

1

Looking at Gender, Culture, and Other Diversities in the Classroom

An Overview

Chapter Guiding Questions

This chapter will help you answer the following questions:

- How do cultural differences among students affect classroom experiences with new technologies?
- How is gender a factor among students using new technologies?
- How are disabilities differentiated and described?
- What are the standards and guidelines for working with technology in the classroom?
- What are the standards and guidelines for working with students with disabilities?

We are all different. Like snowflakes, no two human beings are exactly alike. How we recognize and relate to those differences depends on the prevailing culture, how individuals choose to make their needs known, and the technologies available to accommodate differences.

2 ● Technology and the Diverse Learner

We educators must recognize that every student is unique. Differences among our students may be small or large. Some differences are considered advantageous (the “gifted” student) and give the student an advantage in the classroom. Other differences can be a challenge to the individual (the “disadvantaged” or “differently abled” student), especially in situations that highlight the challenge because of the emphasis on certain information-processing strategies.

A good example of how a challenge may also be a gift is the student with a learning disability who can master a concept but has difficulty reading the textbook because he or she is looking at the shapes on the page rather than decoding the meaning of the words on the page. In the classroom, where decoding text for meaning is critical, this is a serious problem. However, this “disability” becomes a “gift” when the student attends an art class or enrolls in a graphic design school where the ability to see the relationships among shapes is an asset.

This is a frustrating situation for all concerned. It is frustrating for students, who know that they understand the concept but cannot unlock the information. It is also frustrating for the teacher, who has to find different ways to help students unlock the information. Technology can be a big help to you, the teacher, in finding the right presentation strategy for the student. However, while technology can be a powerful tool, it has to be supported with effective instruction and, most important, by a knowledgeable and caring professional.

Innovations in information technologies and assistive/adaptive technologies can be powerful tools for success in the classroom. “Success” is defined as high achievement in the K–12 and higher-education curricula and/or in the workforce. As we continue to rely on computer technology at home and at work, equal access to this technology becomes critical to economic success (Gilley, 2002). This is another reason why the integration of technology in the classroom is important. By providing all students with access to technology in the regular classroom, you are also providing them with opportunities to gain skills that will serve them well after they leave school. While access to computers is getting better with time, many students are excluded from more advanced technology courses because of their gender, ethnicity, or disability. This digital divide (see Figure 1.1) limits the possibilities for these students, thus wasting their potential talent.

Although every individual is unique, some of the differences among us have been identified and categorized. The goal of making generalizations about differences is not to create stereotypes or support prejudices, but to identify the challenges and the gifts that many people share so that we may keep from overlooking, avoiding, or minimizing them. Our intent is to use these classifications as a way to help you find a technology or

Figure 1.1 The Digital Divide

In some instances the differences among individuals specifically concern their access to new technologies. The term “digital divide” refers to the gap between those in society who have access to computer technology and those who do not. Recognizing this problem and making new technologies a regular part of classroom activity reduce the digital divide and help all students succeed. Knowing what technology is capable of and how it can be used to foster student success is every teacher’s responsibility.

method of instruction that can be a good fit. It is important to keep in mind that you may need to modify our suggestions and strategies to fit your unique situation. Throughout this book we will look at differences dictated by culture, gender, and ability because these are currently popular methods of categorizing the differences among individuals.

CULTURAL DIVERSITY

Whether we prefer to think of it as a “melting pot” or a “tossed salad,” the population of the United States is composed of individuals from a variety of ethnic groups and cultures. Each of these groups and cultures contributes to creating a nation that is, we believe, greater than the sum of its parts. For all of the strengths derived from this variety, a heterogeneous society can present many challenges as well. Different languages, different customs, and the prejudices of one group against another can create impediments to educational success. Even agreeing on what it means to be a “successful” person can be difficult among varying groups.

Cultural differences are very real, but for the most part they have been constructed by society. That is to say, the differences we perceive are largely based on factors such as upbringing, training, and socioeconomic circumstance. Cultural differences can also be problematic because they are “in the eye of the beholder.” Each individual identifies more with some aspects of his or her heritage than with other aspects. A person described by others as Eastern European American might identify himself or herself as American, Jewish, Catholic, New Yorker, or Californian. The possibilities for varying descriptions based on cultural differences are almost infinite and are made at the discretion of the individual. Few measures of cultural difference are truly objective, and intellectual or physical abilities are not inherent in individuals because of their cultural circumstances. One example of this phenomenon can be seen in cultures

4 ● Technology and the Diverse Learner

located in remote areas of the world that value survival skills such as building a fire and finding food. In this cultural (and physical) context, these skills are a mark of high intelligence. Fortunately for many educational researchers, survival skills are not as important in the United States, where mathematical intelligence is highly valued.

