Integration of Universal Design of Instruction in Occupational Therapy Professional Education: Responding to Student Diversity

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Universal design, the design of products and environments to be usable by all people (The Center for Universal Design, 1997) improves access for people with and without disabilities (Bowe, 2000; Burgstahler, 2001). When applied to instruction, it is intended to maximize the usability of educational materials and environments for all students, regardless of their sensory or physical abilities or learning styles (McGuire & Scott, 2002). It emphasizes anticipating a variety of needs so that very few students require accommodations (i.e., specific adaptations to the context, equipment, or both) to meet individual needs.

The need for Universal Design of Instruction (UDI) is growing due to the increasing diversity of students entering college (Bowe, 2000; Henderson, 2001; McGuire & Scott, 2002). This increased diversity, including students with disabilities, likely will result in increased enrollment in occupational therapy programs of students with a wide range of learning needs. This challenges us to examine how we are meeting our students’ learning needs. Bowe reminds us that we need to avoid the tendency to blame deficits on students and be prepared to scrutinize our instructional design for potential problems. In doing this, we should raise three questions: (1) Is current instructional practice meeting the diverse learning needs of our students? (2) Are we fully acknowledging and maximizing the benefits of diversity in our educational environment? (3) Are we providing full access to educational experiences without disadvantaging any of our students?

Universal design of instruction is congruent with the occupational therapy values of client-centered care, the concepts of which include provision of flexible approaches; person-centered service and communication; and encouragement of active involvement in tasks in relationship to personal and environmental needs (Law, Baum, & Baptiste, 2002). Universal design also is consistent with the expectation that each enrolled student should receive full access to equitable learning in occupational therapy educational programs. This does not mean that educational standards are lowered since universal design of instruction simply focuses on minimizing or eliminating barriers to learning opportunities by increasing access to information.

The Center for Universal Design (1997) created seven principles of universal design. These include equitable use, flexibility of use, simple and intuitive use, perceptible information, tolerance for error, low physical effort, and size and space for approach and use. When all the principles are applied to instruction, physical, sensory, and cognitive barriers imposed on the learning environment are reduced. Specifically, instruction is provided in ways that meet learning needs of visual, auditory, tactile, and kinesthetic learners. This might include use of the Internet, multimedia presentations, handouts, discussions, and experiential activities. These can be combined to provide comprehensive and equitable instruction in the preparation of occupational therapy students. This paper describes each of the seven principles of universal design as they apply to occupational therapy instructional design and implementation.

The Seven Principles and Examples of Universal Design of Instruction

(1) Equitable use: “The design is useful and marketable to people with diverse abilities” (The Center for Universal Design, 1997). A basic tenet of this principle is that instruction for all students should provide equal opportunity (McGuire & Scott, 2002). Equitable use applied to instruction means that curriculum and instruction are welcoming and inclusive of all students—valuing and inviting students of diversity, including those with disabilities. For instance, consider the situation in an occupational therapy theory class, where you have a student who is deaf and relies on lip-reading. The student may need to sit near the front of the classroom in order to lip-read during lectures. This may compromise note taking because the student needs to sustain visual focus on the speaker’s lips. However, if lecture notes are provided for all students that can be downloaded from the Web, this accommodates the needs of a student who is deaf. It may also be helpful for other students in class, such as those with learning disabilities, or students where English is a second language, or those with handwriting challenges secondary to a physical condition such as arthritis.
(2) Flexibility in use: “The design accommodates a wide range of individual preferences and abilities” (The Center for Universal Design, 1997). This principle when applied includes using a variety of teaching modalities (e.g., lecture, discussion, handouts, case studies, videotapes, and experiential activities) to meet diverse learning needs. For example, syllabi and course learning materials can be prepared ahead of time and placed online so that students can use them in the format that best meets their needs (e.g., screen reader, speech output, enlarged font, printed copies). Web pages should be made accessible and videotapes should be captioned (Burgstahler, 2001). Allowing students to work alone or in small groups also can provide flexibility in learning.

In order to accommodate students who initially process information slowly, while simultaneously benefiting all class members, competency-building questions can be discussed via e-mail to assist in developing knowledge and critical thinking skills. Since occupational therapists must engage in critical thinking and verbal reporting in practice, communication skills must transition from e-mail to in-class discussion. The initial task demands should reflect the student’s ability level and then the challenge should increase as the student gains competence. For example, the initial demand of discussing via e-mail requires critical thinking and problem solving with no time constraints. The next step might involve putting time limits on responding, with the final step involving on-the-spot critical thinking and verbal discussion in class or during fieldwork. Throughout this process, feedback should be provided at each step.

