Universal Design for Learning

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INTRODUCTION

Buckminster Fuller, a multi-talented innovator of the 20th century, contributed to society as a scientist, engineer, and inventor (left hemisphere/brain dominance), and as a philosopher, psychologist, and essayist (right hemisphere/brain dominance). The multi-faceted dimension that defined Fuller (and other such inventors and leaders) contributed greatly to his successes. Yet, in traditional academic environments, indeed in current ones (which are defined by rigorous standards, high-stakes assessments, and accountability for all), these preeminent leaders of innovation would not have been recognized for their talents or contributions—during their school years. Einstein, who was labeled a failure by his grade school math teachers, proceeded to change how we view and operate in our world—despite his limitations. The educational system did not know how to accommodate his way of learning; yet, he excelled in spite of the failures of public education. In today's educational climate, many potential Fullers and Einsteins may be experiencing the same failures of our system. This is often true of students who learn differently from how they are taught, including students with disabilities (Smith, 2001).

THE CHALLENGE OF MEETING MULTIPLE STUDENT NEEDS AND STYLES

The design of curricula and learning environments that can meet the needs of all learners is a challenge. Often, attempts are made to retrofit a situation or environment to meet the needs of a specific student or group of students. These attempts to restructure or adapt often fall short of offering a more holistic solution—one that does not single out a particular student or group of students as being different or needing "extra" teacher effort. Rose and Meyer (2000) note that through new studies of the brain, researchers have proven that each of us receives information and learns very differently—depending upon the activity in which we are engaged. This "modularized" learning approach of our brains further supports the importance for educators to include multiple representations of information, pathways for expression, and opportunities for engagement (Rose & Meyer, 2002). Universal Design for Learning (UDL) is a new educational approach for teaching diverse learners by focusing on more flexible applications of technologies, instructional networks, and manipulation of digital content (CAST, 2000).

The communications technology revolution, digital systems, brain research, multiple intelligence theories (Gardner, 1983; Sternberg, 1996), *and* the civil rights movement of persons with disabilities—for example, nondiscrimination statutes such as the Rehabilitation Act of 1973 as amended, the Americans with Disabilities Act of 1990, and the series of special education laws, now known as the Individuals with Disabilities Education Act of 1997—have merged to create a new era in the UDL educational approach that seeks to meet the needs of all learners without pointing out their differences. It is what Rose and Meyer (2002) call the "intersection of initiatives" (p. 7). They say that our educational initiatives of integrated units, multiple intelligences, multi-sensory teaching, differentiated instruction, performance-based assessments, and computers in schools, digital and Web-based media, and others combine to form UDL.

Universal Design for Learning is based upon discoveries from brain research that the Center for Applied Special Technology (CAST) has translated into technologies designed to enable instructional success for students with diverse learning needs. A precept of UDL requires that instruction and assessment ap-

proaches are flexible enough to automatically include alternatives—making them accessible and appropriate for individuals with diverse backgrounds, varied learning approaches, abilities, and disabilities. On the other hand, UDL "draws upon a student's…strengths and interests that may be blocked by the exclusive use of printed text" (p. 7). This notion is supported with the understanding that intelligence is defined as the ability to solve problems or to create products that are valued (Gardner, 1983).

WHAT MILLENNIUM TEACHERS SHOULD KNOW

The Individuals with Disabilities Act (IDEA, 34 CFR, 1997) requires special education and general education teachers to collaborate in all activities supported by the Act. The intent of this collaboration is to ensure that students with disabilities receive instruction in the most appropriate educational settings. One significant result of incorporating UDL strategies in education is that *all* students, with or without disabilities, can benefit from the variety of teaching methods employed. Through a UDL framework, educators can: 1) learn to identify student strengths, needs, and preferences through brain networks (e.g., teachers will be able to read and interpret PET scans to understand brain functions of certain learners); 2) adjust for curriculum and classroom barriers by maximizing multiple options for expression and engagement using assistive technologies such as speech recognition software, talking word processors, screen readers, and tactile graphic pads; and 3) recognize benefits from the use of technologies that can provide multiple representation of instructional formats. For example, one student may excel when he reads material that is simultaneously spoken aloud and visually highlighted by word and sentence, while another may "come alive" through small group discussions and opportunities to demonstrate learned material. Millennium teachers do not need to operate the vast array of assistive technology devices and services, but they should be aware of how they and their students can access them—as well as where and how to receive training in these technologies.

BASIC UDL SKILLS FOR MILLENNIUM TEACHERS

Universal Design for Learning supports a philosophy of incorporating a wide variety of technology and instructional approaches in order to reach all students. Through the core concept of UDL—"anything that is accessible to some, needs to be accessible to all"—millennium teachers must have opportunities to learn and apply computer technology, Web access, and digitized curricula to their classrooms. Curriculum can include digital and online resources rather than print-based textbooks (Rose & Meyer, 2000), requiring teachers to know how to locate digital content and how to create it. Also, teachers and support personnel should have access to, and know how to operate, digital video cameras and scanners, and should know how to manipulate digital text, images, audio, video, and networks (Rose & Meyer, 2000). By acquiring these skills—which teacher preparation programs should provide—teachers can transform media from one form to others, and thus can foster student learning by using text-to-speech, speech-to-text, image-to-touch (e.g., tactile graphics), text-on-video, graphics-on-video (e.g., signed captioning for students who are deaf or have a certain learning disability), sound maps, and so forth (Rose & Meyer, 2000). With these and other options for learning, teachers can be more creative in developing instructional opportunities, and students can better access and demonstrate their learning. It is vital that more widespread efforts be made to ensure that teachers, both special and regular education teachers, have access to this important information on how to incorporate learning methods, technologies, and strategies to reach ALL learners.

REFERENCES

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