Two aspects of culture that can be measured to some extent are English language proficiency and socioeconomic status (SES). English language skill and SES have a particularly strong effect on how students are treated in the classroom and how they approach technology.

One's skill with the English language can have the greatest impact on the classroom experience for both student and teacher. There are well over two million non-English-speaking students in U.S. classrooms. During the 2000–01 school year, thirty-nine states reported supporting Limited English Proficiency (LEP) students (National Center for Education Statistics [NCES], 2003). California reported 1.5 million LEP students, and Texas reported more than half a million (NCES). LEP students are more motivated to learn English if they are attracted to the technology to begin with. This is in part due to the dominance of the English language on the Internet (see Figure 1.2).

Figure 1.2 Language Populations Online

English	36.5%	Chinese	10.9%
Japanese	9.7%	Spanish	7.2%
German	6.7%	Korean	4.5%
Italian	3.8%	French	3.5%
Portuguese	3%	Russian	2.9%

SOURCE: European Travel Commission, *New Media Review*. Retrieved April 24, 2003, from <http://www.etcnewmedia.com/review/>.

Students' socioeconomic status (SES) can affect their experiences as learners as well. Obviously, low SES groups have less access to computing tools since these are currently expensive. Children from high SES families often have far more access to networked computers at home than do their low SES peers. It is interesting that students have access to the same video games and other forms of electronic entertainment regardless of their SES.

The way computing tools are used differently by high and low SES groups says a great deal about the availability of technology to high SES students and impacts their relationship with technology. High SES students are often placed in situations where they control the computer, using it for creative communication and data manipulation. On the other hand, low SES students are often subjected to computer programs that in

essence control the individual; what is frequently referred to as “drill and practice” software limits the amount of personal power these students have over the computer so that they become passive, rather than active, participants in the instructional process (Butler-Pascoe & Wiburg, 2003).

Encouraging students from a variety of ethnic backgrounds can be challenging for the teacher. Many teachers who are successful in dealing with these issues provide not only access to technology but also role models (community members and/or celebrities) who demonstrate how people from similar backgrounds have successfully mastered technology in their lives and careers. These teachers show students how mastering technology can lead to higher-paying careers.

GENDER

Certainly one difference that can be measured among any human population is gender. Gender becomes a factor in classroom instruction when the teacher creates a learning environment that favors the success of either boys or girls. Most of the time the teacher’s favoritism is subtle and unintentional. Historically, certain subject areas have tended to be problematic in terms of gender favoritism. Two curricular areas where gender is problematic are science and technology.

Gender differences are both similar to and different from cultural differences. Certainly there are physiological differences between the sexes, but these do not extend to inherent differences in the ability to succeed at school or work. The effect of gender on learning and achievement is constructed by culture. In Western societies, girls are expected to behave more passively than boys. Boys are expected to be active and curious, often to the point of getting into trouble, which is considered normal and acceptable (Schrum & Geisler, 2003). Typically, our culture describes “male” behavior as aggressive, assertive, and competitive. “Female” behavior is described as collaborative and supportive. Boys are encouraged to develop skills in fields like engineering and computer science; girls are often discouraged from participation in these fields. Fields that focus on personal aesthetics (e.g., fashion and interior design) and child development (e.g., elementary education) are considered a female realm.

From these differences come disparate approaches to technology. Research conducted by Honey et al. (1991) suggests that males envision technology as a means to gain power and control over the physical universe, while females envision technology as a means to improve communication and collaboration.

Currently, males use computing technologies more often than girls. Boys use computers as toys, while girls use computers to accomplish tasks

6 ● Technology and the Diverse Learner

(Gilley, 2002). Research shows that girls are just as capable as boys at handling computer technology. However, research also shows that boys tend to receive greater encouragement from parents and teachers to pursue computer interests than girls (Margolis & Fisher, 2001). Boys tend to become “obsessed” with computers whereas girls tend to be occasional users. This difference in approach seems to create situations in which boys are encouraged to develop expertise with computing technologies (Margolis & Fisher, 2001). Moreover, women tend to have a lower self-perception of their real computer skills than do men (Mathis, 2002).

