born in Ohio in 1913 but spent most of her youth in Toronto. She attended the University of Toronto, where she earned her Ph.D. in developmental psychology in 1939. Mary Ainsworth taught at the University of Toronto, where she conducted research into patterns of early emotional attachment in infants. She pursued her interest in attachment in London and Uganda. While in Africa she conducted a longitudinal study of the development of mother–infant attachment, which she wrote about in *Infancy in Uganda: Infant Care and the Growth of Love*.

Katharine M. Banham, born in 1897, was the first woman to earn a Ph.D. at the University of Montreal. Her research interests included mental development in infancy and early childhood, with particular emphasis on social and emotional development and the rehabilitation of children with cerebral palsy. She was the author of *The Social and Emotional Development of the Child* (1931) and numerous articles, as well as a number of rating scales and psychological test instruments that are still in use today. She was a lecturer in psychology at the University of Toronto from 1921 to 1924, practised as a psychologist for the Canadian National Committee for Mental Health, became a clinical psychologist for the Montreal Mental Hygiene Institute, and held several positions at McGill University. Dr. Banham was the first woman on the psychology faculty at Duke University and a major force in North American psychological research until her death in 1995.

These early Canadian researchers contributed to educational dialogues that continue today, including the importance of considering the whole person, the inclusion of democratic processes, the importance of attachment and students' socio-emotional development, and the need to consider individual learning styles when teaching.



Mary Salter Ainsworth



Katharine M. Banham

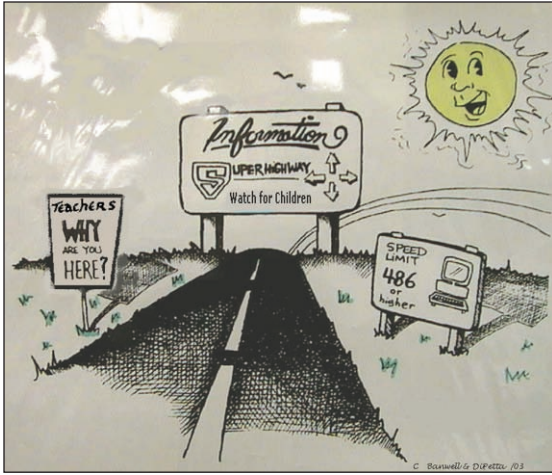
play important roles in educational psychology (Calfée, 1999; Shuell, 1996). The field draws its knowledge from theory and research in psychology, from theory and research more directly created and conducted by educational psychologists, and from the practical experiences of teachers. For example, the theories of Jean Piaget, Lev Vygotsky, and Robbie Case, which we discuss in Chapter 2, “Physical, Cognitive, and Language Development,” have many applications that can guide your teaching. Some theorists and researchers in educational psychology have tied their activities more directly to learning and teaching in schools. For example, after carrying out a two-year study of 12 secondary schools in British Columbia, Alberta, and Quebec, Henchey and his colleagues (Henchey et al., 2001) offer insights about school and teacher practices that promote high achievement for low-income students. Their findings underscore the importance of holding positive attitudes and high expectations for students, a focus on academic achievement and good teaching, structured classroom instruction, “traditional” standards of behaviour, and a sense of engagement and belonging among teachers and students.

educational psychology

The branch of psychology that specializes in understanding teaching and learning in educational settings

I have been a student and I have been a teacher. I have seen the pain that comes from not doing nearly well enough. And I have seen the pleasure that can come from the absolute joy of good learning.

Kim Campbell
Former Canadian prime minister,
Contemporary



© Banwell & DiPetta, 1998

There is spirited debate about how much teaching can be based on science versus how much of it is art. As a science, educational psychology's aim is to provide you with research knowledge that you can effectively apply to teaching situations. But scientific knowledge alone cannot inform you about all of the teaching situations that you will encounter, and this is where educational psychology is an art. You will need to make some important judgments in the classroom based on your personal skills and experiences as well as the accumulated wisdom of other teachers. As we see next, those judgments often take place in a classroom that is complex and fast-paced.

Effective Teaching

One reality of teaching is that many events occur simultaneously and in rapid-fire succession (McMillan, 1997; Sumara, 2002). Events happen quickly and it is difficult to predict what effect any one action by the teacher will have on any particular student. Often teachers must make quick decisions that have uncertain outcomes. The complexities of classroom do not allow effective teachers to follow a “one-size-fits-all” approach to teaching (Diaz, 1997). Teachers must master a variety of perspectives and strategies and be flexible in their application. Before we discuss these needs, however, we need to consider some social and ethical matters and the diverse nature of students in our schools.

Teaching Involves Social and Ethical Matters Schools are settings in which considerable socialization takes place. The social and ethical dimensions of teaching include the question of educational equity. When teachers make decisions about routine matters such as which students to call on, how to call on them, what kinds of assignments to make, or how to group students for instruction, they can create advantages for some students and disadvantages for others. In some cases, they might unintentionally and unconsciously perpetuate injustices toward students from particular backgrounds. For example, research suggests that teachers generally give boys more instructional time, more time to answer questions, more hints, and more second attempts than they give girls (AAUW Report, 1998; Cole & Willingham, 1997; Crawford & Unger, 2000).

Teaching Involves a Diverse Mosaic of Students

Your classroom will be filled with students who differ in many ways. They will have different levels of intellectual ability, different personality profiles, different interests, varying motivations to learn, and different family, economic, religious, and cultural backgrounds. How can you effectively teach this incredible mosaic of students?

You will want to reach all of your students and teach them in individualized ways that effectively meet their learning needs. Students' vast individual variations and diversity increase the classroom's complexity and contribute to the challenge of teaching. This diversity is especially apparent in the increasing number of students whose racial, ethnic, linguistic, and cultural backgrounds are quite different from students of Western European heritage, to whom most North American educational systems originally were addressed (Banks & Banks, 1997; Marshall, 1996; Morrison, 2000).

Effective Teachers You have had many teachers in your life, and soon you will be a teacher yourself. Spend a few moments thinking about the teachers you have had and your



Through the Eyes of Teachers

To Teach Is to Learn Twice

As a first-year teacher, I quickly learned that my pre-service training had not prepared, and could not prepare me for all the situations that I would encounter in the classroom. Teacher education programs stress the importance of initiative, intuition, and life-long learning as skills that teachers need to develop. However, pre-service programs cannot teach those skills—just as they cannot instill in teachers the desire to make a difference in their students' lives.

When teaching, I remind myself that I was once where my students are now—struggling with theories and concepts and relying on teachers as learning guides. Now, however, it is my responsibility to ensure that students understand the very concepts that I once struggled to learn. I realize that what I had learned as a student, I had to learn again as a teacher. I had to revisit this content with the intent of finding ways to make it meaningful to students. I began to see concepts in new ways and I realized that I was learning along with my students. This realization secured my commitment to the processes of life-long learning and professional development that my pre-service instructors had talked about so long ago.

Paul Allen
Associate Professor, Faculty of Education,
University of New Brunswick
Former secondary-school teacher

image of the teacher you want to be. Some of your teachers likely were outstanding and left you with a very positive image. Others probably were not so great.

In a survey of almost 1,000 students ages 13 to 17, having a good sense of humour, making the class interesting, and having in-depth knowledge of the subject matter were the three characteristics listed as being the most important for teachers to have (NASSP, 1997). In Canada, most provincial/territorial governments provide guidelines or standards for the teaching profession. For example, Ontario's Ministry of Education outlines the following as key standards of practice for teachers: commitment to students and student learning, professional knowledge, teaching practice, leadership and community service and ongoing professional learning in Ontario (for more information about standards of practice, see provincial education Web sites).

Professional Knowledge and Skills Effective teachers have a good command of their subject matter and a solid core of teaching skills. They have excellent instructional strategies supported by methods of goal setting, instructional planning, and classroom management. They know how to motivate, communicate, and work effectively with students from culturally diverse backgrounds. They also understand how to use appropriate levels of technology in the classroom (see Figure 1.1).

Subject-Matter Competence In the last decade, in their wish lists of teacher characteristics, secondary-school students have increasingly mentioned “teacher knowledge of their subjects” (NASSP, 1997). Having a thoughtful, flexible, conceptual understanding of subject matter is indispensable for being an effective teacher (Borko & Putnam, 1996). Of course, knowledge of subject matter includes a lot more than just facts, terms, and general concepts. It also includes knowledge about instructional strategies, goal setting and planning, classroom management, motivation, communication, working with diverse students, and technology.

Instructional Strategies The principle of constructivism was at the centre of William James' and John Dewey's philosophies of education. **Constructivism** emphasizes that individuals actively construct knowledge and understanding. In the constructivist view, information is not directly poured into children's minds. Rather, children are encouraged to explore their world, discover knowledge, reflect, and think critically. Today, constructivism includes an emphasis on collaboration—students working with each other in their efforts to know and understand (Oldfather et al., 1999). Thus, a teacher with a constructivist

The eye sees only what the mind is prepared to comprehend.

Robertson Davies
Canadian novelist, 20th century

The art of teaching is the art of awakening the natural curiosity of young minds.

