Universal Design for Learning: Frequently Asked Questions

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**Q 1: How can Universal Design for Learning (UDL) improve students' access to the general curriculum?**

Each learner, with or without identified disabilities, presents a unique pattern of skills, interests, and needs. In the United States, reauthorizations of the federal Individuals with Disabilities Education Act (IDEA) have cited the need to adjust various aspects of curriculum and instruction to meet these individual differences and thus ensure access to the general curriculum; yet traditional curriculum materials and methods are not inherently amenable to adjustment.

The only practical and affordable way to implement the requirements of IDEA is to provide flexible materials that are accessible to different kinds of learners. Because learning is not just a question of access to materials, clear strategies for adjusting learning goals, teaching methods and materials, and assessment methods are necessary. Professional training in individualizing learning is needed as well.

The cornerstone of Universal Design for Learning is flexibility. The UDL approach leverages the inherent flexibility of digital media to support individualized learning. UDL concepts form the basis of the development of adjustable materials, instructional approaches, assessment methods, and professional development that can meet IDEA's call for access to the general curriculum for students with disabilities.
Q 2: What is the difference between physical and cognitive access to the general curriculum?

Broadly speaking, physical access to the curriculum includes sensory and motor access (such as the ability to see text and images, hear sound and speech, and manipulate materials and expressive tools). Individuals with physical or sensory disabilities may encounter barriers when using traditional materials such as books, paper and pencil, keyboards, audiotapes without text equivalents, or videos lacking captions or audio descriptions.

Examples of cognitive access to the general curriculum include the ability to understand assignments, plan approaches to and execute tasks, use materials effectively, comprehend content presented in various media, organize work, understand and use feedback, and express ideas effectively. All learners (but especially those with learning disabilities, attention deficits, developmental disabilities, or affective difficulties) may encounter barriers when instructional materials are not designed in a flexible manner.

Students need both physical and cognitive access in order to succeed in the general curriculum. A student with a learning disability may be able to see text clearly (physical access) but may have difficulty understanding the assignment or purpose for reading, finding main points, organizing notes, and expressing understanding (cognitive access). Conversely, a student with cerebral palsy may fully understand an assignment and have clear ideas for executing it (cognitive access), but be blocked from expressing those ideas by inappropriate tools (physical access).

Q 3: How has the mandate for access to the general curriculum changed the role of the special educator?

Traditionally, the role of the special educator has been distinct from the role of the general educator, with the special educator focusing on remedial instruction of skills rather than on curricular content, often in a separate physical setting. Both IDEA and UDL support a new role for special educators. IDEA specifies that "joint participation and leadership of general and special educators in curriculum standards development, professional development, resource allocation, and instruction are critical in helping students with disabilities access the general education curriculum...."

Because IDEA mandates access to the general curriculum and the attainment of goals connected to curriculum standards for students with disabilities, special educators will now work collaboratively with general educators to customize the general curriculum to meet the needs of students with disabilities. Not coincidentally, special educators may also collaborate with general educators to customize goals, materials, methods, and assessment for students without identified disabilities. Each learner has unique strengths, weaknesses, interests, and needs, and the skills of the special educator can assist the general educator in helping all students reach curricular goals.
Q 4: What barriers need to be removed from current general curriculum materials to make them accessible for all learners?

The single most significant barrier in the general curriculum is the fixed medium of presentation. For example, printed materials, the most pervasive means of providing materials, cannot be modified from their original format, nor can the information provided this way be enhanced or made more supportive for diverse learners. Videotapes, audiotapes, and even some software are also generally fixed in their presentation, making them accessible and appropriate learning tools for some, but not for all.

The presentation of curricular materials and tools in digital, networked form is the first step in overcoming the barrier of fixed media. Digital form is necessary because it provides the underlying flexibility needed for customization. When digitized, text, images, sound, and video can be converted into other accessible forms at the teacher's or learner's request. This capacity to be transformed, and to be presented in multiple forms simultaneously, is unique to digital media.

Networked form is necessary because it provides the following:

- the opportunity for students to access their curricular materials and projects from multiple sites (at school, at home, while traveling, in multiple classrooms)
- the possibility of ongoing, embedded assessment (with student processes and student work collected in one place, and feedback offered on an ongoing basis)
- a wide variety of content, supporting varied student interests
- vast information resources, and multiple ways to access that information to support different learners' modes of finding information
- supports, such as online dictionaries, thesauri, and encyclopedias, and the ability to have text read aloud, to provide scaffolding for students with difficulties and to expand information and ideas for all students.

However, simply providing materials in digital form does not guarantee the flexibility of use needed to truly individualize learning. This flexibility must be built in by software and curriculum designers so that materials are truly adaptable and can be used by teachers to individualize goals, methods, and assessment.

Q 5: What are the differences between assistive technology and Universal Design for Learning?

Children with physical or language disabilities may need properly designed wheelchairs, adaptive switches to control their environment, speech synthesizers, and other assistive devices. Assistive technologies will always have a role in the education of learners with
disabilities, and Universal Design for Learning will not eliminate the need for personal assistive devices.