Historically, not many women have entered the field of information technology (IT) (Mathis, 2002). Yet many jobs require technical expertise but not the traditional programming skills that most people associate with IT careers. Graphic arts is a career path that does not involve programming and yet is technology intensive. Graphic artists use computers to create original artwork for print, video, and the Web. Computers play a key role in television and filmmaking. Today, many movies we see feature backgrounds, action, and even characters that are created in the computer. The same is true for many animated movies, such as *Toy Story*. Theatrical production can also involve a great deal of computer technology. The control of lighting and sound is often managed with some type of computer interface. Teaching is yet another area in which technology can be an important tool. Increasingly, community colleges and universities have departments of distance education that help instructors develop and deliver their teaching online. Professionals in this area have a unique blend of people and technology skills. Although they have not been popularly adopted, several initiatives are currently under way to explore the possibilities of teaching online in K–12 settings.

With all of these career possibilities open to girls and boys, it is important that teachers become aware of gender issues and work to make opportunities available for both boys and girls to learn more about technology. A key to this, of course, is an awareness of the “gender factor” in your classroom. There are several possible approaches, but one simple way of doing this is to occasionally videotape your classroom, focusing the camera on the technology. After videotaping the activities in your classroom over a period of days, review the videotapes to see how often students are using the technology, who is using it, and how they are using it. Once you have done this, you can identify problems and correct them. You may notice that when working in groups, the boys tend to “hog” the keyboard and the girls are frequently forced to sit off to the side and engage in other activities. If this occurs, you can establish group rules that require the girls to be on the keyboard for the same amount of time as the boys. You can also rotate roles in the group to ensure that the girls have a certain number of tasks to do on the computer.

DIFFERING ABILITIES: EXCEPTIONAL CHILDREN

Cultural and gender differences are things we all share. Each of us claims a heritage and each of us can be defined as either male or female. At some point many of us can also claim the further distinction of being “exceptional.” For most of us, this will happen later in life when we face a medical condition such as arthritis that can leave us impaired or disabled. For a significant number of us, being exceptional is a characteristic that spans an entire lifetime. Individuals who are considered exceptional are defined as having impairments and/or talents that place them at an unusual point on the spectrum of human ability.

While every individual is slightly different in his or her cognitive and physical abilities, exceptional children have skills and abilities that are unusually different. Some may have significant cognitive impairments that limit their ability to encode or decode information, while others may have superior ability in retaining information or in generalizing existing knowledge to new situations. Some students may have significant physical impairments that limit their hearing, vision, or motor skills. Often we think of exceptional children as those with cognitive and physical challenges, but gifted and talented individuals are considered exceptional as well.

Since it is common to address first the needs of students who face challenges, we will begin by defining key terms that are frequently used to differentiate conditions (see Figure 1.3). It is important to reemphasize that although someone may have an impairment, he or she does not necessarily have a disability.

Figure 1.3 Defining the Differences Among Exceptional Individuals

The Americans with Disabilities Act (ADA) provides descriptions that essentially define the following:

Impairment. A problem with or loss of normal psychological or anatomical functioning.

Disability. A restriction in or loss of one’s ability to perform normal human activities.

Handicapped (Disadvantaged). A situation in which a person’s age, sex, social, or cultural status prevents that person from fulfilling a role considered normal for him or her.

A fourth difference not defined by the ADA is:

Gifted and Talented. Displaying highly superior abilities in memory, cognitive reasoning, visual skills, or auditory skills.

8 ● Technology and the Diverse Learner

There are four terms commonly used to identify exceptional individuals: *impairment*, *disability*, *disadvantaged*, and *gifted and talented*.

An impairment is a problem with or the loss of normal mental or physical functions. A student who is impaired may be missing a limb or lack the ability to hear. A student who has a cognitive impairment may have difficulties memorizing a list of spelling words.