Anatole France
French novelist and poet, 19th century

constructivism

Principle that emphasizes that individuals actively construct knowledge and understanding

CHARACTERISTICS OF EFFECTIVE TEACHERS	
Characteristics	
1.	Have a sense of humour
2.	Make the class interesting
3.	Have knowledge of their subjects
4.	Explain things clearly
5.	Spend time to help students
6.	Are fair to their students
7.	Treat students like adults
8.	Relate well to students
9.	Are considerate of students' feelings
10.	Don't show favouritism toward students

FIGURE 1.1 Students' Images of Effective Teachers

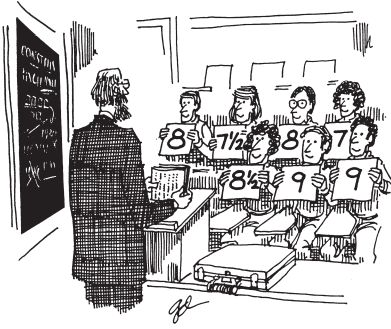
Through the Eyes of Students



A Good Teacher Is Someone Who...

A good teacher is someone who gives students a second chance to do their work correctly. She is fair with her students. If she says she is going to do something, she does it. She gives children fun challenges and rewards good work. She helps you learn by spending extra time with you and taking up homework with the class. A good teacher will let you take home the class pet and do chores around the classroom. Most importantly, a really good teacher cares about her students and never yells or gets angry with them.

Jonathon and Raymond
Grade 4 students, Ontario
Reading, movies, video games, and sport enthusiasts



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instructional philosophy would not have students memorize information rote but would give them opportunities to meaningfully construct the knowledge and understanding themselves (Gibson & MacKay, 2001; Kahn, 1999).

Increasingly, the trend in educational reform is to teach from a constructivist perspective (Bransford, Brown, & Cocking, 1999; Kuhn, 1999; Perkins, 1999). The constructivist belief is that for too long in North American education children have been required to sit still, be passive learners, and rote memorize irrelevant as well as relevant information. However, not everyone embraces the constructivist view. Some traditional educators believe that the teacher should direct and control students' learning more than the constructivist view implies. They also believe that constructivists often don't focus enough on basic academic tasks or have sufficiently high expectations for children's achievement. Some experts in educational psychology believe that you can be an effective teacher whether you follow the current trend in educational reform and teach more from a constructivist perspective or you adopt a more traditional direct-instruction approach. As you will see in the rest of our journey through evaluating what makes a teacher effective, many other domains and issues are involved.

Goal-Setting and Instructional Planning Skills Whether constructivist or more traditional, effective teachers don't just go in the classroom and "wing it." They set high goals for their teaching and develop organized plans for reaching those goals. They also develop specific criteria for success. They spend considerable time in instructional planning, organizing their lessons to maximize students' learning. As they plan, effective teachers reflect and think about how they can make learning both challenging and interesting.

Classroom-Management Skills An important aspect of being an effective teacher is being able to keep the class as a whole working together and oriented toward classroom tasks (Borko & Putnam, 1996). Effective teachers establish and maintain an environment in which learning can occur. To create this optimal learning environment, teachers need a repertoire of strategies for establishing rules and procedures, organizing groups, monitoring and pacing classroom activities, and handling misbehaviour (Emmer, Evertson, & Worsham, 2000; Freiberg, 1999; Weinstein, 1997).

Motivational Skills Effective teachers have good strategies for helping students become self-motivated to learn (Boekaerts, Pintrich, & Zeidner, 2000). Educational psychologists increasingly believe that this is best accomplished by providing real-world learning opportunities that are of optimal difficulty and novelty for each student (Brophy, 1998). Effective teachers know that students are motivated when they can make choices that are in line with their personal interests. Such teachers give them the opportunity to think creatively and deeply about projects (Runco, 1999).

Communication Skills Also indispensable to teaching are skills in speaking, listening, overcoming barriers to verbal communication, tuning in to students' nonverbal communication, and constructively resolving conflicts. Communication skills are critical not only in teaching students, but also in interacting effectively with parents. Effective teachers use good communication skills when they talk "with" rather than "to" students, parents, administrators, and others; keep criticism at a minimum; and have an assertive rather than aggressive, manipulative, or passive communication style (Alberti & Emmons, 1995; Emmer et al., 2000). And effective teachers work to improve students' communication skills as well. This is especially important because communication skills have been rated as the skills most sought by today's employers (Collins, 1996).

Working Effectively with Students from Culturally Diverse Backgrounds In today's world of increasing intercultural contact, effective teachers are knowledgeable about people from different cultural backgrounds and are sensitive to their needs (Sadker & Sadker, 2000; Spring, 2000; Wilson, 1999). Effective teachers encourage students to have positive personal contact with others and think of ways to create such settings. They

It is more important to be ingenious than to be a genius.

Pierre Elliot Trudeau
Former Canadian prime minister,
20th century

guide students in thinking critically about culture and ethnicity issues, and they forestall or reduce bias, cultivate acceptance, and serve as cultural mediators (Banks & Banks, 1997).

Technological Skills Technology itself does not necessarily improve students' ability to learn. Technology, however, does alter the environment within which learning takes place. Marshall McLuhan (1964) explained that "It is the framework itself that changes with technology, and not just the picture within the frame." A combination of five conditions is necessary to create learning environments that adequately support students' learning with technology. The first condition is vision and support from educational leaders. The second condition includes clear educational goals, content standards, and curriculum resources. Access to technology is the third condition. The fourth condition includes time, support, and ongoing assessment of the effectiveness of the technology for teaching and learning. This latter condition is based on the 1999 report *Preparing to Implement Learner Outcomes in Technology: Best Practices for Alberta School Jurisdictions*. Finally, the fifth condition is a constructivist focus (Couture, 1997). Each of these conditions is necessary but insufficient in and of itself for increasing teacher and student use of new technologies. The glue that binds these conditions together and makes the parts work as a whole is teachers—teachers who are skilled in the use of technology for teaching and learning, and who integrate information and communication technology appropriately into classroom practice.

Effective teachers know how to use and teach students to use computers for discovery and writing, can evaluate the effectiveness of instructional games and computer simulations, know how to use and teach students to use computer-mediated communication resources such as the Internet, and are knowledgeable about various assistive devices to support the learning of students with exceptionalities.

In the United States, the International Society for Technology in Education (ISTE) established the National Educational Technology Standards (NETS) in 1999. In Canada, a national protocol to enhance the sharing and use of online educational material, called the Canadian Core Learning Resource Metadata Protocol (CanCore), was started in 2001 to provide a standard for describing all multimedia educational objectives. A national education technology consortium of university, government, and industry developed the protocol (see www.cancore.ca).

The ISTE and CanCore standards provide a framework for defining the following:

- What students should know about and be able to do with technology at various stages throughout their academic lives
- What educators need to know about how to use technology effectively and appropriately throughout the curriculum
- What systems, access, staff development, and support services are needed to work with technology in education
- What assessment and evaluation strategies are best suited to monitoring student progress and technological effectiveness in teaching and learning

Commitment Effective teachers also have a caring concern for their students. They really want to be with the students and are dedicated to helping them learn. Effective teachers do what they have to do to engage students in learning, even if it means spending extra time or resources. Although effective teachers are caring, they keep their role as a teacher distinct from student roles. Finally, besides having a caring concern for their students, effective teachers look for ways to help their students consider each other's feelings and care about each other.



What are some important aspects of professional knowledge and skills that make up effective teaching?



Technology and Education

The Promise of Information and Communication Technology

Information and communication technology (ICT) has long been touted as a vehicle for helping students learn more effectively and enhancing access to learning opportunities in communities that have been excluded from the education mainstream.

According to the *Information and Communications Technologies in Schools Survey* conducted by Statistics Canada (2003/2004), virtually all Canadian elementary and secondary schools have computers and are connected to the Internet. Furthermore, the survey reports a ratio of one computer for every five students. But what are the consequences of this almost-universal school access to ICT?

According to school principals who took part in the Statistics Canada survey, most Canadian teachers possess the technical skills

to prepare report cards, monitor attendance, and record grades. However, nearly half of the principals believed that the majority of teachers in their schools were unprepared and/or unable to use ICT to enhance student learning. Moreover, many school administrations expressed concern about increasing costs of technology maintenance and management, as well as potential risks associated with unsupervised student Internet access. Despite these challenges, the survey findings suggest that administrators, teachers, parents, and students believe that investment in ICT is worthwhile and that the technology will help make the curriculum more challenging and enriching (see www.statcan.ca).

Professional Growth Effective teachers develop a positive identity, seek advice from experienced teachers, maintain their own learning, and build up good resources and supports.

Developing a Positive Identity Your identity is the whole of you, a composite of many pieces. One of life's most important tasks is to integrate the pieces into a meaningful and positive self-portrait (Deaux, 1996; Novak & Purkey, 2001). Fortunately, teaching as a career is gaining more respect. The Ontario Institute for Studies in Education's 2001 public opinion survey of public attitudes and opinions related to educational policy and preferences reported that, while general satisfaction with schools is now at a low point, there is more satisfaction with teachers' performances. The report suggests that support for increased funding of public education is now higher than ever before. Today most teachers see a positive identity in their profession, but there is also an increasing sense of anxiety and stress associated with increased public demands on, and expectations of, teachers (Schaefer, 2001).