(3) Simple and intuitive use: “Use of the design is easy to understand, regardless of the user’s experience, knowledge, language skills, or current concentration level” (The Center for Universal Design, 1997). Applied to universal design of instruction, this means that standard, familiar structures, formats, and examples to which students can relate should be used throughout the instructional process. A clearly written syllabus with assignment requirements and a grading rubric should be provided to facilitate student understanding of expectations.

In addition, set formats for sessions (e.g., always starting with a review of objectives or schedule for the day) and effective prompting and feedback during instruction may facilitate student success. Also, all verbal and text information should be explained using examples reflecting student experiences. For instance, when teaching task analysis, it is important to describe the principles involved, but also to exemplify the principles by providing examples that are relevant to all students and that reflect the step-by-step process. In doing this, an instructor should not assume relevance, but rather determine relevance by asking the students to provide tasks for analysis and then confirming that the tasks are familiar and relevant to all students. Consider the situation where an instructor exemplifies task analysis using the activity of sewing on a button. If a student has never threaded a needle or sewn on a button, he or she may have difficulty understanding the process, thus limiting the utility of the instruction. Only through the selection of a universally understood task or the teaching of a specific task prior to analyzing it, is the principle of simple and intuitive use respected.

(4) Perceptible information: “The design communicates necessary information effectively to the user, regardless of ambient conditions or the user’s sensory abilities” (The Center for Universal Design, 1997). Ensuring perceptible information during instruction means that information is provided in a variety of modes: (a) visual (videos, overheads, pictorials, graphs, handouts containing outlines and lecture notes); (b) auditory (lecture, discussion, videotapes); and (c) kinesthetic (experiential in-class activities, labs). The key is to provide opportunities for reinforcement of information through multiple modalities. For example, lecture information can be reinforced by written information (e.g., outlines, lecture notes, charts), by experiential activities, or by audio- or videotapes of the lectures. In this way, opportunities are provided for students to check and recheck their knowledge and skill as individually needed. Some students learn conceptually, and “get it” when reading or listening to content. Others learn through demonstration and through experiencing it themselves. Some require repetition for integration; some don’t. Instruction should be responsive to these differences and instructors should recognize that learning preferences also might vary according to the content being taught. In addition, providing perceptible information means that priority and essential information are highlighted, or foregrounded from the less important information. The one exception is when the instructional goal is for the students to learn to prioritize and identify essential information. In this case, the goal should be clearly articulated and the instruction should be designed to help the students meet the goal.

(5) Tolerance for error: “The design minimizes hazards and the adverse consequences of accidental or unintended actions” (The Center for Universal Design, 1997). What this principle means for instruction, is simply that there is time and space provided for ease of correction rather than merely penalty for mistakes. For instance, in the early stages of instruction, this would include building in feedback to written papers and assignments, with encouragement to rewrite a paper or treatment plan with improvements and submit for reevaluation. Usable feedback (verbal, written, or demonstration) should be provided both during and after educational activities. Another example of this principle is using computer software that guides the user toward gaining a correct response. Tolerance for error also allows for a student to monitor and advance his or her own learning progress at a comfortable pace (within acceptable bounds of the program) without undue penalty. For instance, class instruction related to the Peabody Developmental Motor Scales (Folio & Fewell, 2000) might include a lecture, demonstration of test administration, and laboratory experiences focusing on test scoring and administration. This might meet the needs of most students, however some may need additional experiences to achieve competency. Allowing a student to check out instructional materials (e.g., video of administration of the Peabody Developmental Motor Scales, scoring module, test kit, manual) allows for skill development at the student’s pace and through his or her preferred means of study. The student may practice independently or with peers. This provision of practice options...
demonstrates sensitivity to individual learning needs and tolerance for error during the skill development phase, and allows for competency evaluation using a flexible timeline.

(6) Low physical effort: “The design can be used efficiently and comfortably and with a minimum of fatigue” (The Center for Universal Design, 1997). According to universal design of instruction, required energy output should be minimized and all students should have full access to the library, classrooms, labs, equipment, and restrooms. Three examples of this principle follow: (a) equipment in labs can be positioned for easy access and use of proper body mechanics for all students, including those who use wheelchairs; (b) all students, including those who have difficulty taking copious notes in class due to physical or auditory perceptual deficits, can be allowed to tape record or download a lecture from the Web so that it can be studied at home; (c) breaks can be incorporated in class sessions for all students, including those with low sitting tolerance (e.g., students with arthritis, students with multiple sclerosis, students with attention deficit disorder).

