

Outline for Technology & Learning article entitled: Basic Technology Tools for A Diverse Student Population

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Basic Technology Tools for A Diverse Student Population

The diversity of learning needs in today's student population continues to grow and includes a wide spectrum of abilities in language, learning styles, background, disabilities, technology skills, motivation, engagement, and access. With schools being held increasingly accountable to show that all students are learning, every student must have access to the curriculum in ways that suit their learning. Enhancements put in place to help certain portions of the student population may end up benefiting others in the classroom. A good example of this is the use of sound amplification systems that have been put in classrooms to assist students with hearing loss. The result has been that all students, especially those with attention deficit disorder and those for whom audio is a learning-style strength, also benefit from the modification. Many of the tools that are now available to us today can enhance the learning abilities for all students on all ranges of the learning spectrum.

Universal Design for Learning

Universal Design came from architectural alterations to ensure accessibility of the physical environment such as ramps built for wheelchairs and walkers. Disability advocates encouraged web page designers to consider accessibility and several organizations offer accessibility guidelines and web page validation tools to assist web designers in accomplishing this goal. CAST (The Center for Accessing Special Technologies www.cast.org) was involved in the web accessibility process and has now encouraged similar accessibility opportunities in learning environments. CAST defines UDL as providing multiple means of representation, expression and engagement by using flexibility in the methods teachers use for delivery of instruction, materials and providing alternative opportunities for students to show what they know and can do. It means using an open approach when we design educational environments to meet the entire range of learners, going along with the concept in differentiated instruction that "one size does not fit all". Universal design is an emerging discipline based on the application of advances in learning theory, instructional design, educational technology, and assistive technology. (Edyburn, 2005)

Increasing availability of accessible content

Technology increasingly offers a growing range of digital resources that can be used to provide content to a classroom of diverse learners in a wide variety of ways. Digitized text, whether in electronic textbooks, web pages, publications and articles available in pdf form, or teacher created content, allows accessibility to a much wider audience than previously possible, particularly if assistive tools are provided. Text manipulations can be done by the student for easier reading by changing font sizes, contrast, colors, etc. Text speech readers can convert the text to speech, and tools can be used to highlight words and sentences as the reader progresses at the appropriate rate and offer vocabulary assistance when needed. Multimedia content such as audio files, ebooks, images, video and interactive programs offer teachers a broad range of options to enhance their

content for learners of all styles.

Basic desktop tools

The opportunities for all computers to be readily equipped with a set of tools that are available to all learners is increasing through operating system enhancements, free and open source tools, and inexpensive tools that can make a big difference in students' abilities to learn. All educational technology departments should carefully evaluate their computers to ensure there are options for:

Computer system accessibility tools: speech, font, keyboard and mouse options, visuals for sounds

Literacy tools: dictionary, thesaurus, and word prediction tools

Speech Recognition: programs designed to ease input

Talking text: text readers, text-to-speech file creators and screen readers

Word Processing: text highlighting and font alterations for readability, spell- and grammar-checking that is configurable, ability to add comments/notes

Organizers: graphic organizers for research, writing and reading comprehension, personal organizers

It is important for teachers, aides and staff to have professional development training in learning to use these tools and enable students' exposure to their capabilities and use. It is also important to evaluate the accessibility options in all software purchased or used by schools to ensure features are available that will benefit all students and teachers.

Curriculum & Lesson Plans

A UDL curriculum is designed to be flexible with additional strategies that minimize barriers and enhance content. Teachers can easily offer multimedia alternatives that maximize access to both information and learning. When teachers evaluate student abilities and realize the strengths and challenges that each student brings to learning, by using effective teaching practices they can engage more students and help all students demonstrate progress. In designing a lesson with UDL in mind, teachers analyze their lesson in relation to potential barriers to access and provide ways to offer a variety of methods for students to express their understanding of the material. It's valuable for teachers to know that less time is spent by teachers when modifications are put into curriculum up front rather than making modifications later for each individual need. These kinds of technological enhancements to the standard text-based (textbook) classroom support thinking and learning processes and provide opportunities for cooperative learning. Multimedia content provides a combination of linguistic and imagery to increase retention, and learning and organization tools such as graphic organizers, word processor tables and spreadsheets can be used to enhance categorization, note-taking and summarization strategies.

Technology Gains

Many assistive technology devices and programs have been available to a specific population for some time now and we now see that the advances in the usability and decreases in cost have made them helpful to more students. Judy Dunnan is a speech and language therapist in NH and has worked with AT modifications for many years. She believes the kids will bring the movement of universal design along. "It's the kids that have moved instant messaging, cell phone communications, and text messaging into primary forms of personal communications and will continue to lead us in the direction of universal design and it will probably look different than what we can even conceive. The place where UDL is most important isn't in the tools (tools will be there) but is in the flexibility we accept for cognitively problem-solving in ways that aren't obvious to us. Schools need to let students be cognitively flexible."

Benefits

We can enhance learning and literacy skills by offering alternative sources and modes of real-world reading/listening, vocabulary development, and reading comprehension improvements using organization and categorization tools. Students can be offered a wide range of tools that can assist each student in their unique set of learning strengths and difficulties. This is a logical opportunity to leverage the technology in schools to enable all learners to use tools that they will use as life-long learners.

More information

CAST - The Center for Accessing Special Technologies <http://www.cast.org>

[A Primer on Universal Design \(UD\) in Education, Dave L. Edyburn, PH.D.](http://www.uwm.edu/~edyburn/ud.html)
<http://www.uwm.edu/~edyburn/ud.html>

SAU 16 Technology - UDL: <http://technology.sau16.org/udl.htm>

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Submission request to Technology & Learning

<http://www.techlearning.com/content/speak/articles/write.php>

submission by email to: gwensol@earthlink.net

Gwen, Attached is an article entitled Basic Technology Tools for a Diverse Population that I'm submitting for publication. It encourages the implementation and use of widely available accessibility and computer tools that can be implemented and made available to everyone in a school in the philosophy of universal design for learning. Thank you for your consideration.

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