Your identity includes more than your role as a teacher. It also includes your personal life, lifestyle, relationships, physical health, mental health, and personal interests. Seek to integrate these various pieces of your life into a positive, meaningful identity of who you are. Also keep in mind that although your identity will stay with you for the rest of your life, it won't be cast in stone. Through the rest of your career as an educator, you will change and grow as the world around you changes, especially if you invite yourself personally and professionally to explore new opportunities and challenges (Novak & Purkey, 2001).

Seek Advice from Competent Experienced Teachers Competent experienced teachers can be an especially valuable resource for beginning teachers—and for other experienced teachers as well. Increasingly, teachers engage in collaborative consultation in which people with diverse areas of expertise interact to promote competent instruction and provide effective services for students (Hewitt & Whittier, 1997).

A number of research studies have compared beginning teachers and experienced teachers (Berliner, 1988; Borko & Putnam, 1996; Calderhead, 1996; Leinhardt & Greeno, 1986; Scott, 1999; Webb et al., 1997). In general, experienced teachers are more likely than beginning teachers to:

- Have confidence in their decision-making and problem-solving strategies;
- Have expertise in managing their classrooms;

- Orchestrate smoothly running classrooms;
- Engage in well-practised, virtually automatic routines;
- Have extensive knowledge of instructional strategies; and
- Make deep interpretations of events.

However, researchers have found that too often both experienced and beginning teachers lack the rich and flexible understanding of subject matter that is required to teach in ways that are responsive to students' learning needs (Borko & Putnam, 1996). Indeed, it is important to recognize that not every experienced teacher is a good teacher. Some experienced teachers will say, "Forget everything you learned in school and watch what I do instead." This might or might not be a good idea for you. Many new strategies of teaching have been developed in recent years, especially from a constructivist perspective, so it is important to keep an open mind about whether an experienced teacher is giving you the best advice.

Life-Long Learning At the start of this chapter we quoted Canadian astronaut Julie Payette's statement that education opens the door to the future. Payette also reminds us that

The biggest hurdle to progress is the illusion of knowledge. One of the worst mistakes we can make as a people is to think that we know it all. To forget that there is always something more to learn, something new to discover. However far we think we have been, there is much further to go. And we owe it to ourselves and to our children to keep on exploring. For if one day we stop looking, asking, and learning, that day we will start regressing.

Currently, there is much educational reform taking place, and reform is likely to continue into the foreseeable future. It is an exciting time to become a teacher because of the many new developments. Make a commitment to keep up to date about research and knowledge about effective teaching.

Build Up Good Resources and Supports Don't think that you have to educate your students by yourself. It is especially important to develop good relationships with your students' parents or guardians and encourage them to be partners with you in educating their children. Throughout this book, we will highlight effective ways for you to do this.

You rarely achieve more than you expect.

Carol Grosse
American educator, 20th century

Teaching Strategies

For Effective Teaching

- ✓ Plan on wearing many different hats
 - have a sound knowledge of your subject matter
 - develop people, collaboration, and organization skills
- ✓ Put yourself in your students' shoes
 - think about how your students perceive you
 - model what you want your students to do
- ✓ Prepare for the future
 - reflect on your teaching practice
 - look for opportunities to grow personally and professionally
 - think about your students' futures
- ✓ Balance effective and academic dimensions of teaching
 - recognize that students are complex individuals
 - know your students as individuals
 - acknowledge students' academic and non-academic strengths

Developing good working relationships with your administrators and other teachers also can benefit your teaching. Consulting with experienced teachers can be especially effective. One good strategy is to ask a competent experienced teacher to serve as your mentor, someone you can go to for advice and guidance to help you become a more effective teacher.

Also examine other resources of the school system or community you might call on in teaching your students. A school system might have funds available for a teacher's aide or technology equipment. Get to know people in your community who might be willing to come to your class to share their expertise or to serve as mentors for students. Some businesses have mentoring programs for students. For example, Pratt & Whitney Canada, of Longueuil, Quebec, provides a variety of mentoring programs. One of these programs, called Jeunes Entrepreneurs, involves youth in schools across Canada who may be interested in careers in technology. The program has one mentor working with a team of three to four students. Hewlett-Packard is another example of a business that mentors students; HP hosts an online math and science mentoring program for students in Grades 5 to 12.

We have discussed many different characteristics of effective teaching, and we have explored some of the goals of educational psychology. A review of these ideas is presented in Summary Table 1.1.



RESEARCH IN EDUCATIONAL PSYCHOLOGY

Research can be a valuable source of information about teaching. We will explore the nature of research, its importance to teaching, and how you can use research to improve your classroom practice.

The Nature of Research

The word “research” evolved from the fourteenth-century French word *rechercher*, meaning “to examine something thoroughly.” It was not until the nineteenth century, however, that the word came to be associated with scientific inquiry (Godin, 2001). Increasingly, educational policymakers, school administrators, and teachers rely on scientifically based research methods to help them make decisions about school programs and practices (Slavin, 2003). Stanovich and Stanovich (2003) define scientifically based research as a form of exploration (study) that employs systematic methods that draw on careful observation or experimentation in order to make valid, credible, reliable, and trustworthy conclusions.

What kind of research forms the basis of educational psychology? According to Feuer, Towne, and Shavelson (2002), “No method is good, bad, scientific, or unscientific in itself: Rather, it is the appropriate application of method to a particular problem that enables judgments about scientific quality.” Accordingly, educational research includes quantitative methodologies such as experimental, quasi-experimental, and correlation research, as well as qualitative methodologies such as ethnography and case studies.

Why Research Is Important

It sometimes is said that experience is the most important teacher. Your own experiences and those experiences that other teachers, administrators, and experts share with you will make you a better teacher. Research can also make you a better teacher when it is appropriately translated into classroom practice (Charles, 1997; Fraenkel & Wallen, 2000).

SUMMARY TABLE 1.1

The Goals of Educational Psychology

<p>What is the historical background of educational psychology?</p>	<ul style="list-style-type: none"> • William James, John Dewey, E. L. Thorndike, James Baldwin, and Samuel Ralph Laycock were important pioneers in North American educational psychology. • William James launched the first psychology textbook in North America and emphasized the link between theory and practice. • Dewey's ideas include the child as active learner, education of the whole child, a focus on children's adaptation to the environment, and the view that all children deserve a competent education. • E. L. Thorndike emphasized the need for assessment and measurement in education. He also advocated for scientific research to be carried out around the nature of learning and how best to develop children's reasoning skills. • Mary Salter Ainsworth and Katharine Banham were two prominent Canadian researchers who studied early childhood development. Ainsworth documented patterns of early emotional attachment in infants while Banham studied the mental development of infants and young children.
<p>Is educational psychology an art or a science?</p>	<ul style="list-style-type: none"> • Educational psychology involves elements of both art and science. • Opinion is divided about how much of teaching should be based purely on science and how much of it is an art.
<p>What is the nature of teaching?</p>	<ul style="list-style-type: none"> • Teaching involves uncertainty. It is difficult to predict what effect a given action will have on a student. Teachers, therefore, need a tolerance for uncertainty and unpredictability. • Teaching involves social and ethical matters. Educational equity involves academic, social, and ethical dimensions. Every classroom action, including routine decisions such as which student to call on, can advantage or disadvantage certain students. • Teaching involves acknowledging students' diverse abilities and backgrounds. Linguistic, cultural, racial, and ethnic diversity is increasingly a defining characteristic of the Canadian school system.
<p>What is effective teaching?</p>	<ul style="list-style-type: none"> • Some of the key characteristics of effective teachers include a sense of humour, making classes interesting, subject-matter knowledge, fairness, respect, consideration of and equal treatment for all students, and the ability to explain things clearly. • Subject-matter competence, the use of effective instructional strategies, goal setting, planning, classroom management, motivation, and cultural sensitivity are some of the knowledges and skills required by members of the teaching profession. • Caring about students as individuals and learners, having a positive attitude about teaching, and self-motivation are key elements for teaching. • Effective teaching involves life-long learning and continuous professional growth. Developing a positive self-identity, seeking advice from competent and experienced teachers, and developing and maintaining a database of resources and supports are all part of professional growth in teaching.



Through the Eyes of Teachers

Never Stop Learning

I have always believed that if you are not a good learner, you won't be a good teacher. We grow and develop as persons through learning. Throughout my teaching career, I have attended conferences and workshops in an effort to keep my teaching current, interesting, and relevant for my students and for myself. I believe that I am a model for my students. If I stop learning—so will they. That is one example that I don't want to set.

Christine Bernardo-Kusy
Elementary-school teacher
Ontario

We all get a great deal of knowledge from personal experience. We generalize from what we observe and frequently turn memorable encounters into lifetime “truths.” But how valid are these conclusions? Sometimes we err in making these personal observations or misinterpret what we see and hear. Chances are, you can think of many situations in which you thought other people read you the wrong way, just as they might have felt that you misread them. And when we base information on personal experiences only, we aren't always totally objective because we sometimes make judgments that protect our ego and self-esteem (McMillan, 2000).

We get information not only from personal experiences, but also from authorities or experts. In your teaching career, you will hear many authorities and experts spell out a “best way” to educate students. But the authorities and experts don't always agree. One experienced teacher might tell you to do one thing with your students, another experienced teacher might tell you to do the opposite. How can you tell which advice to believe? One way to clarify the situation is to look at research that has been conducted on the topic.

In a world as empirical as ours, a youngster who does not know what he is good at will not be sure what he is good for.