A disabled student is limited in or cannot perform normal human activities, such as walking or reading. While there is significant debate over the characteristics of specific disabilities, there are four commonly accepted broad groups of disabilities:

- Learning, which includes dyslexia (reading), dysgraphia (writing), and dyscalculia (mathematics)
- Speech and language
- Mental retardation
- Emotional disturbance

Students are considered to be disadvantaged when their disability creates problems for them in specific situations. An example is the learning disabled child in the classroom. The normal classroom environment requires a great deal of reading and writing for a student to be successful. A student with dyslexia is disadvantaged in this environment because to be successful the student needs to do a great deal of reading. However, in a situation such as graphic design, the same student would not be disadvantaged because reading does not have the same impact on the student's success.

Exceptional children are varied, and in an attempt to deal with their educational needs, educators have developed several "categories" to describe the impairments of these children. Although many exceptional children have some type of impairment, they can also fall into the category of gifted and talented. While some misuse these categories by assigning labels to children and discriminating against them, the labels are intended to help in describing the types of services that tend to be most beneficial to students who fall within these broad categories.

The definitions of many categories such as "learning disability" are still being debated within the exceptional education community. This speaks volumes about the diversity of learners who fall under the umbrella term "exceptional children." For the purposes of this book, we will use three broad areas to help us organize the various types of exceptionalities: *physical impairments*, *cognitive impairments*, and *gifted and talented*.

- Physical impairments affect mobility and/or limit a student's interaction with the learning environment based on information processing.

Examples of physical impairments that affect mobility include spina bifida, muscular dystrophy, and spinal cord injuries. Examples of physical impairments that influence a student's ability to interact with the learning environment and process information include vision or hearing loss (to the point that the student has trouble reading or hearing the teacher).

- Cognitive impairments can impede a student's ability to process information. Types of cognitive impairments include traumatic brain injury, autism, mental retardation, behavioral disorders, communication disorders, and learning disorders. Students who have cognitive impairments may have difficulty processing language or memorizing. Aphasia is a communication disorder that limits a student's ability to process language (usually associated with a stroke). A student who has aphasia may be able to recognize objects in pictures but will not be able to name those objects. An example of a learning disorder is attention deficit hyperactivity disorder (ADHD), which limits a student's ability to attend to and stay focused on a specific activity. A student who has ADHD tends to be restless and to move from one activity to another without completing the first activity.

- Gifted and talented refers to students who excel in academic settings and therefore require unique instructional strategies to address their "accelerated" needs. A student who is identified as gifted and talented displays remarkable abilities that go far beyond the standard range of abilities found among most people. A person may be gifted and talented in terms of cognitive skill (memory, reasoning, or rote functions such as multiplication or division), visual or auditory skills (the visual or musical arts), or physical skill (athletic ability or an enhanced sense).

Technology can be quite effective in reducing or removing restrictions that hinder the performance of normal human activities. Word processing, for example, can simplify many writing tasks such as spell checking. In the early 1980s, many studies were conducted that examined new ways of composing on the computer. At the time, functions such as spell checking were considered novel and came as separate programs to be used with the word processor. For many students with learning disabilities, word processing was a blessing that allowed them the freedom to get their thoughts down without having to use pencil and paper. Now, word processing is found in most office environments. Spell check is now integrated into virtually all word processors and even into Web browsers such as Apple's *Safari*, which allows an individual to spell-check the contents of a form before it is submitted. Many other technologies are following the same path, including computerized speech that can be used to read the contents of Web sites back to a student.

10 ● Technology and the Diverse Learner

Word processing is a great example of a technology that can support a student with a disability. Three distinct types of technological or strategic support that can help reduce or remove restrictions for students with disabilities are *assistive/adaptive*, *remedial*, and *compensatory*. One interesting thing about these categories is that the same technology can fall into a different category depending on the context in which it is being used.

- Assistive/adaptive technologies and strategies assist students with a task that they cannot accomplish otherwise. Assistive technologies can be simple or complicated. A straw that helps a paralyzed person drink from a glass is an example of a simple assistive technology. A computerized wheelchair that can be controlled by blowing into a mouthpiece is an example of a complicated assistive technology. Assistive/adaptive technologies are generally not used to teach a concept but are used to help the student access the information necessary to learn the concept (e.g., eyeglasses do not help a child learn to read; they help a child see well enough to learn to read).