However, exclusive emphasis on assistive technologies places the burden, one of adaptation, on the learner—not the curriculum. The idea that students must procure or be prescribed special individual tools whenever they cannot use standard curricula undermines learning for everyone. Exclusively print-based tools and methods, uncaptioned videos and software, images and posters that lack text descriptions—all create a culture of failure for many of our children. UDL curriculum materials assume diverse learner goals, learner profiles, and assessment methods, and therefore are designed with flexibility as their keystone. UDL materials offer options to transform content presentation and provide multimedia presentation, options for varied learning supports and modes of student expression, and varied means of building student engagement. Instead of one assumed standard with variations, variations comprise the standard.

As UDL becomes more viable and pervasive, the power of assistive technology can be devoted to providing more efficient interaction with a curriculum that is already access-aware. For the students who need it, assistive technology will no longer be required to overcome barriers in a poorly-designed curriculum, but will enhance active interaction with a curriculum that has been designed at the outset to be accessible to all.

Q 6: How can technology help teachers individualize teaching materials to make learning engaging and challenging for all students?

Technology tools, if designed according to the Web Accessibility Initiative (WAI) and UDL guidelines, can be created to support the individualization necessary to engage all learners, as illustrated by the following examples.

Pam, a student with learning disabilities for whom English is also a second language, uses CAST's eReader software to help her complete a reading assignment. eReader's spoken voice and synchronized highlighting features help her track words on a page, pace her reading, and associate the way a word looks with the way it sounds. After reading the story several times with the spoken voice option turned on and the highlighting speed set to slow, she turns the read aloud feature off, increases the highlighting speed slightly, and reads the story again. In this manner, she works gradually to increase her reading comprehension and speed.

Seth, a student with low vision whose word comprehension skills are excellent, uses eReader to adjust the font, style, size, and color of digital text, background, and highlighting, to achieve maximum contrast and readability.

Jeremy, a poor speller who does not enjoy writing, uses the auditory feedback offered by Don Johnston's Write:OutLoud software to engage in the task of writing an English composition. As he types his composition and it is displayed on the computer screen, the
program reads it aloud by word, sentence, paragraph, or letter-by-letter, helping him to identify sentence construction problems and spelling mistakes. When he misspells a word, it flashes on the screen, indicating his error. Using the program's talking spell checker, he calls up a list of suggested words to replace the misspelled word, and, in the case of homonyms, short definitions to distinguish one word from another. Jeremy selects a word when its pronunciation (or definition) indicates it is the correct word, and completes the composition without spelling errors.

Daniel, whose physical disabilities prevent him from using a mouse or a computer keyboard, uses Ke:nx software with Write:OutLoud to gain single switch access to program controls and an onscreen keyboard. In this way, he too can access the writing supports of the program to help him complete his written work.

Ellen, an eighth-grade student with learning disabilities, finds it challenging to utilize the rich resources of the Internet because there is so much information to look at and so many visual distracters. But finding and organizing information from the Web is getting easier for her since her school installed CAST's eTrekker software on its library computers. She signs on, opens eTrekker, and types in a research question such as *What did Harriet Tubman do in the Civil War as a nurse?* eTrekker checks Ellen's spelling and identifies the keywords in her question, such as *Harriet Tubman*, *Civil War*, and *nurse*. Ellen presses the search button and eTrekker lists ten websites that match her search criteria. eTrekker's interface presents a search engine environment free of distracting advertisements and extraneous information. Ellen selects a few sites to visit, goes to those sites, and, using the reading supports of eReader, which she has also opened on her computer, selects the read feature to have information read aloud to her. eTrekker keeps her research question and keywords on the screen, helping her to maintain focus on the nursing aspect of Tubman's life, rather than her role in the Underground Railroad. Ellen highlights and pastes information into the onscreen notepad and generates some of her own notes on the topic. When she finishes her Internet search, eTrekker stores her research question and keywords, the websites she has visited, and her notes so that she can easily retrieve them.

**Q 7: How can the Internet and multimedia be used to individualize learning for students with varied backgrounds, learning styles, abilities and disabilities?**

The flexibility of digital media and the varied resources available on the World Wide Web provide great opportunity for individualization. However, care must be taken to structure any learning experience so that the focus remains on the particular goal at hand. This requires preparation and careful consideration of each learner's needs and skills.

Example: A seventh-grade science class, with the help of their teacher, uses Engaging Minds' Inspiration software, a concept mapping program, to create a ‘launch pad’ of selected web sites to use when researching the topic of whales. Inspiration enables this diverse group of seventh-grade students, with varied abilities and preferences, to work
together to fulfill the goal of the assignment: to find out the best place in the world to film whales for an upcoming movie, and how much such a project might cost. One student, a reluctant reader who does poorly in print-based assignments, excels when it comes to interpreting the data presented in maps and graphs depicting whale migratory patterns. Another student's math skills come to the fore as she analyzes how much it will cost to get a crew to the Gulf of Maine to film humpback whales in action. As the students gather their data, they weave their separate findings into a cohesive whole using Inspiration. When their research is complete, another student uses his visual talents to present the group's findings in a dazzling PowerPoint presentation.