Edgar Z. Friedenberg
U.S. educator and sociologist, contemporary

Scientific Research and Teaching

Some people have difficulty thinking of educational psychology as being a science in the same way that physics or biology is a science. Can a discipline that studies the best ways to help children learn, or the ways poverty affects their behaviour in the classroom, be equated with disciplines that examine how gravity works or how blood flows through the body?

Science is defined not by *what* it investigates but by *how* it investigates. Whether you investigate photosynthesis, butterflies, Saturn's moons, or why some students think creatively and others don't, it is the way you investigate that makes the approach scientific or not.

Educational psychologists take a skeptical, scientific attitude toward knowledge. When they hear a claim that a particular method is effective in helping students learn, they want to know if the claim is based on good research. The science part of educational psychology seeks to sort fact from fancy by using particular strategies for obtaining information (Johnson & Christensen, 2000; Kennedy, 1999). The art of educational psychology lies in translating scientifically valid and reliable information into viable and effective classroom practice.

Scientific research is objective, systematic, and testable. It reduces the likelihood that information will be based on personal beliefs, opinions, and feelings. Scientific research is based on the **scientific method**, an approach that can be used to discover accurate information. It includes these steps: conceptualize the problem, collect data, draw conclusions, and revise research conclusions and theory.

Conceptualizing a problem involves identifying the problem, theorizing, and developing one or more hypotheses. For example, a team of researchers decides that it wants to study ways to improve the achievement of students from impoverished backgrounds. The researchers have *identified a problem*, which at a general level might not seem like a difficult task. However, as part of the first step, they also must go beyond the general description of the problem by isolating, analyzing, narrowing, and focusing more specifically on what aspect of it they hope to study. Perhaps the researchers decide to discover whether mentoring that involves sustained support, guidance, and concrete assistance to students from impoverished backgrounds can improve their academic performance. At this point, even more narrowing and focusing needs to take place. What specific strategies do they want the mentors to use? How often will the mentors see the students? How long will the mentoring program last? What aspects of the students' achievement do they want to assess?

scientific research

Objective, systematic, and testable research that reduces the likelihood that information will be based on personal beliefs, opinions, and feelings

scientific method

An approach to discover accurate information that includes conceptualizing the problem, collecting data, drawing conclusions, and revising research conclusions and theory

Science refines everyday thinking.

Albert Einstein
American physicist, 20th century

As researchers formulate a problem to study, they often *draw on theories* and *develop hypotheses*. A **theory** is an *interrelated, coherent set of ideas that helps to explain and make predictions*. A theory contains **hypotheses**, which are *specific assumptions and predictions that can be tested to determine their accuracy*. For example, a theory about mentoring might attempt to explain and predict why sustained support, guidance, and concrete experience should make a difference in the lives of students from impoverished backgrounds. The theory might focus on students' opportunities to model the behaviour and strategies of mentors, or it might focus on the effects of nurturing, which might be missing in the students' lives.

The next step is to *collect information (data)*. In the study of mentoring, the researchers might decide to conduct the mentoring program for six months. Their data might consist of classroom observations, teachers' ratings, and achievement tests given to the mentored students before the mentoring began and at the end of six months of mentoring.

Once data have been collected, educational psychologists *use statistical procedures* to understand the meaning of their quantitative data. Then they try to *draw conclusions*. In the study of mentoring, statistics would help the researchers determine whether their observations are due to chance. After data have been collected, educational psychologists compare their findings with what others have discovered about the same issue.

The final step in the scientific method is *revising research conclusions and theory*. Educational psychologists have generated a number of theories about the best ways for students to learn. Over time, some theories have been discarded and others have been revised. This text presents a number of theories related to educational psychology, along with their support and implications. Figure 1.2 illustrates the steps in the scientific method applied to our study of mentoring.

Quantitative and Qualitative Methods in Research The two philosophies that dominate scientific educational research are the *quantitative* and *qualitative* approaches. Educational research tends to be a blend of both quantitative and qualitative research methodologies. While **quantitative research methods** are *primarily experimental in nature and concerned with the causal relationships between dependent and independent variables*, **qualitative research methods** are *primarily non-experimental and concerned with identifying and describing themes underlying human experience or the experience of a particular phenomenon*.

Quantitative and qualitative research methods are not exclusionary, and often borrow elements or techniques from each other. For example, program-evaluation research, action research, and teacher-as-researcher methods are forms of mixed educational research design that use elements of both quantitative and qualitative methodologies. In the following section we will look at some of the methods that are currently used in educational research.

Research Methods

When educational psychology researchers want to find out, for example, whether watching a lot of TV detracts from student learning, eating a nutritious breakfast improves alertness in class, or getting more recess time decreases absenteeism, they can choose from many methods. We will discuss these methods separately, but recognize that in many instances more than one is used in a single study.

Observation Sherlock Holmes chided his assistant, Watson, "You see but you do not observe." We look at things all the time. However, casually watching two students interacting is not the same as the type of observation used in scientific studies. Scientific observation is highly systematic. It requires knowing what you are looking for, conducting observations in an unbiased manner, accurately recording and categorizing what you see, and effectively communicating your observations (Cone, 1999).

A common way to record observations is to write them down, often using shorthand or symbols. In addition, tape recorders, video cameras, special coding sheets, one-way mirrors, and computers increasingly are being used to make observations more efficient.

theory

An interrelated, coherent set of ideas that helps to explain and make predictions

hypotheses

Specific assumptions and predictions that can be tested to determine their accuracy

Truth is arrived at by the painstaking elimination of the untrue.

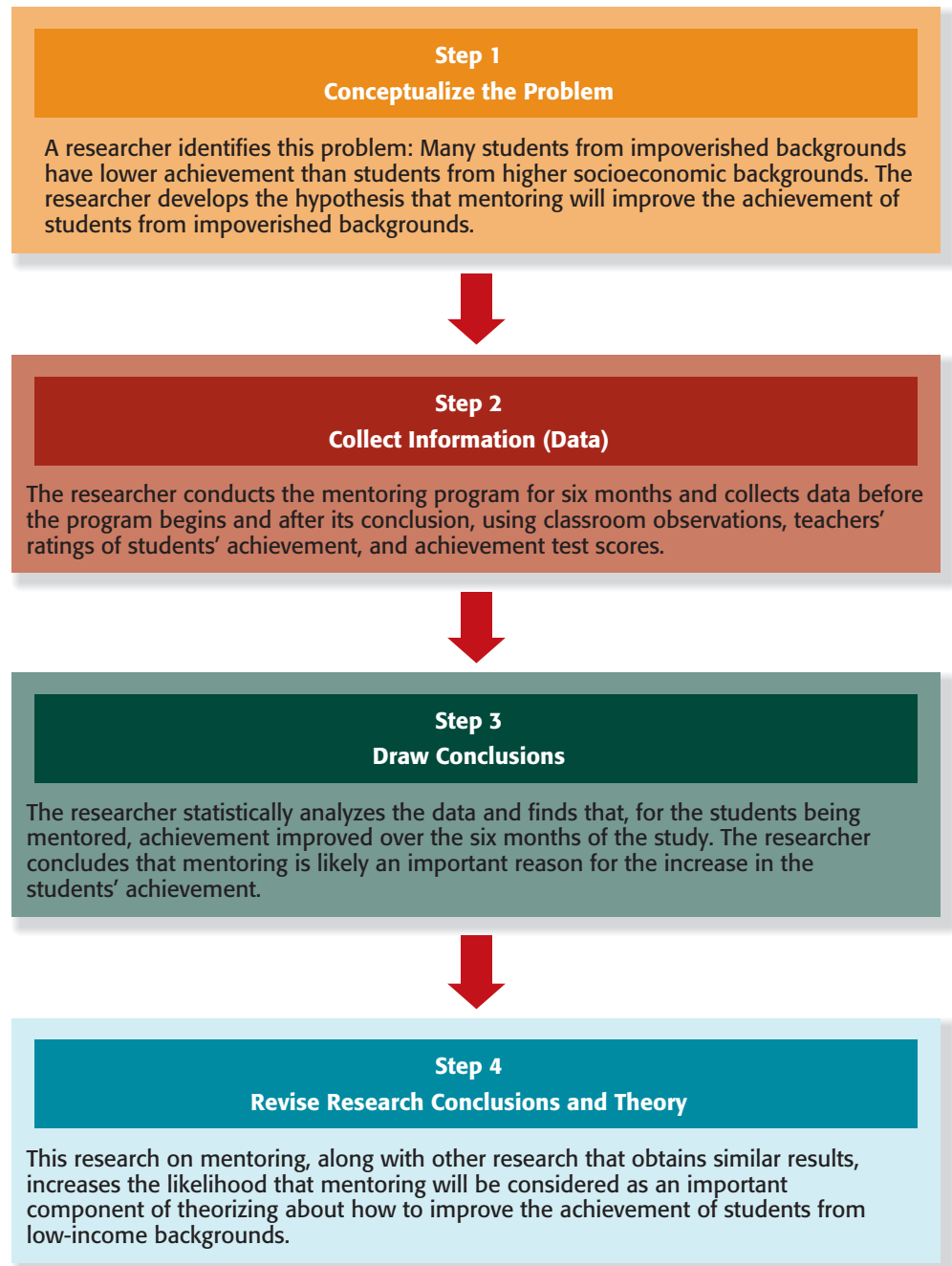
Sir Arthur Conan Doyle
English physician and novelist, 20th century

quantitative research methods

Primarily experimental approach concerned with the causal relationships between dependent and independent variables

qualitative research methods

Primarily non-experimental approach concerned with identifying and describing themes underlying human experience or the experience of a particular phenomenon

FIGURE 1.2 The Scientific Method Applied to a Study of Mentoring**laboratory**

A controlled setting from which many of the complex factors of the real world have been removed

naturalistic observation

Observation of behaviour out in the real world

Observations can be made in laboratories or in naturalistic settings. A **laboratory** is a *controlled setting from which many of the complex factors of the real world have been removed*. Some educational psychologists conduct research in laboratories at the universities where they work and teach. Although laboratories often help researchers gain more control in their studies, they have been criticized as being artificial. In **naturalistic observation**, *behaviour is observed out in the real world*. Educational psychologists conduct naturalistic observations of children in classrooms, at museums, on playgrounds, in homes, in neighbourhoods, and in other settings.