- Remedial technologies and strategies teach or remediate. Like traditional remediation, remediation technologies use repetition and simplification of complex concepts to “remediate” the student. Examples include software designed to help students practice specific skills such as spelling, reading, or mathematics. Remedial technologies are easy to use in the classroom, as they require little input from the teacher. But they do require that the teacher understand the instructional needs of students and the capabilities of the software to make an effective match between the two. Teachers may be tempted to overuse a remedial technology because it appears to do all of the work for them. To avoid falling into this trap, teachers must carefully assess when the need for the software has passed and when activities that encourage the development of higher-order thinking are necessary.

- Compensatory technologies and strategies help a student perform an academic task more effectively and efficiently than they could on their own. Examples include word processing (instead of handwriting), spell-checking software, and calculators. These tools are assistive in that they help the student accomplish a task; they are also teaching tools in that they help the student better understand certain concepts. Using a graphic calculator to teach statistical concepts is a good example. The student can perform simple operations while learning how more complex operations work.

How Many Exceptional Children Are There?

Approximately 8.8% of the population ages six to seventeen is receiving special education services. This percentage translates into

approximately 5.7 million students. Most of the students receiving special education services are between three and nine years old. The number of students receiving these services gradually decreases after students reach age nine (Heward, 2003). There are many reasons why students no longer need services. Some students appear to “grow out” of an exceptional category or develop “coping” strategies that allow them to function effectively in an educational environment. Other students are “cured” because of effective interventions early in their educational career. Regardless of the reasons, exceptional students still need effective classroom instruction that meets their needs.

Students with learning disabilities make up 50% of the children identified as exceptional. This is the fastest-growing group; 18.9% of the exceptional population has a speech/language impairment; 10.6% has some form of mental retardation; and 8.2% has some type of emotional disturbance U.S. Department of Education, 2002). While students with emotional disabilities make up the smallest number of exceptional students, they tend to require many more resources.

Although law does not mandate it, forty-three states currently provide services for gifted and talented students. More than two million students are receiving these services.

History of the Legislation Regarding Disabilities

Prior to the 1970s, many states had laws that excluded students with disabilities from mainstream classrooms. These students were often relegated to school basements or separate buildings. The recognition that unequal educational opportunities existed for these students led to legislation known as PL 94-142/IDEA.

Originally called the Education for All Handicapped Children Act, PL 94-142/IDEA was passed in 1975 and has been amended several times since its enactment. A 1990 amendment renamed the original legislation the Individuals with Disabilities Education Act, or IDEA. In 1997, provisions concerning issues such as increased parental participation were included in the legislation (U.S. Department of Education, 2003). There had been other legislation prior to it, but IDEA’s six principles are considered the most comprehensive and sweeping of any legislation protecting students with disabilities:

- Schools must educate *all* children with disabilities.
- Schools must use nonbiased, scientific methods to identify students with disabilities.
- Students are entitled to free and appropriate public education.

12 ● Technology and the Diverse Learner

- Students must be educated in the least restrictive environment possible (this means that students must remain in the regular classroom as much as possible).
- Schools must have due process safeguards such as parental consent before placement can occur.
- Parents and students must be involved in a shared decision-making process before placement can occur. This is often done through annual Individual Education Plan (IEP) meetings. IDEA is the first legislation that required an IEP for each child.

While each of these principles is important, the concept of the least restrictive environment (LRE) probably has the greatest impact on the classroom teacher. Traditionally, LRE has meant that students went to a special classroom for additional services. The popularity of the recent movement *inclusion* means that more students stay in the mainstream classroom and resources are brought to them. Inclusion requires effective planning between the classroom teacher and the resource teacher and flexibility from the classroom teacher. However, when carried out correctly, inclusion allows students to benefit from a full day of instruction and integration with their peers.

Another legislative act, the Gifted and Talented Children's Education Act of 1978, provides funds for inservice training programs and research aimed at meeting the needs of gifted and talented students. Like IDEA, this act has been amended several times. As with LRE, the challenge for the classroom teacher is to provide instruction that meets the needs of the student identified as gifted in the context of the classroom. Within the classroom environment, the teacher has to augment the regular instruction for the gifted and talented student.