(7) Size and space for approach and use: “Appropriate size and space is [are] provided for approach, reach, manipulation, and use regardless of the user's size, posture or mobility” (The Center for Universal Design, 1997). Universal Design of Instruction requires that classrooms and clinic spaces be of appropriate size for access. Environmental considerations include, yet are not limited to, adequate space allotted for wheelchair mobility and positioning of objects (e.g., mailboxes, phones, desks, tables, laboratory equipment, and supplies) in the physical environment to facilitate access. Time to move within the environment (e.g., between classes) also merits consideration when scheduling classes and educational experiences. Back-to-back classes may not allow sufficient time to transition from one class to another for some students (e.g., those with diabetes, fatigue, low endurance, and medical issues requiring frequent restroom use). Another way to apply this principle is to allow students preferred seating. For example, students who have hearing impairments or have difficulty concentrating may benefit from sitting directly in front of the instructor.

Issues Related to Universal Design of Instruction

Use of universal design of instruction has many advantages. For example, it may reduce the need for expensive accommodations such as Braille texts, or providing sign language interpreters. Putting lectures and assignment criteria on a Web page or disk allows students to use their own computer technology as needed (Burgstahler, 2001). This assists students who have visual impairments and students with learning disabilities who use screen reader computer technology. Some faculty members may feel that giving students disks of lectures is overadvantageing them. However, placing lecture outlines and material on disk or online simply meets the goal of providing full access to information. The students are still responsible for learning the information.

Another advantage of incorporating universal design of instruction in occupational therapy education is that doing so introduces students to the principles of universal design and demonstrates their application. This experience with universal design is relevant to students' future work with clients, fieldwork students, and colleagues.

Not only do the students benefit from the integration of universal design of instruction in course design, faculty benefit as well. First, instructors ultimately may save time by decreasing the need to arrange for individual accommodations for students. Second, providing students with written lecture information may decrease the number of requests for clarification and repetition of material, a process that typically slows a lecture. For example, if the students have the session outline and lecture notes to follow, material may be covered in less time because students are less apt to ask instructors to slow down or to repeat statements so they can take notes that accurately reflect the lecture. This efficiency may provide more time for open discussion and engagement in critical thinking and problem solving. In addition, the provision of written materials may decrease student requests for lecture clarification outside of class time.

Though universal design used in the classroom reduces the need for individualized academic accommodations (Burgstahler, 2001; McGuire & Scott, 2002), some students with disabilities will still require them. For instance, a sign language interpreter may still be needed for a student who is deaf; an oral exam may be substituted for a written exam for a student who has arthritis; and a quiet office space for taking exams may benefit a student with an attention deficit disorder. Requests for such accommodations, unlike universal design, are the responsibility of the student and ultimately it is the student's responsibility to educate others regarding his or her needs.

One of the biggest challenges faced by educators is balancing the need to build essential skills and to maintain standards while adapting instructional methods to meet the diverse learning needs of students. Providing full access to information through universal design of instruction does not mean removing learning challenges and compromising performance expectations. Employing universal design of instruction simply provides alternative ways for students to meet the essential competencies. Academic standards remain firm, as do student responsibilities.

Summary and Conclusions

Application of the seven principles of universal design of instruction in occupational therapy education is intended to meet the diverse learning needs of students and provide full access to educational experiences without disadvantaging some students (Bowe, 2000; Burgstahler, 2001; McGuire & Scott, 2002). The intended outcome is success for all students. Further, universal design of instruction is congruent with the occupational therapy core value of mutual respect, whereby…

We treat people fairly and equitably.
We acknowledge and support others regardless of differences. We appreciate their qualities, capabilities and contributions (American Occupational Therapy Association, 2003).

While the benefits of universal design of instruction in occupational therapy curricula appear to be extensive, a caveat must be included. Use of any instructional design
tool is legitimized when grounded in research. Though literature in multiple disciplines is expanding related to universal design of instruction, we need research specific to occupational therapy education.

References


Correction

The AOTA Board of Directors was listed incorrectly in the July/August issue. Ann Burkhardt, Peter Brey, and Panelpha (Penny) Kyler were inadvertently omitted from the list, whereas Dianna Puccetti and Deborah Slater should have been removed. Also, Elaine Viseltear was incorrectly named as the first editor of AJOT in the editorial. Charlotte D. Bone was the journal’s first editor from 1947 to 1949 and Cordelia Myers was the editor from 1968 to 1974.