Interviews and Questionnaires Sometimes the quickest and best way to get information about students and teachers is to ask them for it. Educational psychologists use interviews and questionnaires (surveys) to find out about students' and teachers' experiences,

beliefs, and feelings. Most interviews take place face-to-face, although they can be done in other ways, such as over the phone or the Internet. Questionnaires are usually given to individuals in printed form. They can be filled out in many ways, such as in person, by mail, or via the Internet.

Good interviews and surveys involve concrete, specific, and unambiguous questions and some means of checking the authenticity of the respondents' replies. However, interviews and surveys are not without problems. One crucial limitation is that many individuals give socially desirable answers, responding in a way they think is most socially acceptable and desirable rather than how they truly think or feel. For example, some teachers, when interviewed or asked to fill out a questionnaire about their teaching practices, hesitate to admit honestly how frequently they chide or criticize their students. Skilled interviewing techniques and questions that increase forthright responses are crucial to obtaining accurate information. Another problem with interviews and surveys is that the respondents sometimes simply lie.

Case Studies Case studies, simply defined, are descriptions of “real-life” experiences that illustrate important concepts and issues in a field of study (Crosling & Webb, 2002). In other words, a **case study** is an *in-depth examination of an individual or situation*. A case study presents a unique method for combining theory and practice in a problem-solving framework. Cases differ from narratives in that they typically do not contain outcomes or conclusions, but leave the reader to contemplate the most appropriate course of action.

Traditionally, case studies have been associated with business, medicine, and law. Recently, however, case studies increasingly have been used in education to help teachers and teacher-candidates develop essential problem recognition and resolution skills (Clandinin & Connelly, 2000; Elliott, Woloshyn, DiPetta, & Bennett, 2000). Case studies hold the promise of developing exemplary professional practice by enabling educators to consider multiple perspectives when addressing the everyday complexities of classroom teaching. Case studies provide educators and administrators with authentic opportunities to develop and practise the decision-making and problem-solving skills that will guide them throughout their professional lives (Edwards, Smith, & Webb, 2001). Case studies also provide a means for reflecting on philosophies of education, applying theory, and developing critical-thinking skills. Case studies provide a broad overview of educational contexts and practice and promote a sense of responsibility and accountability when making classroom choices and decisions.

The Crack the Case scenarios presented at the end of each chapter and the in-depth cases available at this book's Online Learning Centre provide “real-life” teaching instances that can be used to enhance your observation, critical-thinking, problem-solving, and decision-making skills in the context of authentic educational settings.

Ethnographic Research In **ethnographic research**, the researcher focuses on *the social and cultural construction of meaning within specific groups or communities*. Ethnographers use close observation and investigation as a means of *revealing common cultural understandings* related to a particular phenomena associated with a specific group or community including work groups, leisure groups, professional groups, or groups defined by geography, ethnicity, or culture.

Cohen (2003) describes **ethnography** as *an inward-looking methodology that seeks to reveal shared understanding of a particular phenomenon*. For example, educational ethnographers might study how meaning is negotiated between teachers and students across different grade levels, how professional roles and relationships are developed within educational institutions, or how educational policy is developed and implemented in a given area (Beach, Gobbo, Jeffery, Smyth, & Troman, 2004).

Ethnographers intentionally select participants who they believe can provide an overview or detailed description of the practices of the community being studied. As part of the research process, these participants may be interviewed and/or observed numerous times, with information gathered from previous data-gathering sessions being revisited to clarify and deepen the portrait of the community being explored.

case study

An in-depth examination of an individual or situation

ethnographic research

Research that focuses on the social and cultural construction of meaning within specific groups or communities

ethnography

An inward-looking methodology that seeks to reveal shared understanding of a particular phenomenon

While ethnography may be viewed as a descriptive rather than analytical methodology, the collective understanding of the topic area that ethnographic research provides often is considered to be more meaningful than objective data such as grade-point averages or income differentials (Cohen, 2003; Creswell, 2005).

correlational research

Research that seeks to describe the strength of the relation between two or more events or characteristics

experimental research

Research that allows educational psychologists to determine the causes of behaviour

experiment

A carefully regulated procedure in which one or more of the factors believed to influence the behaviour being studied is manipulated and all other factors are held constant

quasi-experimental research

Research that addresses cause-and-effect questions and includes studies where the prerequisites for the true experiment have not been attained, primarily the random assignment of subjects to treatment groups

cross-sectional research

Research that involves studying groups of people all at one time

Correlational Research In **correlational research**, *the goal is to describe the strength of the relation between two or more events or characteristics*. Correlational research is useful because the more strongly two events are correlated (related or associated), the more effectively we can predict one from the other. For example, if researchers find that low-involved, permissive teaching is correlated with a student's lack of self-control, it suggests that low-involved, permissive teaching might be one source of the lack of self-control.

However, a caution is in order. *Correlation by itself does not equal causation*. The correlational finding just mentioned does not mean that permissive teaching necessarily causes low student self-control. It could mean that, but it also could mean that the students' lack of self-control caused the teachers to throw up their arms in despair and give up trying to control the out-of-control class. It also could be that other factors, such as heredity, poverty, or inadequate parenting, caused the correlation between permissive teaching and low student self-control.

Experimental Research **Experimental research** *allows educational psychologists to determine the causes of behaviour*. Educational psychologists accomplish this task by performing an **experiment**, *a carefully regulated procedure in which one or more of the factors believed to influence the behaviour being studied is manipulated and all other factors are held constant*. If the behaviour under study changes when a factor is manipulated, we say that the manipulated factor causes the behaviour to change. *Cause* is the event being manipulated. *Effect* is the behaviour that changes because of the manipulation. Experimental research is the only truly reliable method of establishing cause and effect. Experiments involve examining the influence of at least one *independent variable* (the manipulated, influential, or experimental factor) on one or more *dependent variables* (the measured factor). Experiments also involve random assignment of participants to *experimental groups* (the ones receiving the manipulation) and *control groups* (comparison groups treated identically except for the manipulated factor). Because correlational research does not involve manipulation of factors, it is not a dependable way to isolate cause.

Quasi-experimental research *also addresses cause-and-effect questions, but includes studies where the prerequisites for the true experiment have not been attained, primarily the random assignment of subjects to treatment groups*. Educational research designs are common in education and involve the comparison of intake groups such as students with or without learning disabilities, two classes in the same school, or two schools in a school board (Creswell, 2005). In such situations it is either impractical or impossible to assign participants to treatment groups randomly, making it necessary to use other methodological and/or statistical procedures to compensate for the lack of randomness.

Consider the mentoring study outlined in Figure 1.2. If the researchers wanted to determine whether students from "lower socioeconomic" backgrounds experienced greater learning gains than students from "higher socioeconomic" backgrounds as a result of participating in the mentoring program, the research design would be quasi-experimental as it would be impossible to assign students to either socioeconomic group. However, by carefully matching students across the groups on other critical factors such as class size, number of siblings, and so on, and by using appropriate statistical procedures for data analysis, the researchers can still determine the viability of mentoring for diverse groups of students.

Time Span of Research Another research decision involves the time span of the research. We have several options—we can study groups of individuals all at one time or study the same individuals over time.

Cross-sectional research *involves studying groups of people all at one time*. For example, a researcher might be interested in studying the self-esteem of students in Grades 4, 6,

and 8. In a cross-sectional study, the students' self-esteem would be assessed at one time, using groups of children in Grades 4, 6, and 8. The cross-sectional study's main advantage is that the researcher does not have to wait for the students to grow older. However, this approach provides no information about the stability of individual students' self-esteem, or how it might change over time.

Longitudinal research involves studying the same individuals over a period of time, usually several years or more. In a longitudinal research study of self-esteem, the researcher might examine the self-esteem of a group of Grade 4 students, then assess the same students' self-esteem again in Grade 6, and then again in Grade 8. One of the great values of longitudinal research is that we can evaluate how individual children change as they get older. However, because longitudinal research is time-consuming and costly, most research is cross-sectional.

At this point we have discussed a number of ideas about why research is important, the scientific research approach, and research methods. A review of these ideas is presented in Summary Table 1.2.

Program Evaluation, Action Research, and the Teacher-as-Researcher

In discussing research methods so far, we have referred mainly to methods that are used to improve our knowledge and understanding of general educational practices. The same methods also can be applied to research whose aim is more specific, such as determining how well a particular educational strategy or program is working (Graziano & Raulin, 2000; Slavin, 2003). This more narrowly targeted work often includes program-evaluation research, action research, and the teacher-as-researcher.

