UNIVERSAL DESIGN OF INSTRUCTION: A WIN-WIN SITUATION!

Quebec's college-student population has become increasingly diverse, and now includes individuals with various learning styles, interests and capabilities: adults returning to school; those whose first language is neither English nor French; members of different cultural and religious communities; and individuals with disabilities. Instructors have to teach all these students, often in the same class. What is more, they must evaluate learning in an equitable manner, without favouring—or penalizing—any one group. How can this be accomplished? Universal design of instruction (UDI) offers a few potential solutions.

DEFINITION

UDI can be defined as the design of instructional materials and activities that allow people with a varied range of skills and abilities to acquire knowledge. These activities are thus created with a view to including all students from the very outset (Burgstahler, 2005). UDI is based on the principle that, if a concept works well for individuals with disabilities, it will work for most people. For example, large computer screens were originally designed for people with visual impairments, but with time became important tools for others as well, especially individuals who work with electronic spreadsheets. The concept of UDI is also based on the notion that it is better to provide students with several ways of absorbing the material and to demonstrate what they have learned. Furthermore, it is essential to understand that this concept in no way promotes the idea that a single solution applies to all students.

CONCEPT ORIGINS

Universal design originated in the 1980s from architecture. The central tenets of the approach are as follows: "the design of products and environments are to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design (or at extra cost)" (Story, Mueller and Mace, 1998, p. 3). This is the principle that gave us curb cuts in sidewalks and at intersections, for example. Although initially designed to facilitate movement for wheelchair users, these features subsequently also proved convenient for parents with baby strollers and people transporting items on a dolly.

Seven principles governing the design of universally accessible products and environments were initially proposed by Story, Mueller and Mace (1998) and adapted to other fields, including education. Two other principles were added specifically to create an environment conducive to learning (Scott, Loewen, Funckes and Kroeger, 2003). Table 1 shows all nine principles as applicable to education (Nguyen, Fichten, Barile and Lévesque, 2006).

SUGGESTIONS FOR IMPLEMENTING PRINCIPLES

For the approach to be effective, academic institutions must work together to determine what works and how to incorporate the principles of UDI into their courses.

In accordance with the work of many authors (Burgstahler, 2005; McGuire, Scott and Shaw, 2003), the research conducted by the Adaptech Research Network and the experiences of our colleagues and partners (i.e., campus disability service providers and teachers), we have established the four following recommendations.

A   Planning

Supply courses outlines in electronic format so students can adapt them to their own needs (large fonts, audio files, colours, etc.).

Be available during set virtual office hours in order to take account of the fact that some students find getting about difficult or have young children (but no babysitter) or other family obligations (instant messaging, course-management system e-mailers, etc.).

B   Delivery

Use different methods of delivering content (lectures, electronic and audio documents, podcasts, etc.), so students can select those that best suit their personal learning styles and circumstances.

Create online support groups and teams, as real-time chats allow students to work from home, promote discussion and inclusion and help make factors such as age, accent and home-school travel time less important.

Prior to each class, supply course notes so students can read them in advance. We would stress here, for teachers who might worry that this will negatively impact class attendance, that one of our studies shows that students attend classes even when notes are made available beforehand (Fichten, King, Nguyen, Mimouni, Juhel and Raymond, 2011).

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TABLE 1 – THE NINE PRINCIPLES OF UDI

Principes and definitions	Sample recommendations for adapting courses to a more diverse student population
1. Equitable Use The course does not penalize any group of students.	• Use different methods of delivering content (lectures, peer teaching, etc.). • Prior to each class, provide course notes online.
2. Flexibility in Use Instruction is designed to accommodate a wide range of individual abilities and take account of differences among students.	• Give students several evaluation options (term work, oral presentations, portfolios, etc.).
3. Simple and Intuitive Instructions are easy to understand, and tools are simple to use.	• Enhance instruction via visual representations such as diagrams. • Choose textbooks that include a summary and key words for each chapter.
4. Perceptible Information Essential information is conveyed effectively, so as to be understood by all the students independently of their sensory skills.	• For slide presentations, use a large font and good colour contrast. • Supply all course visual and sound content (e.g., hard copies of slide shows in which image content is described). • Ensure that videos are captioned.
5. Tolerance for Error Possible variations in student learning rates are anticipated; risks of error due to accident are minimized.	• Ensure that online examinations allow students who accidentally press the wrong key to go back and correct their mistake. • Put practice exams online (as is the case for SAAQ tests). • Allow students to do written work in class on computer, so they can modify or revise without constantly having to erase and rewrite their texts.
6. Low Physical Effort The course minimizes the need for physical effort that is not essential to instructional objectives.	• Let students submit their assignments by e-mail. • Opt for several short exams rather than one long one.
7. Size and Space for Approach and Use Space is organized so that all students, regardless of their size, posture or mobility, have enough room to move around.	• Provide enough space for sign-language interpreters, guide dogs and various technologies. • Ensure that students' visual field is unobstructed during classroom demonstrations.
8. A Community of Learners The environment promotes interaction and communication between students and teachers.	• Use various means to encourage the inclusion of all students in discussion groups (classroom teamwork, discussion forums, Facebook, etc.).
9. Instructional Climate The environment is conducive to learning and the inclusion of all students.	• Maintain high expectations of students while remaining open to any discussion of special needs and promoting an atmosphere conducive to learning and communication.

C Evaluation

Over the course of the semester, opt for several evaluations (essays, oral presentations, multimedia projects, etc.) instead of just one or two exams; this allows students to demonstrate what they have learned in keeping with their particular learning style and circumstances.

Provide two or three evaluation choices for each task, specifying different but equivalent criteria for each.

Diversify exam formats so students can use different means of retrieving information (search their memory, perform analyses, organize facts, etc.); this will enable them to demonstrate their knowledge in various ways (multiple-choice questions, short-answer questions, summaries, diagrams, etc.).

D Networking

Find other teachers who are interested in the principles of UDI, and exchange ideas.

Meet with staff from the campus disability services office to discuss the possibility of organizing workshops or other training sessions to teach how to implement the principles of UDI.

CONCLUSION

Today's student population is extremely diverse. To promote inclusion in all aspects of education, so that each individual can develop to his or her full potential and participate fully in society, it is vital that teaching and learning structures, as well as the courses they offer, adapt to this diversity. The concept of UDI can help us transform our institutions and better meet the needs of all who attend them.

To summarize, UDI constitutes a response to today's diverse student population. It encourages the practice of inclusive instruction; promotes courses designed to ensure accessibility for all from the outset (thus avoiding the need for subsequent modification); enhances students' ability to acquire knowledge and develop skills; and uses technological resources to convey knowledge and to ensure that students develop the prescribed skills and competencies. In other words, a win-win situation!

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