The Americans with Disabilities Act (ADA), enacted in 1990, is landmark legislation that extends the civil rights protection of persons with disabilities to all public services including transportation and telecommunications and to private sector employment. This is significant because in addition to affecting classroom instruction, the act protects all people with disabilities at every stage of life from discrimination. Among other things, the ADA affects the accessibility of Web sites, through Titles II and III, which require state and local governments and others to provide effective communication whenever the Internet is used (International Center for Disability Resources on the Internet, 1999). The accessibility of Web sites is important for classroom teachers when they are selecting online resources to use in their classroom. Visually impaired students can use readers that can read the contents of a Web site to them. However, if the Web site does not conform to accessibility standards (and many do not), they will be of little instructional use.

The Individual Education Plan (IEP)

The IEP is a critical part of the special education process. The IEP is a system for determining where the child is and where he or she should be going. The IEP is important for the classroom teacher because it specifies how the student will achieve educational goals, how long the attainment of those goals should take, and how everyone will know when the child achieves those goals. IDEA requires that every student with special needs between the ages of three and twenty-one have an IEP. Older students must have a provision in their IEP to help them make the transition out of school. This transition could be toward independent living, including, if possible, some type of work after school is completed.

An IEP is created by a designated IEP team that must include the student's parent(s), at least one regular education teacher, at least one special education teacher, a representative from the local education agency (LEA), an individual who can interpret the instructional implications of evaluation results (generally a school psychologist), other individuals such as outside tutors who are familiar with the education of the child (this is at the discretion of the parents or school), and the student if he or she is age fourteen or older.

The regular education teacher plays an important role in the development and implementation of the IEP. In many cases, it is the classroom teacher who makes the initial referral when it becomes apparent that a student is having difficulty in school. The regular classroom teacher can also provide the IEP team with a great deal of feedback about the student's progress.

Individual Education Plans have a variety of components. Many are required by law and are designed to ensure that the rights of students are not violated and that they receive the best and most appropriate services possible. The parts of the IEP that are directly concerned with instruction include the following:

- The student's current educational performance
- Goals and objectives that are measurable along with benchmarks that can indicate progress
- Services that the student will receive, including special and regular education and any supplemental services
- Program modifications that may have to be made to support the student
- The extent, if any, to which the student will not participate in the regular class

The IEP also specifies any modifications that may be required for standardized tests such as state-administered achievement tests. These

14 ● Technology and the Diverse Learner

modifications can include extra time, word processing, and/or a person to read the test to the student. The type of testing modifications allowed can vary depending on the state where the student resides. All Individual Education Plans, however, must include a rationale for any modifications to the administration of standardized tests and alternate methods of assessment if a standardized assessment is not appropriate. These modifications can have significant ramifications for the student if, for instance, certain modifications mean that the student does not graduate from high school but receives a certificate of completion instead. Needless to say, these important decisions should involve the entire IEP team.

The IEP also includes several items that measure the student's progress and establish procedures:

- The projected date for the beginning of the services and modifications described
- The anticipated frequency, location, and duration of services and modifications
- How the team will measure the student's progress toward yearly goals
- How parents will be regularly informed about their child's progress
- Whether the progress that the student makes is sufficient to meet annual goals

The IEP can include statements about the student's use of assistive technologies for instruction including computing tools such as word-processing and spell-checking software, specialized input devices (keyboards, tablets, mice, touch screens), text readers for books and/or for online resources (e.g., Web sites), and software tutorial programs for spelling, reading, and math.

Inclusion

The term "inclusion" means educating students with disabilities in regular classrooms. This is part of the least restrictive environment principle of IDEA: students must be educated as close to the regular educational environment as possible. In practice, inclusion means that instead of pulling the exceptional child out of the classroom, services are brought to the child in the classroom. Some experts believe in full inclusion in which all children with disabilities are served in the regular classroom, while others (including the Council for Exceptional Children) believe in a continuum of inclusion with full inclusion as the ultimate goal. The child's IEP should determine the degree to which inclusion is accomplished.

Inclusion in educational settings has several defining characteristics (Giangreco, Cloninger, Dennis, & Edelman, 2000). Among these are:

- The inclusion of students with a variety of abilities
- Students feeling that they are an integral part of the classroom
- Students sharing a common education experience
- Persons with and without disabilities equally sharing the setting
- Addressing the needs of the entire student (social, psychological, etc.)

While the degree to which inclusion should take place is still being debated, it is proving to be a successful educational strategy for many students with disabilities. Of course, a key component to the success or failure of inclusion is whether the classroom teacher is able and/or willing to differentiate instruction to meet the individual needs of students in the classroom.