Program-Evaluation Research The primary purpose of **program-evaluation research** in education is *to examine a particular program or programs to establish effectiveness in meeting stated educational goals or objectives* (Lam, 1995). The information or feedback gathered in program-evaluation research can be used to help improve an educational program, as well as adding to the general knowledge base about such programs or research methods. Program-evaluation research often focuses on a specific location or type of program. Because it often is directed at answering a question about a specific school or school system, the results of program-evaluation research are not intended to be generalized to other settings (Charles, 1997). A program-evaluation researcher might ask questions like these:

- Has a gifted program that was instituted two years ago had positive effects on students' creative thinking and academic achievement?
- Has a technology program that has been in place for one year improved students' attitudes toward school?
- Which of two reading programs being used in this school system has improved students' reading skills the most?

Action Research **Action research** is used to solve a specific classroom or school problem, improve teaching and other educational strategies, or make a decision at a specific location (Calhoun, 2002; Creswell, 2005). The goal of action research is to improve educational practices immediately in one or two classrooms, at one school, or at several schools. Action research is carried out by teachers and administrators rather than educational-psychology researchers. However, the practitioners might follow many of the guidelines of scientific research that we described earlier, such as trying to make the research and observations as systematic as possible to avoid bias and misinterpretation (Mills, 2000). Action research can be carried out by individual teachers in their classrooms, in collaborative action groups involving volunteers, and school-wide through coordinated administration and teacher efforts (Calhoun, 1993, 1994, 2002). Action research serves to improve the conditions of a school; it also helps teachers in the early detection of problems, teaching problem-solving skills, and gauging the effectiveness of their teaching methods.

longitudinal research

Research that involves studying the same individuals over a period of time, usually several years or more

The real voyage of discovery consists not in seeking new landscapes, but in having new eyes.

Marcel Proust
French author, 20th century

program-evaluation research

Research that examines a particular program or programs to establish effectiveness in meeting stated goals or objectives

action research

Research used to solve a specific classroom or school problem, improve teaching and other educational strategies, or make a decision at a specific location

SUMMARY TABLE 1.2

Why Research Is Important, the Nature of Research, Scientific Research and Teaching, and Research Methods

What is the nature of research?	<ul style="list-style-type: none"> • The word “research” evolved from the French word <i>rechercher</i>, meaning “to examine something thoroughly.” • Educational research includes experimental and quasi-experimental research, as well as qualitative, descriptive, and correlation studies. <p>Scientifically based research involves systematic methods that draw on careful observation or experimentation to make valid, credible, reliable, and trustworthy conclusions.</p>
Why is research important for teachers?	<ul style="list-style-type: none"> • Teachers can improve their practice by reflecting on personal experiences and listening to advice from experts. • Research determines what strategies to keep and what to avoid. • Research avoids errors in judgment based on personal experience.
How are scientific research and teaching related?	<ul style="list-style-type: none"> • Scientific research is objective, systematic, and testable and reduces the probability that information will be based on feelings, opinions, or personal beliefs. • The scientific method involves conceptualizing the problem, collecting data, drawing conclusions, and revising research conclusions and theory. • Theories are coherent sets of ideas and hypotheses that help to explain events and to make predictions that can help improve teaching practice.
What are some research methods used by teachers?	<ul style="list-style-type: none"> • Quantitative methods are primarily experimental and focus on causation. • Qualitative methods (i.e., observation, case study, action research) are concerned with describing underlying themes or experiences of particular phenomena. • Observation involves systematic study of behaviours or events in either a lab or a natural setting. • Interviews are a data-gathering method; they are usually conducted face-to-face but can also be done by phone or by video conference. • Case studies provide an in-depth look at an individual or event in a natural setting. Generalizing from case studies can be problematic. • Correlational research describes the strength of the relationship between two or more events or characteristics. • Experiments involve examining the influence of at least one independent variable (the manipulated, influential, or experimental factor) on one or more dependent variables (the measured factor). Experiments also involve random assignment of participants to experimental groups (the ones receiving the manipulation) and control groups (comparison groups treated identically except for the manipulated factor). • The time span of research is either cross-sectional, which studies various groups all at one time, or longitudinal, which studies the same group over time.

Teacher-as-Researcher The concept of **teacher-as-researcher**, or what is increasingly referred to as “*teacher-researcher*,” suggests that teachers can conduct their own systematic studies to improve their teaching practice. This is an important outgrowth of action research. Some educational experts believe that the most effective teachers routinely ask questions and monitor problems to be solved, collect data, interpret it, and share their conclusions with other teachers (Barkie & Provost, 2004; Flake et al., 1995; Russell, 2000; Squire, 1998; Tarleton, 2005).

To obtain information, the teacher-researcher uses methods such as systematic observation, interviews, and case studies. One widely used technique is the *clinical interview*, in which the teacher makes the student feel comfortable, shares beliefs and expectations, and asks questions in a nonthreatening manner. Before conducting a clinical interview with a student, the teacher usually will put together a targeted set of questions to ask. Clinical interviews not only can help you obtain information about a particular issue or problem, but also can provide you with a sense of how children think and feel.

Another popular teacher-as-researcher method is **participant observation**, in which the observer-researcher is actively involved as a participant in the activity or setting (Creswell, 2005; McMillan, 2000). The participant-observer often will observe for a while and then take notes on what he or she has seen. The observer usually makes these observations and writes down notes over a period of days, weeks, or months and looks for patterns in the observations. For example, to study a student who is doing poorly in the class without apparent reason, the teacher might develop a plan to observe the student from time to time and record observations of the student’s behaviour and what is going on in the classroom at the time.

In addition to participant observation, the teacher might conduct several clinical interviews with the student, discuss the child’s situation with the child’s parents, and consult with a school psychologist about the child’s behaviour. Based on this work as teacher-researcher, the teacher will be able to create an intervention strategy that considerably improves the student’s behaviour.

Thus, learning about educational research methods not only can help you understand the research that educational psychologists conduct, but also has another practical benefit. The more knowledge you have about research in educational psychology, the more effective you will be in the increasingly popular teacher-researcher role (Gay & Airasian, 2000).

teacher-as-researcher

Also known as teacher-researcher, teacher who conducts his/her own systematic studies to improve teaching practice

participant observation

Method in which the observer-researcher is actively involved as a participant in the activity or setting



What methods can a teacher-as-researcher use to obtain information about students?



Through the Eyes of Teachers

Using Action Research to Change Classroom Practice

The best action-research project that I ever did involved asking my Grade 7 class to describe their ideal teacher. There was a general consensus that “good” teachers genuinely care about their students and display an interest in their well-being. They said that they learned best when their teachers expressed interest in them as individuals. The project made me curious about my students’ perceptions of me as their teacher. I believed that I was a caring teacher, but was curious about whether I demonstrated this care in the classroom. I started an action-research project by asking my class, “How do you know when a teacher cares about you?” Students’ responses included, “When the teacher smiles at you and calls you by name,” “When the teacher bugs you about getting your homework done,” and “When the teacher understands that you have a family or personal problem.”

The next step was to try to determine how my students interpreted my behaviours as their teacher. With some fear and trepidation, I videotaped myself teaching. The experience was an enlightening one. I saw that I was very strict and formal, seldom smiling or showing my students that I cared about them. I scared myself to the point where I realized that I had to “lighten up” in class. I now monitor my classroom behaviours by remembering what I saw on that videotape. I smile more, my students smile more, and my classroom is the caring and happy place that I want it to be. My little action-research project helped me create balance between having control and expressing care—it helped me become a better teacher.

Susan Drake
Professor of Education
Former intermediate-grade teacher
Ontario

situated learning theory

Stresses daily life experiences and social experiences as critical factors for learning

Theory into Practice

Improving teaching and learning is the heart of educational psychology. Translating educational psychology theory into practical and effective classroom practice, however, is a complex and often daunting task. Moving theory into practice forms the “art” component of the art and science of teaching. For example, consider the skill and expertise required to translate a theoretical model like situated learning theory into classroom practice.

Situated learning theory *stresses daily life experiences and social experiences as critical factors for learning* (Lave & Wenger, 1991). According to Lave and Wenger, learning involves the social processes of engagement, or what they refer to as “communities of practice.”

According to the Lave and Wenger model, learning involves “an evolving, continuously renewed set of relations.” Knowledge and learning must therefore be understood in context, and classroom activities need to be grounded in authentic real-world practices that are culturally meaningful to students. Situated learning theory requires teachers to use students’ pre-existing interests, knowledge, and skills as the foundation on which new understandings are constructed. Such a view of teaching differs significantly from more linear approaches where teaching is an abstract activity focusing on the use of rules and principles that direct students’ learning behaviours.

Situated learning theory, however, does not provide exact formulas or prescriptions for contextualizing learning, nor does it tell teachers how to link students’ pre-existing interests, knowledge, or skills with new learning. As teachers you will need to develop these skills independently in response to the unique learning needs and abilities of the students in your classrooms.

In other words, moving theory into practice involves a process of informed trial and error where teachers develop and implement activities based on their understanding of theory and their knowledge of students’ abilities and needs. Teachers are then required to evaluate the effectiveness of the activity and begin the process of refining the activity to improve student learning. In this sense, teaching from

theory is an iterative and creative activity that involves ongoing reflection and informed discussion. Moving theory into practice effectively is as much an “art” as a “science” and is best achieved through the concerted collaborative efforts of theorists, researchers, and educators.

