Tool Kit on Universal Design for Learning

In 2006, the U.S. Department of Education developed a *Tool Kit on Teaching and Assessing Students with Disabilities (Tool Kit)* to support the Department's initiative to improve outcomes for students With disabilities. The *Tool Kit* focused on increasing states' capacity to provide rigorous assessment, instruction, and accountability for students with disabilities. The *Tool Kit on Universal Design for Learning* is an additional component of the original *Tool Kit*, and offers a compilation of current information on universal design for learning (UDL).

What Is UDL?

UDL is a framework for designing educational environments that help all students gain knowledge, skills, and enthusiasm for learning. The concept of UDL was inspired by the universal design movement in product development and architecture, which calls for the design of structures that anticipate the needs of individuals with disabilities and accommodate these needs from the outset (Orkwis & McLane, 1998; Rose & Meyer, 2002). Elements of universally designed buildings might include levered door handles, widened bathroom stalls that can accommodate wheelchairs or other assistive devices, and tables and countertops at a variety of heights. The tenets of universal design also can be applied to teaching and assessing, and in these contexts, a universally designed curriculum includes goals, methods, materials, and assessments, and supports all learners by simultaneously reducing barriers to the curriculum and providing rich support for learning (Rose & Meyer, 2002). In a classroom using a universally designed curriculum one might find books on tape, interactive software, magnifiers, or highlighted materials. UDL can be used operationally to provide access to the general education curriculum and maximize learning for the greatest number of students (The Access Center).

UDL is a framework with three guiding principles that parallel three distinct learning networks in the brain: recognition, strategy, and affect (Rose & Meyer, 2002). This framework is important because it reflects the ways in which students take in and process information. Using this framework, educators can improve outcomes for diverse learners by applying the principles below to the development of goals, instructional methods, classroom materials, and assessments.   Use of these principles leads to improved outcomes for students because they provide all individuals with fair opportunities for learning by improving access to content.

1. Provide multiple and flexible methods of presentation to give students various ways of acquiring information and knowledge. Technically sophisticated (hi-tech) examples of this include using digital books, specialized software, and Web sites. Low-technology (low-tech) examples include highlighted handouts, overheads with highlighted text, and cards with tactile or color-coded ink.

2. Provide multiple and flexible means of expression to provide diverse students with alternatives for demonstrating what they have learned. Hi-tech examples of this include online concept mapping software, which provides students with a graphic map to demonstrate learning, speech-to-text programs, and graphing to a computer, which collects data regarding students' learning progress. Low-tech examples include cooperative learning (asking the student to demonstrate his/her learning in small groups), think alouds (encouraging the student to talk about what s/he is learning), and oral tests.

3. Provide multiple and flexible means of engagement to tap into diverse learners' interests, challenge them appropriately, and motivate them to learn. Hi-tech examples include interactive software, recorded readings or books, and visual graphics. Low-tech examples include, games or songs, performance-based assessment, and peer tutoring.

UDL can incorporate the use of digital materials and be implemented in a broad range of educational settings. Research has shown that digital materials, such as automated speech to text, provide powerful learning supports in the universally designed classroom. Well-designed, digital materials can sometimes be more flexible than conventional classroom tools such as printed text, printed images, and lectures (Center for Applied Special Technology). Digital materials can be modified easily and efficiently from one media type to another instantaneously. For example, one might modify text to speech, speech to text, image to text, depending on the needs of the student. Such materials make it easier to customize and individualize learning materials and methods. This transformational capability of digital media is, in part, the impetus for the *Individuals with Disabilities Education Act (IDEA)* of 2004 regulations related to the National Instructional Materials Accessibility Standard (NIMAS). Students with disabilities that make it difficult to read printed materials may require Braille, e-text, audio or large print versions of core learning materials. All of these can be created from a single NIMAS-compliant digital source file. NIMAS is a technical standard used by publishers to produce source files (in XML)

that may be used to develop multiple specialized formats (such as Braille, audio books, electronic text, large print, etc.) for students with disabilities related to accessing printed materials. NIMAS enables states and school districts to leverage the flexibility afforded by digital technology to develop those multiple specialized formats quickly and efficiently.   For more information, visit http://nimas.cast.org/about/nimas/index.html.

UDL Teaching Methods

The Center for Applied Special Technology (CAST), funded by the Office of Special Education Programs (OSEP), at the U.S. Department of Education, has devised three sets of broad teaching methods that support each of the three UDL principles. These teaching methods draw on knowledge of the qualities of digital media and how recognition, strategic, and affective networks operate. The UDL teaching methods (Rose & Meyer, 2002) are listed below. To learn more, visit CAST at www.cast.org/publications/ncac/ncac_lowinc_section1.html.

To support diverse *recognition* networks:

- Provide multiple examples;
- Highlight critical features;
- Provide multiple media and formats; and
- Support background context.

To support diverse *strategic* networks:

- Provide flexible models of skilled performance;
- Provide opportunities to practice with supports;
- Provide ongoing, relevant feedback; and
- Offer flexible opportunities for demonstrating skill.

To support diverse *affective* networks:

- Offer choices of context and tools;
- Offer adjustable levels of challenge;
- Offer choices of learning content; and
- Offer choices of rewards.

Benefits and Examples of UDL

UDL is a framework for providing instructional content in a variety of formats that respond to student learning differences and, therefore, make curricula more accessible for students (Orkwis, 2003). With UDL, educators can still individualize learning, while maximizing the consistency of educational goals, by developing a flexible curriculum that supports all learners (Hitchcock et al., 2002). UDL also provides for delivering instruction using a variety of teaching methods. Technology provides one means of changing instruction and engaging students in digital learning formats (Abdell & Lewis, 2005); however, there are a variety of additional ways that UDL can be incorporated into education, such as the following:

- **Building accessibility into design** helps to ensure that features meeting the needs of the widest range of students are incorporated integrally into the curricula. Such designs can prevent the need for adaptations or retrofitting. For example, electronic curricular material that is designed to be compatible with assistive technology devices allows paraprofessionals, parents, or teachers to more easily program these devices with appropriate content.

- **Providing adaptable materials and media** allows students to choose and customize formats suited to their learning needs. For example, using digitized text, students can change text to speech, speech to text, font size, colors, and highlighting. Digitized materials also can support students through built-in scaffolding to assist with activities such as word recognition, decoding, and problem solving. There also are non-digitized materials, such as highlighted passages or overheads, that can provide support to students.

- **Using multiple media,** such as video and audio formats, provides a variety of ways to represent a concept and allows students to access the materials through different senses. For example, computer-based simulations that include video description can help students with and without disabilities to visualize difficult concepts. A more low-tech example might be using a book with large print or providing books on tape for students.

- **Providing challenging, salient, and age-appropriate materials** to all students motivates students who may not otherwise be able to access curricular content they need given their age and developmental level. For example, a student with a learning disability can use decoding supports and text-to-speech features incorporated into

digitized history or science books, enhancing his or her ability to access grade-level content.

- **Presenting information in multiple, parallel forms** help to accommodate diverse learning styles. For example, information can be presented orally in a lecture, visually through pictures or readings, kinesthetically through a model demonstration, and using technology-based programs that further allow students to interact with the concepts.

To learn more, visit the Access Center at www.k8accesscenter.org/training_resources/UniversalDesign.asp.

The *Tool Kit on UDL* brings together current information on UDL, including the UDL framework, principles of UDL, and UDL teaching and assessment methods. In addition to references that provide more information on UDL, this tool kit includes products by OSEP-funded centers that are free of charge to stakeholders, as well as resources that can be used to support UDL implementation.

References

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