STANDARDS AND GUIDELINES

Standards provide educators with guidelines intended to promote best practices in a particular subject or field. The standards we will concern ourselves with most closely throughout this book directly relate to technology in the classroom, to special education, and to issues of accessibility as it relates to information technology.

The International Society for Technology in Education (ISTE) has set forth the most popular and widely accepted classroom technology standards. Thirty states have adopted the society's *National Educational Technology Standards for Students* (the NETS-S). The ISTE standards specify what students should know in order to be technologically literate. The most important standards center around the use of technology to support issues related to diversity and to personal productivity in the classroom:

- Students understand the ethical, cultural, and societal issues related to technology.
- Students use technology tools to enhance learning, increase productivity, and promote creativity (International Society for Technology in Education, 2000).

IDEA does not provide any standards as such but does contain many guidelines for the use of technology with exceptional children including assistive technology, technology to create a least restrictive environment, and instruction and assessment. IDEA also provides guidelines for IEP

development, which is important in determining appropriate use of technology in the classroom.

The ADA mandates that persons with disabilities be given equal access to all public places and institutions. All federally funded projects have to provide this accessibility. Web accessibility is one of the most widely impacted subjects of this mandate. This is also relevant to the instruction that takes place in the classroom if it involves technology. Asking a student with a visual impairment to use a Web site that does not meet basic accessibility standards can create many problems for the student. Fortunately, most Web sites that are accessible proudly display one or more “seals of approval” such as the “Bobby Approved” icon (*Bobby* is software that analyzes Web sites and Web pages to determine whether all accessibility standards have been met; for more information on *Bobby*, visit <http://bobby.cast.org/>). Since many schools have Web sites of their own, it is critically important to follow guidelines for Web accessibility in order to be ADA compliant. This is especially true if the school receives federal funding. Specific guidelines and tools are available from the World Wide Web Consortium (W3C) at <http://www.w3c.org/>.

SUMMARY

We need only to walk into a clothing store to see that human beings come in all shapes and sizes. We need only to spend time in a classroom to see that students also come in all (“instructional”) shapes and sizes. In this chapter, we have explored cultural, gender, physical, and cognitive differences that students possess. Many of the problems related to culture and gender tend to emerge when teachers are unaware of how the classroom environment and/or their own behaviors support or hinder students as they interact with technology.

Students can have a variety of exceptionalities that can arise from some type of impairment or an unusual talent. Technology can provide the teacher with tools that can facilitate assistance, remediation, or extended learning.

In the United States, exceptional students are protected by several laws, including IDEA and the ADA. IDEA mandates that every student with an exceptionality must have an Individual Education Plan. This plan sets instructional goals and defines the modifications and support necessary to reach these goals. The concept of least restrictive environment first mandated by IDEA is today being expanded through the practice of inclusion.

Standards and guidelines provided by the ADA, IDEA, and the International Society for Technology in Education, while not overly specific, inform the best practices of using technology to accommodate diverse learners.

FOR FURTHER APPLICATION

Below are several resources and professional development activities that can help you better understand how technology can be used with diverse learners.

- Teaching Diverse Learners (<http://www.lab.brown.edu/tdl/>) is one of many Web sites that can provide information and links to additional resources to help you better understand the pedagogical issues associated with English Language Learners. Of special interest are the many events listed on the Web site.

- The Council for Exceptional Children (<http://www.cec.sped.org/>) is the leading organization for exceptional children. In addition to its Web site, which offers a great deal of information and many links to resources about exceptional children, the council holds a number of workshops and an annual conference.

- Many organizations provide Web sites, list serves, and discussion forums that can help you communicate with experts and other teachers who have worked with diverse learners. Using a search engine such as Google (www.google.com), you can search for diverse learner listservers to find many discussion forums.

- One way to learn more about diverse learners is to take a course on the subject, and courses offered online may be particularly well suited to professionals with time and geographic constraints. A Google search using the terms “online course,” “diverse,” and “learners” will take you to several sites that list or offer online courses that focus on instruction for diverse learners. One such Web site is the Learning Bridges Online Learning Center (<http://www.learningbridges.com/PDSChar.aspx>), which offers both free and fee-based online courses. Many of these courses can be taken during the summer and may count as professional development.