Research Challenges

Research in educational psychology poses a number of challenges. Some of the challenges involve the pursuit of knowledge itself. Others involve the effects of research on participants. Still others relate to better understanding of the information derived from research studies.

Ethics Educational psychologists must exercise considerable caution to ensure the well-being of children participating in a research study. Most universities and school systems have review boards that evaluate whether the research is ethical. Before research is conducted in a

school system, an administrator or administrative committee evaluates the research plan and decides whether the research can potentially benefit the system.

The code of ethics adopted by the Canadian Psychological Association (CPA) instructs researchers to protect participants from mental and physical harm. The Medical Research Council of Canada, the Natural Science and Engineering Research Council of Canada, and the Social Sciences and Humanities Research Council of Canada prepared a joint report establishing the policy standard for research on human participants (Tri-Council Policy Statement, 1998). Essentially, the policy states that the best interests of the participants must always be foremost in researchers' minds. All participants who are old enough to do so must give their informed consent to participate. If they are not old enough, parental or guardian consent must be obtained. When children and adolescents are studied, parental or guardian consent is almost always obtained. Informed consent means that the participants (and/or their parents or legal guardians) have been told what their participation will entail and any risks that might be involved. For example, if researchers want to study the effects of conflict in divorced families on learning and achievement, the participants should be informed that in some instances discussion of a family's experiences might improve family relationships, but in other cases might raise unwanted family stress. After informed consent is given, participants retain the right to withdraw at any time (Bersoff, 1999).

Because students are vulnerable and usually lack power and control when facing adults, educators always should strive to make their research encounters positive and supportive experiences for each student. Even if the family gives permission for a student to participate in a research study, if the student doesn't want to participate, that desire should be respected.

Gender Traditionally, science has been presented as nonbiased and value-free. However, many experts on gender believe that much educational and other research has been gender-biased (Anselmi, 1998; Chalmers, 1995; Doyle & Paludi, 1998). Educational researchers argue that for too long the female experience was subsumed under the male experience (Tetreault, 1997). For example, conclusions about females have been routinely drawn based on research done only with males. Similarly, with regard to socioeconomic bias, conclusions have been drawn about all males and all females from studies that do not include participants from all income backgrounds.

Ethnicity and Culture We need to include more students from ethnic minority backgrounds in our research on educational psychology (Graham, 1992; Lee, 1992). Historically, ethnic minority children essentially have been ignored in research or simply viewed as



One research challenge involves ensuring that educational research does not involve gender bias. What are some of the questions scholars have raised about gender bias in educational research?



Another research challenge focuses on children from ethnic minority backgrounds. What are some of the ways research has been characterized by ethnic bias? How can this bias be reduced or eliminated?



Through the Eyes of an Educational Researcher

I came to academia after spending many years in a school setting. As a practitioner, I was acutely aware that enhancing my knowledge and skills was critical to my responsibility to teach well. The same was true for my responsibility as a researcher. I had to acquire new knowledge and skills to properly pursue my changing research interests. As such, teaching and research are invigorating and renewing processes, lending personal and professional credibility to our scholarly endeavours.

Alan Edmunds, PhD
The University of Western Ontario

ethnic gloss

Using an ethnic label in a superficial way that makes an ethnic group seem more homogeneous than it really is

variations from the norm or average. Their developmental and educational problems have been viewed as “confounds” or “noise” in data, and researchers have deliberately excluded these students from the samples they have selected to study (Ryan-Finn, Cauce, & Grove, 1995). Because ethnic-minority students have been excluded from research for so long, there likely is more variation in their lives than research studies have indicated in the past (Stevenson, 1995).

Researchers also have tended to practise “ethnic gloss” when they select and describe ethnic minority groups (Trimble, 2000; Trimble, 1989). **Ethnic gloss** means using an ethnic label (e.g., Asian, Italo-Canadian, Latino, or Native Canadian) in a superficial way that makes an ethnic group seem more homogeneous than it really is. For example, a researcher might describe a sample simply as, “20 Asians, 20 Italo-Canadians, and 20 Native Canadians,” when a more precise description of the groups would need to specify that “of the 20 Asian participants, 5 were Canadian-

born Koreans from low-income families living in Vancouver; 10 were from homes where Korean is the dominant language spoken; and 10 were from homes where English is now the main spoken language. Five described themselves as Korean, 5 as Korean-Canadian, and 10 as Canadian.” Ethnic gloss can cause researchers to obtain samples of ethnic groups that either are not representative or that conceal the group’s diversity, which can lead to overgeneralization and stereotyping.

Also, historically, when researchers have studied individuals from ethnic minority groups, they have focused on their problems. It is important to study the problems such as poverty that ethnic minority groups may face, but it also is important to examine their strengths, such as their pride, self-esteem, problem-solving skills, and extended-family support systems.

Being a Wise Consumer of Information about Educational Psychology

We live in a society that generates a vast amount of information about education in various media, ranging from research journals to newspapers and television. The information varies greatly in quality. How can you evaluate the credibility of this information?

Be Cautious of What Is Reported in the Popular Media Education is increasingly talked about in the news. Television, radio, newspapers, and magazines all frequently report on educational research. Many professional educators and researchers regularly supply the media with information. In some cases, this research has been published in professional journals or presented at national meetings and then picked up by the popular media. Most universities have a media relations department that contacts the press about current faculty research.

However, not all information about education that appears in the media comes from professionals with excellent credentials and reputations. Most journalists, television reporters, and other media personnel are not scientifically trained and do not have the skills to sort through the avalanche of material they receive in order to make sound decisions about which information to report.

Unfortunately, the media focus on sensational, dramatic findings. They want you to stay tuned or buy their publication. When the information they gather from educational journals is not sensational, they might embellish it and sensationalize it, going beyond what the researcher intended.

Another problem with media reports about research is that the media often do not have the luxury of time and space to go into important details about a study. They often get only a few lines or a few minutes to summarize as best they can what can be very complex findings. Too often this means that what is reported is overgeneralized and stereotyped.

Avoid Drawing Conclusions about Individual Needs Based on Group Research

Nomothetic research is research conducted at the level of the group. Most educational psychology research is nomothetic. Individual variations in how students respond is not a common focus. For example, if researchers are interested in the effects of divorce on children's school achievement, they might conduct a study with 50 children from divorced families and 50 children from intact, never-divorced families. They might find that the children from divorced families, as a group, had lower achievement in school than did the children from intact families. That is a nomothetic finding that applies to children of divorce as a group. And that is what is commonly reported in the media and in research journals as well. In this particular study, it likely was the case that some of the children from divorced families had higher school achievement than children from intact families—not as many, but some. Indeed, it is entirely possible that, of the 100 children in the study, the two or three children who had the highest school achievement were from divorced families—and that this fact was never reported in the popular media.

Nomothetic research can give teachers good information about the characteristics of a group of children, revealing strengths and weaknesses of the group. However, in many instances teachers, as well as the child's parents, want to know about how to help one particular child cope and learn more effectively. **Idiographic needs** are the needs of the individual, not the group. Unfortunately, although nomothetic research can point to problems for certain groups of children, it does not always hold for an individual child.

Recognize How Easy It Is to Overgeneralize about a Small or Clinical Sample There often isn't space or time in media presentations to go into detail about the nature of the sample of children on which the study is based. In many cases, samples are too small to let us generalize readily to a larger population. For example, if a study of children from divorced families is based on only 10 to 20 children, what is found in the study cannot be generalized to all children from divorced families. Perhaps the sample was drawn from families that have substantial economic resources, are of Western European heritage, live in a small town, and are undergoing therapy. From this study, we clearly would be making unwarranted generalizations if we thought the findings also characterize children who are from low- to moderate-income families, are from other ethnic backgrounds, live in a different geographical location, and are not undergoing therapy.

Be Aware That a Single Study Usually Is Not the Defining Word The media might identify an interesting research study and claim that it is something phenomenal with far-reaching implications. As a competent consumer of information, be aware that it is extremely rare for a single study to have earth-shattering, conclusive answers that apply to all students and teachers. In fact, where there are large numbers of studies that focus on a particular issue, it is not unusual to find conflicting results from one study to the next. Reliable answers about teaching and learning usually emerge only after many researchers have conducted similar studies and drawn similar conclusions. In our example of divorce, if one study reports that a school counselling program for students from divorced families improved their school achievement, we cannot conclude that the counselling will work as effectively with all students from divorced families until many more studies are conducted.

Always Consider the Source of the Information and Evaluate Its Credibility *Caveat emptor* is a Latin phrase that means "Let the buyer beware"; it should be the motto for the wise consumer of educational psychology. Studies are not automatically accepted by the research community. Researchers usually must submit their findings to a research journal, where they are reviewed by the researcher's colleagues, who make a decision about whether or not to publish the paper. Although the quality of research in journals is far from uniform, in most cases the research has undergone far more scrutiny and careful consideration of the work's quality than is the case for research or any other information that has not gone through the journal process.

nomothetic research

Research conducted at the level of the group

idiographic needs

Needs of the individual and not the group

Both skepticism and wonder are skills that need honing and practice. Their harmonious marriage within the mind of every schoolchild ought to be a principal goal of public education.

Carl Sagan
U.S. astronomer and author, 20th century

At this point we have studied many ideas about program evaluation, action research, teacher-as-researcher, and research challenges. A review of these ideas is presented in Summary Table 1.3. In the next chapter, we will explore the physical and cognitive aspects of children's development.

SUMMARY TABLE 1.3

Program Evaluation, Action Research, the Teacher-as-Researcher, and Research Challenges

<p>What are program evaluation, action research, and the teacher-as-researcher?</p>	<ul style="list-style-type: none"> • Program evaluation is research designed to make decisions about the effectiveness of a particular program or programs. • Action research is used to solve specific classroom or social problems, improve teaching practice, or make decisions about specific locations. • Teachers-as-researchers conduct classroom studies to improve their practice using such techniques as clinical interviews and participant observation.
<p>How can teachers translate theory into classroom practice?</p>	<ul style="list-style-type: none"> • Teaching from theory is an iterative and creative activity that involves ongoing reflection and informed discussion. • Moving theory into practice is best achieved through collaborative efforts amongst theorists, researchers, and educators working and communicating together in a community of practice. • Moving theory into practice forms the "art" component of the art and science of teaching.
<p>What challenges are associated with the study of education?</p>	<ul style="list-style-type: none"> • It is critical to keep the participants' interests in mind. • Every effort should be made to make research equitable for both males and females since research has for too long been biased against females. • More children from minority backgrounds and cultures need to be included in educational psychology research. • Avoid drawing conclusions about individual needs based on group research, don't overgeneralize from one sample or study. • Remember that correlational studies are not causal studies. • Always consider the source of information in evaluating its credibility. Caveat emptor (or, "Let the buyer beware") is the motto of the wise educational psychology consumer.



Crack the Case

The Curriculum Decision

Mrs. Vandelaar, an elementary-school principal, felt frustrated when her teachers tried to teach their students about being good citizens.

The school and school board lacked appropriate curriculum and materials to assist them with this task. She was aware that there were many programs available that addressed these issues, and she hoped to be able to purchase one for implementation at her school. She worried, however, that the school board might not see the value of such a citizenship program and would refuse to support its purchase or implementation. Mrs. Vandelaar believed that she and her teachers would be called upon to demonstrate the need for such a program, as well as the benefits associated with implementing it.

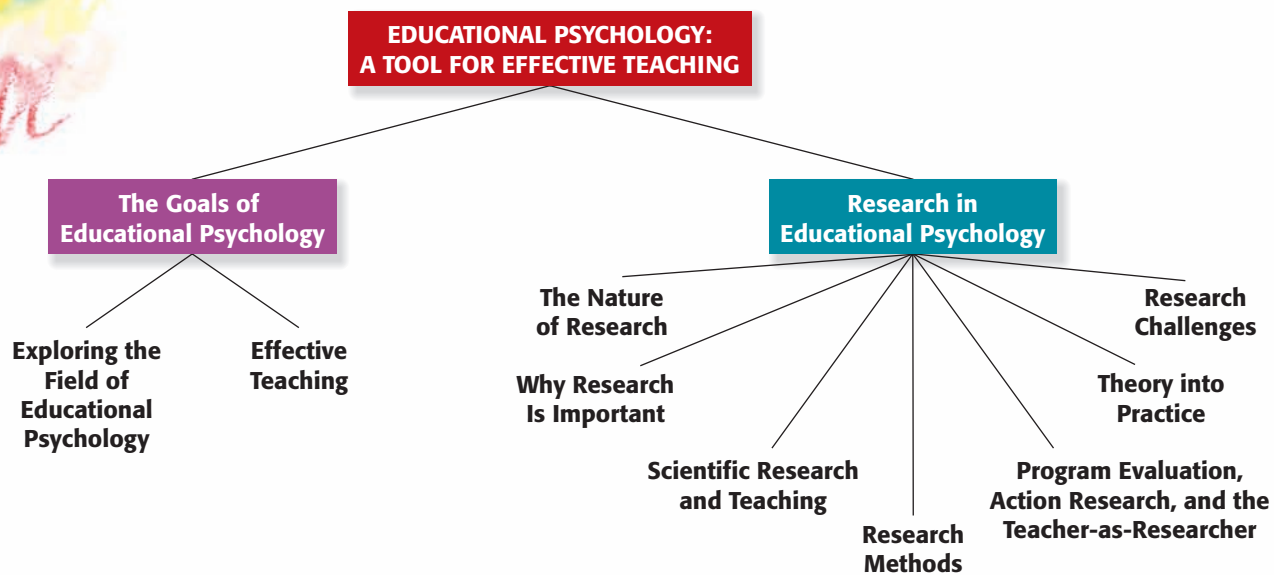
Some teachers didn't agree with Mrs. Vandelaar's perspective. One believed that it was futile to attempt to change student behaviour because they couldn't change parent behaviour: "After all, the apple

doesn't fall far from the tree." Another teacher wanted a "ready-to-use" program that could be applied to all students across Grades 1 to 8. He had read an article in a popular magazine endorsing this program. Yet another teacher wanted to purchase a new version of an old program that she had used when she was a student. Mrs. Vandelaar knew that she had one school year to review existing programs and make a convincing case to the school board for funding.

- How would you carry out the background research necessary to make a sound decision about program selection?
- What issues would need to be considered? Why?
- What type(s) of research would be appropriate? Why?
- What design would you use? Why? Could you use an experimental design? Why or why not?



Chapter Review



To obtain a detailed review of this chapter, study these three summary tables:

SUMMARY TABLE 1.1	The Goals of Educational Psychology	page 13
SUMMARY TABLE 1.2	Why Research Is Important, the Nature of Research, Scientific Research and Teaching, and Research Methods	page 20
SUMMARY TABLE 1.3	Program Evaluation, Action Research, the Teacher-as-Researcher, and Research Challenges	page 26

KEY TERMS

action research 19	ethnography 17	nomothetic research 25	quasi-experimental research 18
case study 17	experiment 18	participant observation 21	scientific method 14
constructivism 7	experimental research 18	program-evaluation research 19	scientific research 14
correlational research 18	hypotheses 15	qualitative research methods 15	situated learning theory 22
cross-sectional research 18	idiographic needs 25	quantitative research methods 15	teacher-as-researcher 21
educational psychology 5	laboratory 16		theory 15
ethnic gloss 24	longitudinal research 19		
ethnographic research 17	naturalistic observation 16		

PROFESSIONAL DEVELOPMENT/PORTFOLIO ACTIVITIES

1. What Kind of Teacher Do You Want to Be?

As a teacher candidate, you may be imagining what kind of teacher you aspire to become. As well, you may be setting learning objectives as the means to achieve your goal. These learning objectives often become evident during your teacher training. Write a letter to a friend describing your expectations with respect to your teacher training and the kind of teacher that you want to become. What strengths do you want to develop? What do you believe will be your most significant challenges? Place your letter in an envelope and put it away until the end of the first term. After a few months, read it again; consider what you have learned, and redefine and confirm your goals.

2. Planning for Problems

Teaching environments are fast-paced and complex. Anticipating what might happen and planning ahead will help you to prepare for potential challenges. Try this activity. Make two columns on a piece of notepaper. Consider the grade level

and the students that you want to teach. On one side of the paper, brainstorm and list some of the challenges that might happen in the classroom. On the other side, write a strategy for how you might cope with these challenges.

3. Your Teaching Philosophy

Understanding why you are teaching a subject is as important as understanding how you teach that subject. Imagine that you are about to begin your first teaching position in a few weeks. Prepare a letter of introduction for parents that outlines your plans for the class. In this letter, describe your philosophy or approach to teaching. As you explain your philosophy, consider the following questions: Is your focus on the development of basic skills? Will you encourage your students to be “higher-order” thinkers? Will you stress personal growth as a goal for your students? What will you do in your classes to help your students reach the learning objectives? Place this letter in your portfolio.



INTERNET ACTIVITIES

1. Building a Web-Resource Database

The Internet and World Wide Web are powerful resources for teachers, but it takes time and patience to sift through the volume of material available online. Start building a resource database with your colleagues. You could develop a set of criteria for evaluating the educational potential of online resources or Web sites. Consider what makes a good educational Web site. How can you verify the validity or accuracy of the information you find? Explore three educational Web sites or Internet resources; critique them using the criteria that you have developed, and prepare a synopsis. By keeping a log of these Web sites and critiques, you are developing a database of online resources for use in your own classroom.

2. Educational Psychology in Different Media

Information about educational psychology appears in journals, magazines, newspapers, and on the Internet or World Wide Web. How do these different media sources compare with respect to how they present information? Find an interesting article in a research journal such as *Educational Psychology Review* or *Phi Delta Kappan*. Search for the same topic on the Internet and compare the content of the information from the two sources. What similarities and differences do you see? What did you learn from this comparison?

Connect to the Online Learning Centre at www.mcgrawhill.ca/olc/santrock to explore possible answers.



Visit the Educational Psychology, Second Canadian Edition, Online Learning Centre at www.mcgrawhill.ca/olc/santrock to find traditional study aids such as quizzes and writing assignments alongside exciting new offerings such as expert advice and classroom strategies from in-service teachers; video lectures; video observations of real classrooms; and modules for reviewing theory and practising its applications—just to name a few.